
LPCB Red Book



1

Part: 4 Fixed fire fighting systems

bre

Introduction

BRE Global Ltd, based in the UK near London, is an independent third party organisation offering certification of fire, security and sustainability products and services to an international market. LPCB is the certification brand used for fire and security products and services. The LPCB mark is accepted worldwide. We have representative offices in China, India and Dubai. We are owned by the BRE Trust, a not-for-profit organisation.

LPCB listings can be accessed, free of charge, at www.redbooklive.com or via apps from Apple, Google and Windows.

BRE Global Ltd is also a Notified Certification Body and Notified Test Laboratory for:-

- Construction Products Regulation
- Pressure Equipment Directive
- Marine Equipment Directive
- Transport Pressure Equipment Directive

BRE Global additionally carries out:

- Fire Investigation
- Fire Risk Assessment
- Fire Safety Engineering
- Research
- Training

LPCB Listings

Listings are given in sections which list related groups of products and services such as suppression, security and so on. Each section also summarises the technical basis for the certification of each product or service. The Red Book listings should always be used in conjunction with rules, regulations and design specifications required by the relevant Authority having jurisdiction.

Listings comprise:

Volume 1: (This Volume)

- **Fire detection and alarm products, systems, and cables**
- **Manual fire extinguishing equipment**
- **Automatic sprinkler, water spray and deluge systems**
- **Fixed fire fighting products and systems**
- **Watermist systems**
- **Related installers**

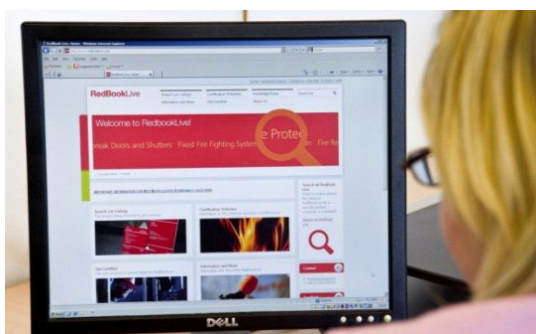
Volume 2:

- Passive fire protection products
- Security protection products
- Fire doors and shutters
- Smoke and fire ventilation systems
- Security Assessments - SABRE
- Related installers
- Management Systems
- Construction products

Listings are given in the name of the manufacturer or service provider, in alphabetical order. They can be downloaded free of charge from our website at www.redbooklive.com and also via an App that is available free from Apple iStore (for iPhone and iPad), from Google Play, (for Android phones and tablets) and Windows Store (for Windows 8 phones).

Updates

Certification of products and services are updated regularly. To ensure that you are using the most up to date information please refer to www.redbooklive.com or download from the App from the website home page.



What is Third Party Certification?

A frequent concern of stakeholders is in knowing whether a product will perform in accordance with the stated specifications. These concerns can involve such product attributes as safety, health or environmental impacts, durability, compatibility, suitability for intended purposes or for stated conditions, and other similar considerations. These issues can all be addressed through product certification.

Third party certification is a conformity assessment process, carried out by a body that is independent of both supplier and customer organisations. It provides confirmation that products and services have met and will continue to meet the requirements of specified standards and other normative documents.

LPCB third party product certification schemes are quality assurance schemes and comprise initial type testing and technical evaluation, assessment and surveillance of the manufacturer's quality system and factory production procedures, regular audit testing, labelling and listing.

Similarly, LPCB schemes for suppliers of services (installers) are also quality assurance schemes comprising a technical assessment of an installer's capability, assessment and surveillance of the installer's quality system and production procedures, regular inspection of completed installations and listing.

Benefits of Third Party Certification

For specifiers, regulators, insurers, manufacturers and installers, the benefits of an LPCB approval are:

For specifiers and regulators:

- Risk reduction - specifying LPCB approved products and services demonstrates due-diligence and best endeavour and mitigates against possible accusations of negligence.
- Avoidance of costly mistakes - you can trust LPCB approved products and services to conform each and every time.
- Time - using Red Book Live to search for and assess products and services can save you time.

For manufacturers and installers:

- Increased global sales - LPCB approval is recognised and specified widely throughout the world. In some territories LPCB approval is a mandatory requirement.
- Added value of the product or service - LPCB approved products and services are recognised as providing added value given their ability to conform each and every time.
- Reduced liability - LPCB approved products and services demonstrate due-diligence which can reduce liability for both you and your customers.

What does LPCB Certification offer?

LPCB certification is carried out against Loss Prevention Standards (LPS's). These LPS's include reference to BS, EN or ISO standards as appropriate. LPCB certification are level 5 schemes as detailed in ISO/ IEC 17067 with the added requirement to have a quality system certificated to ISO 9001.

VOLUME 1 LIST OF APPROVED PRODUCTS AND SERVICES

The technical requirements of LPCB schemes are given in the Loss Prevention Standards (LPSs). These documents are drafted by LPCB technical experts in conjunction with appropriate external experts. They are then peer reviewed by representatives from trade bodies, regulators, insurers, specifiers, manufacturers and other suppliers. Finally these documents are approved for use by the BRE Global Governing Body; the Body that oversees all of the certification activities of BRE Global.

Product schemes comprise:

- Initial type testing and evaluation of product.
- Approval and surveillance of the manufacturer's (or supplier's) quality management system to ISO 9001
- Assessment and surveillance of the manufacturer's (or supplier) factory production control system (FPC).
- Periodic audit testing of the product from either the factory or marketplace.
- Labelling or marking as appropriate.
- Listing on Red Book Live

Installer schemes comprise:

- Technical assessment of the installation contractor's capability.
- Approval and surveillance of the contractor's quality management system to ISO 9001 or assessment against the requirements of the relevant Loss Prevention Standard where ISO 9001 is not appropriate.
- Regular surveillance inspections of on-going installations.
- The issue of Certificates of Conformity by the installer to demonstrate compliance for each installation.
- Listing in the Red Book.

The LPCB Mark - the Mark you can trust

After certification of a product or service the manufacturer or service provider may place the LPCB certification mark, as shown below, on the product, packaging and literature etc.



Where LPCB holds accreditation through the United Kingdom Accreditation Service (UKAS), the certified company may include the UKAS symbol (the Crown and Tick) alongside the LPCB mark for certain applications e.g. promotional literature or material and stationery, as shown below.



(Full details of LPCB accreditation can be found on the UKAS website at www.ukas.com)

Where for reasons of space or cost the use of the above full mark is not practical, then the following simplified mark may be applied directly to the product (for some schemes only). The LPCB scheme rules define how and where the marks can be used.



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Part

4

FIXED FIRE FIGHTING SYSTEMS

PART 4: FIXED FIRE FIGHTING SYSTEMS

INTRODUCTION

The fixed fire extinguishing systems included in this section are for the protection of specific risks, e.g. computer rooms, switch gear, high risk production lines, commercial kitchen protection systems etc.

Great care must be taken in the choice of fire extinguishing agent with respect to life safety, damage to equipment from bi-products, venting and the time it takes to have the system operational again after a discharge incident.

In addition to careful product/system selection it is recommended that all systems are designed, installed and commissioned by third party approved contractors who have demonstrated their competence.

Listings in this section include:

Products

- Condensed aerosol extinguishing generators
- Direct low pressure (DLP) application systems
- Fine water spray components
- Fixed fire extinguishing systems for catering equipment
- Gaseous system components
- Gaseous systems

Products are approved in accordance with a range of standards, the details of which are given at the front of each section relevant to the product.

Design, installation and commissioning contractors

LPS 1204: Requirements for contractors engaged in the design, installation and commissioning of fixed fire systems.

The purpose of LPS 1204 scheme, *Requirements for firms engaged in the design, installation, commissioning and servicing of gas extinguishing systems*, is to provide an assurance that gas extinguishing systems perform correctly. It is recommended that the LPS 1204 Certificated Firm is given responsibility for the complete system, including the following aspects:

- Selection of appropriate gas type
- Extinguishing design concentration
- Check on enclosure leakage integrity
- Discharge and post discharge venting
- Electrical system integration

Certification of Fixed Systems and LPCB Certificates of Conformity

It is a requirement of the LPS 1204 scheme that Certificated Firms shall issue an LPCB Certificate of Conformity in respect of each completed system, extension and alteration. The issue of an LPCB Certificate of Conformity:

- (a) certifies that the gas extinguishing system, extension or alteration has been designed, installed and commissioned in accordance with the recognised standards identified in LPS 1204 and
- (b) ensures that the certificated system, extension and alteration is recorded by the LPCB.

LPCB Inspections

LPS 1204 Certificated Firms are regularly audited for their competence to design, install, commission and service gas extinguishing systems in accordance with recognised installation standards.

Additional Offices

Where a firm has additional offices, each office must meet the requirements of LPS 1204 to be eligible for certification, and is separately listed.

Provisional Approval

Firms with limited experience and track record can gain Provisional Approval in the LPS 1204 scheme. Their work is closely monitored by LPCB and when they have completed the requisite number of gas extinguishing systems contracts over a period of not less than two years, and subject to satisfactory performance, they will be given full approval and listed in this section of the Red Book.

Alberta Fire & Security Equipment Limited

San Gwakkinn Road, Mriehel, BKR 3000, Malta

Tel: +356 21 443538 • Fax: +356 21 484077

E-mail: info@alberta.com.mt • Website: www.alberta.com.mt

Certificate No. CFSI-017 to LPS 1204

Certificated to design, install, commission and service Non-liquefied inert gases and Liquefied halocarbon gases and issue LPCB Certificates of Conformity for these systems.

Chubb Fire & Security Ltd t/a Chubb Mechanical

Littleton Road, Ashford, Middlesex TW15 1TZ, United Kingdom

Tel: +44 (0)1784 425950

E-mail: mechanical@chubb.co.uk • Website: www.chubb.co.uk

Certificate No. CFSI-026 to LPS 1204

Certificated to design, install, commission and service Non-liquefied inert gases and Liquefied halocarbon gases and issue LPCB Certificates of Conformity for these systems.

PART 4: SECTION 1

LPS 1204 CERTIFICATED GAS EXTINGUISHING SYSTEM FIRMS

Clymac Limited

Cloudway Court, Belton Road, Loughborough LE11 1LW, United Kingdom

Tel: +44 (0)1509 232651 • Fax: +44 (0)1509 232665

E-mail: sales@clymac.co.uk • Website: www.clymac.co.uk

Certificate No. CFSI-018 to LPS 1204

Certificated to design, install, commission and service Non-liquefied inert gases and Liquefied halocarbon gases and issue LPCB Certificates of Conformity for these systems.

EA-RS Fire Engineering Limited

4 Swanbridge Industrial Park, Black Croft Road, Witham, Essex CM8 3YN, United Kingdom

Tel: +44 (0)1376 503680

E-mail: onesolution@ea-rsgroup.com • Website: www.ea-rsgroup.com

Certificate No. CFSI-021 to LPS 1204

Certificated to design, install, commission and service Non-liquefied inert gases and Liquefied halocarbon gases and issue LPCB Certificates of Conformity for these systems.

Firecheck Contracts Limited

53 Huntercombe Lane North, Burnham SL1 6DX, United Kingdom

Tel: +44 (0)1628 660999 • Fax: +44 (0)1628 662998

E-mail: info@firecheckltd.co.uk • Website: www.firecheckltd.co.uk

Certificate No. CFSI-019 to LPS 1204

Certificated to design, install, commission and service Non-liquefied inert gases, Liquefied halocarbon gases and Carbon dioxide and issue LPCB Certificates of Conformity for these systems.

Gemini Fire Management Systems Limited

18 Albert Drive, Jubilee Road, Burgess Hill, West Sussex RH15 9TN, United Kingdom

Tel: +44 (0)845 872 5999

E-mail: Sales@Geminifire.co.uk • Website: www.Geminifire.com

Certificate No. CFSI-025 to LPS 1204

Certificated to design, install, commission and service Non-liquefied inert gases and Liquefied halocarbon gases and issue LPCB Certificates of Conformity for these systems.

Hall & Kay Fire Services Limited trading as Hall & Kay Fire Engineering (Ascot)

Unit E - Science Park, Silwood Business Park, Ascot, Berkshire SL5 7PW, United Kingdom

Tel: +44 (0)1344 203800 • Fax: +44 (0)1344 203801

E-mail: MatthewC.Jones@hkfire.co.uk • Website: www.hkfire.co.uk

Certificate No. CFSI-009 to LPS 1204

Certificated to design, install, commission and service Non-liquefied inert gases and Liquefied halocarbon gases and issue LPCB Certificates of Conformity for these systems.

Interserve FS (UK) Limited

Unit 2, London Road Industrial Estate, Pembroke Dock, Pembrokeshire SA72 4RZ, United Kingdom

Tel: +44 (0)1646 623900 • Fax: +44 (0)1646 687869

E-mail: Neil.Lewis@interserve.com • Website: www.initial.co.uk/fire-services/

Certificate No. CFSI-023 to LPS 1024

Certificated to design, install, commission and service Non-liquefied inert gases and issue LPCB Certificates of Conformity for these systems.

Mercury Engineering

Mercury House, Sandyford Industrial Estate, Foxrock, Dublin 18 D18 XH79, Ireland

Tel: +353 1 216 3000 • Fax: +353 1 216 3006

E-mail: fireprotection@mercuryeng.com • Website: www.mercuryeng.com

Certificate No. CFSI-016 to LPS 1204

Certificated to design, install, commission and service Non-liquefied inert gases, Liquefied halocarbon gases and Carbon dioxide and issue LPCB Certificates of Conformity for these systems.

Protec Camerfield Limited (Firepro Division)

5 Churchill Way, Nelson, Lancashire BB9 6RT, United Kingdom

Tel: +44 (0)870 442 2644 • Fax: +44 (0)870 442 2645

E-mail: camerfield.firepro@protec.co.uk • Website: www.protec.co.uk

Certificate No. CFSI-015 to LPS 1204

Certificated to design, install, commission and service Non-liquefied inert gases, Liquefied halocarbon gases and Carbon dioxide and issue LPCB Certificates of Conformity for these systems.

Siemens plc, Building Technologies Division

Brunel House, Sir William Siemens Square, Frimley, Camberley, Surrey GU16 8QD, United Kingdom

Tel: +44 (0)1276 696000 • Fax: +44 (0)1276 696133

E-mail: sales.uk.sbt@siemens.com • Website: www.siemens.co.uk/buildingtechnologies

Certificate No. CFSI-004 to LPS 1204

Certificated to design, install, commission and service Non-liquefied inert gases, Liquefied halocarbon gases and Carbon dioxide and issue LPCB Certificates of Conformity for these systems.

Spectrum Fire Protection (UK) Limited

Middlemore Lane, Aldridge, Walsall, West Midlands WS9 8SP, United Kingdom

Tel: +44 (0)1922 744 466 • Fax: +44 (0)1922 744 477

E-mail: TechSupport@spectrumfire.co.uk • Website: www.spectrumfire.co.uk

Certificate No. CFSI-028 to LPS 1204

Certificated to design, install, commission and service Non-liquefied inert gases and Liquefied halocarbon gases and issue LPCB Certificates of Conformity for these systems.

PART 4: SECTION 1

LPS 1204 CERTIFICATED GAS EXTINGUISHING SYSTEM FIRMS

Trinity Fire and Security Systems Ltd (Exeter)

Little Bridge Business Park, Oil Mill Lane, Clyst St.Mary, Exeter, Devon EX5 1AU, United Kingdom

Tel: +44 (0)1392 874455 • Fax: +44 (0)1392 875546

E-mail: info@trinityprotection.co.uk • Website: www.trinityprotection.co.uk

Certificate No. CFSI-024 to LPS 1204

Certificated to design, install, commission and service Non-liquefied inert gases and Liquefied halocarbon gases and issue LPCB Certificates of Conformity for these systems.

All offices listed on Trinity Fire and Security Systems Ltd's website as shown above are covered by this certificate.

Tyco Fire and Integrated Solutions (the trading company for Tyco Fire and Integrated Solutions (UK) Limited and Tyco Fire and Integrated Solutions (Ireland) Limited)

Security House, The Summit, Hanworth Road, Sunbury on Thames, Middlesex TW16 5DB, United Kingdom

Tel: +44 (0)1753 574111 • Fax: +44 (0)1753 824226

Website: www.tycofis.com

Certificate No. CFSI-011 to LPS 1204

Certificated to design, install, commission and service Non-liquefied inert gases and Liquefied halocarbon gases and issue LPCB Certificates of Conformity for these systems.

Tyco Fire and Integrated Solutions (the trading company for Tyco Fire and Integrated Solutions (UK) Limited and Tyco Fire and Integrated Solutions (Ireland) Limited)

180 Aztec West, Almondsbury, Bristol BS32 4TU, United Kingdom

Tel: +44 (0)1454 240071 • Fax: +44 (0)1454 626443

Website: www.tycofis.com

Certificate No. CFSI-013 to LPS 1204

Certificated to design, install, commission and service Non-liquefied inert gases and Liquefied halocarbon gases and issue LPCB Certificates of Conformity for these systems.

Tyco Fire and Integrated Solutions (the trading company for Tyco Fire and Integrated Solutions (UK) Limited and Tyco Fire and Integrated Solutions (Ireland) Limited)

Mucklow Office Park, Mucklow Hill, Halesowen, West Midlands B62 8DA, United Kingdom

Tel: +44 (0)121 255 6000 • Fax: +44 (0)121 255 6100

Website: www.tycofis.com

Certificate No. CFSI-005 to LPS 1204

Certificated to design, install, commission and service Non-liquefied inert gases and Carbon dioxide and issue LPCB Certificates of Conformity for these systems.

Tyco Fire and Integrated Solutions (the trading company for Tyco Fire and Integrated Solutions (UK) Limited)

Tyco Park, Grimshaw Lane, Newton Heath, Manchester M40 2WL, United Kingdom

Tel: +44 (0)161 205 2321 • Fax: +44 (0)161 455 4459

Website: www.tycofis.com

Certificate No. CFSI-002 to LPS 1204

Certificated to design, install, commission and service Non-liquefied inert gases and Liquefied halocarbon gases and issue LPCB Certificates of Conformity for these systems.

Vipond Fire Protection Limited

10-12 Glenfield Road, Kelvin Industrial Estate, East Kilbride, Lanarkshire G75 0RA, United Kingdom

Tel: +44 (0)1355 2375 25/80/88 • Fax: +44 (0)1355 263399

E-mail: admin.uk@vipondltd.co.uk • Website: www.vipondfire.co.uk

Certificate No. CFSI-027 to LPS 1204

Certificated to design, install, commission and service Non-liquefied inert gases, Liquefied halocarbon gases and Carbon dioxide and issue LPCB Certificates of Conformity for these systems.

PART 4: SECTION 2.1

GASEOUS SYSTEM COMPONENTS

The equipment listed in this section has been assessed and tested to a test schedule, suitable for the product, containing tests from both LPS and EN standards for gaseous system components. The production facilities have also been assessed to ensure that the components meet and continue to meet these standards

BRE Global is a Notified Body for the products in this section that are covered by the published parts of EN 12094.

Where a component is not covered by a published part of EN 12094 it will be evaluated against an LPCB Schedule of Requirements.

In order to function correctly the approved components must be used in accordance with the manufacturer's technical instructions.

Component approval does not mean LPCB system approval. LPCB system approval requirements are set out in Section 2.2.

AIR Fire S.p.A.

Via Tenuta della Mistica - 33/37, Rome 00155, Italy

Tel: +34 680395217

E-mail: info@airfire.eu • Website: www.airfire.eu

Certificate No: 1239Ca to EN12094-4

Container Valves

| Product Name | Description | LPCB Ref. No. |
|---------------------|---|----------------------|
| 071251 | DN12 Container Valve 50 bar, HFC227ea & FK-5-1-12 | 1239Ca/01 |
| 071221 | DN12 Container Valve 50 bar, HFC227ea & FK-5-1-12 | |
| 071231 | DN12 Container Valve 50 bar, HFC227ea & FK-5-1-12 | |
| 072201 | DN12 Container Valve 250 bar, CO ₂ | |
| 072231 | DN12 Container Valve 190 bar, CO ₂ | |
| 072211 | DN12 Container Valve 190 bar, CO ₂ | |
| 072221 | DN12 Container Valve 190 bar, CO ₂ | |
| 073221 | DN12 Container Valve 270 bar, Inert | |
| 073201 | DN12 Container Valve 270 bar, Inert | |
| 073211 | DN12 Container Valve 270 bar, Inert | |
| 073222 | DN12 Container Valve 405 bar, Inert | |
| 073202 | DN12 Container Valve 405 bar, Inert | |
| 073212 | DN12 Container Valve 405 bar, Inert | |

Certificate No: 1239Ca to EN12094-4

Container Valve Actuators

| Product Name | Description | LPCB Ref. No. |
|---------------------|----------------------------|----------------------|
| 072202 | Pneumatic actuator | 1239Ca/02 |
| 072203 | Manual actuator | |
| 022001 | Electrical actuator | |
| 072213 | Pneumatic /manual actuator | |

Carrier Airconditioning & Refrigeration Ltd

Narsinghpur, Kherki Daula Post, Gurgaon 122 004, Haryana, India

Tel: +91-124-4825500 • Fax: +91 124 2372230

E-mail: customersupport.india@carrier.utc.com • Website: www.bis.utc.com

Certificate No: 273Cd to EN 12094 series and Schedule of Requirements

ARGONITE FIXED FIRE FIGHTING COMPONENTS

ARGONITE FIXED FIRE FIGHTING COMPONENTS

¹ This range of equipment is suitable for storage temperatures from -20°C to +50°C and is approved for use with Argonite.

² This range of equipment is approved for use in conjunction with the Kidde Products Design manual reference MA-01-9006-0100 (Revision 10 dated January 2008)

³ System pressure is specified at 150 bar, 200 bar and 300 bar @ 15°C.

Certificate No: 273Cd to a Schedule of Requirements

ARGONITE Container and Container Bracket Assemblies

| Product Name | Description | Capacity (ltr) | System pressure (bar) | LPCB Ref. No. |
|--------------|---------------------|----------------|-----------------------|---------------|
| 01-1331-5900 | 15.9 Litre Cylinder | 15.9 | 150 (4), (5) | 273Cd/01 |
| 01-1311-5900 | 67.5 Litre Cylinder | 67.5 | 150 (4), (5) | |
| 01-1321-5900 | 80.0 Litre Cylinder | 80.0 | 150 (4), (5) | |
| 01-1332-5900 | 15.9 Litre Cylinder | 15.9 | 200 (4), (5) | |
| 01-1312-5900 | 67.5 Litre Cylinder | 67.5 | 200 (4), (5) | |
| 01-1322-5900 | 80.0 Litre Cylinder | 80.0 | 200 (4), (5) | |
| 01-1334-5900 | 15.9 Litre Cylinder | 15.9 | 300 (4), (5) | |
| 01-1314-5900 | 67.5 Litre Cylinder | 67.5 | 300 (4), (5) | |
| 01-1324-5900 | 80.0 Litre Cylinder | 80.0 | 300 (4), (5) | |
| 01-1322-7100 | 80.0 Litre Cylinder | 80.0 | 200 (5), (6) | 273Cd/19 |

4. Cylinder is designed and manufactured in accordance with European Directive 2010/35/EU (TPED) through compliance with ISO 9809-2

5. A range of wall brackets, clamping bas, spacers and clamping bolts for secure container installation are also available

6. Cylinder is designed and manufactured in accordance with BS 5045-1 and is for Indian service only. Cylinder is not compliant with European Directive 84/225/EEC and the TPED.

Certificate No: 273Cd to EN12094 Part 8

ARGONITE C Series and ARGONITE Hoses

| Product Name | Description | Nominal bore (mm) | System pressure (bar) | LPCB Ref. No. |
|-------------------|--------------------|-------------------|-----------------------|---------------|
| 01-3260-0100/1000 | Actuation Hose (7) | DN5 | 150, 200 & 300 | 273Cd/03 |
| 01-3261-0100/1000 | Actuation Hose (7) | DN5 | 150, 200 & 300 | |
| 01-3271-1100/1200 | Actuation Hose (7) | DN5 | 150, 200 & 300 | |
| 01-3272-1100/1200 | Actuation Hose (7) | DN5 | 150, 200 & 300 | |
| 01-3273-1100/1200 | Actuation Hose (7) | DN5 | 150, 200 & 300 | |

7. Hoses are available in a variety of lengths

Certificate No: 273Cd to EN12094 Part 8

ARGONITE Hoses

| Product Name | Description | Nominal bore (mm) | System pressure (bar) | LPCB Ref. No. |
|-------------------|--------------------|-------------------|-----------------------|---------------|
| 01-3284-0100/0200 | Discharge Hose (7) | DN9 | 150, 200 & 300 | 273Cd/03 |

7. Hoses are available in a variety of lengths

PART 4: SECTION 2.1

GASEOUS SYSTEM COMPONENTS

Certificate No: 273Cd to a Schedule of Requirements

ARGONITE Pressure Restrictor Assemblies

| Product Name | Description | Orifice size (mm) | System pressure (bar) | LPCB Ref. No. |
|----------------------------------|-------------------------|-------------------|-----------------------|---------------|
| 01-370X-1030/1070 (8), (9), (10) | ½" Restrictor Assembly | 3-7 | 150, 200 & 300 | 273Cd/04 |
| 01-370X-3050/3180 (9) | 1.0 Restrictor Assembly | 5-18 | 150, 200 & 300 | |
| 01-370X-4120/4270 (9) | 1½" Restrictor Assembly | 12-27 | 150, 200 & 300 | |
| 01-370X-5200/5360 (9) | 2.0 Restrictor Assembly | 20-36 | 150, 200 & 300 | |

8. Not available with NPT Female/NPT Female or NPT Female/BSP Female connections

9. Where X can be 1 for NPT Male/ NPT Female, 2 for NPT Female/NPT Female, 3 for NPT Male/BSP Female or 4 for NPT Female/BSP Female

10. Also available with BSP Male/BSP Female (part no. 01-3706-1030/1070) or BSP Male/NPT Female connections (part no. 01-3705-1030/1070)

Certificate No: 273Cd to a Schedule of Requirements

ARGONITE C SERIES and ARGONITE Pressure Regulator Assemblies

| Product Name | Description | Orifice size (mm) | System pressure (bar) | LPCB Ref. No. |
|--------------|--------------------|-------------------|-----------------------|---------------|
| 01-6017-0000 | Pressure Regulator | N/A | 150, 200 & 300 | 273Cd/04 |

Certificate No: 273Cd to prEN12094 Part 7

ARGONITE C SERIES and ARGONITE Discharge Nozzles

| Product Name | Description | Orifice size (mm) | System pressure (bar) | LPCB Ref. No. |
|--------------------------|---------------------|-------------------|-----------------------|---------------|
| 01-3465-X2030/X2100 (11) | ½" Nozzle Assembly | 3-10 | 60 | 273Cd/05 |
| 01-3465-X3070/X3140 (11) | ¾" Nozzle Assembly | 7-14 | 60 | |
| 01-3465-X4100/X4180 (11) | 1 Nozzle Assembly | 10-18 | 60 | |
| 01-3465-X5150/X5260 (11) | 1½" Nozzle Assembly | 15-26 | 60 | |

11. Where X can be 1 for BSP or 2 for NPT connections

Certificate No: 273Cd to a Schedule of Requirements

ARGONITE Single Area Manifolds

| Product Name | Description | No. cylinders | System pressure (bar) | LPCB Ref. No. |
|------------------------------|-------------------------------|---------------|-----------------------|---------------|
| 01-3506-2011 to 01-3506-2019 | Single Row Discharge Manifold | 1 to 10 | 150, 200 | 273Cd/06 |
| 01-3506-2021 to 01-3506-2029 | Double Row Discharge Manifold | 4 to 20 | 150, 200 | |
| 01-3506-3011 to 01-3506-3019 | Single Row Discharge Manifold | 1 to 10 | 300 | |
| 01-3506-3021 to 01-3506-3029 | Double Row Discharge Manifold | 4 to 20 | 300 | |

Certificate No: 273Cd to a Schedule of Requirements

ARGONITE C SERIES and ARGONITE Multi-Area Manifold Accessories

| Product Name | Description | System pressure (bar) | LPCB Ref. No. |
|--------------|------------------------------------|-----------------------|---------------|
| 01-3508-0002 | Pilot Manifold (2 Diverter Valves) | 150, 200, 300 (12) | 273Cd/06 |
| 01-3508-0003 | Pilot Manifold (3 Diverter Valves) | 150, 200, 300 (12) | |
| 01-3508-0004 | Pilot Manifold (4 Diverter Valves) | 150, 200, 300 (12) | |
| 01-3508-0005 | Pilot Manifold (5 Diverter Valves) | 150, 200, 300 (12) | |

12. Working Pressure Outlet 8 bar

Certificate No: 273Cd to EN12094 Part 5

PART 4: SECTION 2.1
GASEOUS SYSTEM COMPONENTS

ARGONITE C SERIES and ARGONITE Diverter Valves

| Product Name | Description | Size | System pressure (bar) | LPCB Ref. No. |
|--------------|----------------|------|-----------------------|---------------|
| 01-6240-1000 | Diverter Valve | ½" | 150, 200 & 300 | 273Cd/08 |
| 01-6242-1000 | Diverter Valve | 1 | 150, 200 & 300 | |
| 01-6244-1000 | Diverter Valve | 1½" | 150, 200 & 300 | |
| 01-6246-1000 | Diverter Valve | 2 | 150, 200 & 300 | |

Certificate No: 273Cd to EN12094 Part 13

ARGONITE Manifold Check Valves

| Product Name | Description | Nominal bore (mm) | System pressure (bar) | LPCB Ref. No. |
|--------------|----------------------|-------------------|-----------------------|---------------|
| 01-6454-0000 | Manifold Check Valve | ½" BSP & ¾" NPT | 150, 200 & 300 | 273Cd/09 |

Certificate No: 273Cd to EN12094 Part 4

ARGONITE Container Valves

| Product Name | Description | System pressure (bar) | LPCB Ref. No. |
|--------------|--------------------------|-----------------------|---------------|
| 01-6471-0150 | Pneumatic Argonite Valve | 150 | 273Cd/10 |
| 01-6471-0200 | Pneumatic Argonite Valve | 200 | |
| 01-6471-0300 | Pneumatic Argonite Valve | 300 | |

Certificate No: 273Cd to EN12094 Part 4

ARGONITE Release Valves

| Product Name | Description | System pressure (bar) | LPCB Ref. No. |
|--------------|--------------|-----------------------|---------------|
| 01-7172-1150 | Release Unit | 150 | 273Cd/11 |
| 01-7172-1200 | Release Unit | 200 | |
| 01-7172-1300 | Release Unit | 300 | |
| 01-7173-1150 | Release Unit | 150 | |
| 01-7173-1200 | Release Unit | 200 | |
| 01-7173-1300 | Release Unit | 300 | |

Certificate No: 273Cd to EN12094 Part 10

ARGONITE C SERIES and ARGONITE Pressure Monitoring Devices

| Product Name | Description | System pressure (bar) | LPCB Ref. No. |
|--------------|---------------------------|-------------------------------|---------------|
| 01-7221-0300 | Manifold Pressure Gauge ½ | 150, 200 & 300 | 273Cd/15 |
| 03-5713-0000 | Discharge Pressure Switch | Max operating pressure 90 bar | |

Certificate No: 273Cd to EN12094 Part 10

ARGONITE Pressure Monitoring Devices

| Product Name | Description | System pressure (bar) | LPCB Ref. No. |
|--------------|---------------------|-----------------------|---------------|
| 01-7171-1500 | Pressure Gauge Unit | 150 | 273Cd/15 |
| 01-7171-1200 | Pressure Gauge Unit | 200 | |
| 01-7171-1300 | Pressure Gauge Unit | 300 | |

Certificate No: 273Cd to a Schedule of Requirements

ARGONITE C SERIES and ARGONITE Pressure Relief Devices

| Product Name | Description | System pressure (bar) | LPCB Ref. No. |
|-------------------|------------------------|-----------------------|---------------|
| 01-6653-0001/0101 | Pressure Relief Device | 150 | 273Cd/17 |
| 01-6653-0002/0102 | Pressure Relief Device | 200 | |
| 01-6653-0003/0103 | Pressure Relief Device | 300 | |

PART 4: SECTION 2.1

GASEOUS SYSTEM COMPONENTS

Certificate No: 273Cd to EN12094 part 13 and a Schedule of Requirements

ARGONITE C SERIES and ARGONITE Pilot Line Equipment

| Product Name | Description | Nominal bore (mm) | System pressure (bar) | LPCB Ref. No. |
|--------------|----------------------------------|-------------------|-----------------------|---------------|
| 01-6363-0000 | Pilot Line Check Valve | 1/4" BSP | 150, 200 & 300 | 273Cd/18 |
| 01-3388-0000 | Actuation Line Leak Bleeder Unit | - | 150, 200 & 300 | |
| 15-8685-0651 | Actuation Line T-Piece | DN5 | 150, 200 & 300 | |
| 01-4130-000 | Actuation Line Cross | DN5 | 150, 200 & 300 | |

Ceasefire Industries Pvt. Ltd

2nd Floor, Plot No. 4, Sector-135, Noida, Uttar Pradesh 201301, India

Tel: +91 120 4255800 • Fax: +91 120 4255801

E-mail: amit@ceasefire.in • Website: www.ceasefire.in

Certificate No: 980Aa to EN 12094-10:2003

Ceasefire Pressure gauges with switch

| Product Name | Description | LPCB Ref. No. |
|--------------|---|---------------|
| TI-000826 | 0-60 bar range, 22.5 bar switch contact | 980Aa/01 |
| TI-000827 | 0-60 bar range, 22.5 bar switch contact | |
| TI-000828 | 0-100 bar range, 38 bar switch contact | |
| TI-000829 | 0-100 bar range, 38 bar switch contact | |

Certificate No: 1239Ba to EN12094-4

Ceasefire Container Valves DN33 and DN50 for use with HFC227ea.

| Product Name | Description | LPCB Ref. No. |
|--------------|--|---------------|
| SM-RM1994 | DN33 container valve 25 bar, (60 bar burst disc) | 1239Ba/01 |
| SM-RM2132 | DN33 container valve 42 bar, (95 bar burst disc) | |
| SM-RM2121 | DN50 container valve 25 bar, (60 bar burst disc) | |
| SM-RM2122 | DN50 container valve 42 bar, (95 bar burst disc) | |

Certificate No: 1239Ba to EN12094-4

Ceasefire Container Valve Actuators

| Product Name | Description | LPCB Ref. No. |
|--------------|---------------------------------------|---------------|
| SM-RM1996 | Manual actuator | 1239Ba/02 |
| SM-RM2109 | Pneumatic/manual actuator | |
| SM-RM2166 | Pneumatic actuator | |
| SM-RM2169 | Pneumatic/manual actuator (with plug) | |
| SM-RM2167 | Pneumatic actuator (with plug) | |
| SM-RM2168 | Pneumatic actuator | |
| SM-RM1995 | Solenoid actuator | |

Certificate No: 1239Ba to EN12094-13

Ceasefire Check Valves

| Product Name | Description | LPCB Ref. No. |
|--------------|--------------------|---------------|
| SM-RM2130 | DN50 HFCs (70 bar) | 1239Ba/03 |
| SM-RM2080 | DN33 HFCs (70 bar) | |

Certificate No: 1239Ba to EN12094-8

Ceasefire Pilot and Discharge Connectors

| Product Name | Description | LPCB Ref. No. |
|--------------|---|---------------|
| SM-RM2170x | Pilot hose DN5 F/F end couplings, 150mm long | 1239Ba/04 |
| SM-RM2192x | Pilot hose DN5 M/F end couplings, 150mm long | |
| SM-RM2214x | Straight discharge hose DN38 17/8 12UN F turnable/G 11/2 M, 300mm long | |
| SM-RM2226x | Discharge hose with 90° bend DN38 – 17/8" 12UN F turnable/G 11/2" M, 350mm long | |
| SM-RM2237x | Straight discharge hose DN51 – M24 x1.5mm/G ¾" 340mm long | |
| SM-RM2126x | Discharge hose with 90° bend, DN51 – M24 x1.5mm/G ¾" 400mm long | |

Certificate No: 1329f to FprEN12094-7 and LPCB schedule of requirements

Ceasefire Nozzles for HFC227ea.

| Product Name | Description | LPCB Ref. No. |
|--------------|------------------------|---------------|
| XE115008 | 15 NB Discharge nozzle | 1329f/01 |
| XE115009 | 20 NB Discharge nozzle | |
| XE115010 | 25 NB Discharge nozzle | |
| XE115011 | 32 NB Discharge nozzle | |
| XE115012 | 40 NB Discharge nozzle | |
| XE115013 | 50 NB Discharge nozzle | |

Note:
180° and 360° nozzles

Certificate No: 1329f to an LPCB schedule of requirements

Ceasefire Manifolds

| Product Name | Description | LPCB Ref. No. |
|-------------------|----------------------|---------------|
| CF/Manifold/L-002 | 80 NB 2-Way Manifold | 1329f/02 |
| CF/Manifold/L-003 | 80 NB 3-Way Manifold | |
| CF/Manifold/L-004 | 80 NB 4-Way Manifold | |

Note:
All manifolds are supplied with sockets to accept either DN33 or DN50 check valves

Ceodeux Extinguisher Valves Technology S.A. (Rotarex FIRETEC)

24 rue de Diekirch, L-7440 Lintgen, Luxembourg
Tel: +352 32 78 32-1 • Fax: +352 32 78 32-326
E-mail: info@firetec.rotarex.com • Website: www.rotarex.com

Certificate No: 724a to EN 12094-4

Ceodeux CO2 Container valves

| Product Name | Description | LPCB Ref. No. |
|--------------|---------------------------------|---------------|
| B0480 0004 | CO ₂ Container Valve | 724a/01 |
| B0480 0005 | CO ₂ Container Valve | |
| B0480 0006 | CO ₂ Container Valve | |
| B0480 0007 | CO ₂ Container Valve | |
| B0480 0106 | CO ₂ Container Valve | |
| B0480 0107 | CO ₂ Container Valve | |
| B0480 0108 | CO ₂ Container Valve | |
| B0480 0109 | CO ₂ Container Valve | |
| B0480 0110 | CO ₂ Container Valve | |
| B0480 0111 | CO ₂ Container Valve | |
| B0480 0112 | CO ₂ Container Valve | |
| B0480 0113 | CO ₂ Container Valve | |

PART 4: SECTION 2.1

GASEOUS SYSTEM COMPONENTS

1. This range of equipment is suitable for storage temperatures from -20°C to +60°C and is approved for use with CO2
2. This range of equipment is approved for use with Ceodeux Design Manual Reference: B 04800 - CO2 Revision: C
3. System pressure is specified as 60 bar at +20°C

Certificate No: 724a to EN 12094-4

Ceodeux 200 bar Inert Container valves

| Product Name | Description | LPCB Ref. No. |
|---------------------|-------------------------------|----------------------|
| B0480 1002 | 200 bar Inert Container Valve | 724a/02 |
| B0480 1003 | 200 bar Inert Container Valve | |
| B0480 1206 | 200 bar Inert Container Valve | |
| B0480 1207 | 200 bar Inert Container Valve | |
| B0480 1208 | 200 bar Inert Container Valve | |
| B0480 1209 | 200 bar Inert Container Valve | |
| B0480 1210 | 200 bar Inert Container Valve | |
| B0480 1211 | 200 bar Inert Container Valve | |
| B0480 1212 | 200 bar Inert Container Valve | |
| B0480 1213 | 200 bar Inert Container Valve | |
| B0480 1219 | 200 bar Inert Container Valve | |

1. This range of equipment is suitable for storage temperatures from -20°C to +60°C and is approved for use with 200 bar inert gas
2. This range of equipment is approved for use with Ceodeux Design Manual Reference B 04801 - 200 bar Revision: F
3. System pressure is specified as 200 bar at +15°C

Certificate No: 724a to EN 12094-4

Ceodeux 300 bar Inert Container valves

| Product Name | Description | LPCB Ref. No. |
|---------------------|-------------------------------|----------------------|
| B0480 2007 | 300 bar Inert Container Valve | 724a/03 |
| B0480 2008 | 300 bar Inert Container Valve | |
| B0480 2009 | 300 bar Inert Container Valve | |
| B0480 2010 | 300 bar Inert Container Valve | |
| B0480 2012 | 300 bar Inert Container Valve | |
| B0480 2014 | 300 bar Inert Container Valve | |
| B0480 2016 | 300 bar Inert Container Valve | |
| B0480 2021 | 300 bar Inert Container Valve | |

1. This range of equipment is suitable for storage temperatures from -20°C to +60°C and is approved for use with 300 bar inert gas.
2. This range of equipment is approved for use with Ceodeux Design. Manual Reference: B 04802 - 300bar Revision: K.
3. System pressure is specified as 300 bar at +15°C.

Certificate No: 724a to EN 12094-4

Ceodeux Inert Container Valves Discharge Regulator

| Product Name | Description | LPCB Ref. No. |
|---------------------|--|----------------------|
| B08400002 | Inertech Discharge Constant Pressure Regulator | 724a/05 |
| B08400003 | Inertech Discharge Constant Pressure Regulator | |
| B08400004 | Inertech Discharge Constant Pressure Regulator | |
| B08400005 | Inertech Discharge Constant Pressure Regulator | |
| B08400006 | Inertech Discharge Constant Pressure Regulator | |
| B08400007 | Inertech Discharge Constant Pressure Regulator | |
| B08400009 | Inertech Discharge Constant Pressure Regulator | |
| NF311250 | Discharge Constant Pressure Regulator | |

1. This range of equipment is suitable for storage temperatures from -20°C to +60°C and is approved for use with 200 and 300 bar inert gas container valves listed above.
2. This range of equipment is approved for use with Ceodeux Design Manual References: 04801 - 200 bar Revision: F and B 04802 - 300bar Revision: K
3. System pressure is specified as 200 or 300 bar at +15°C

Certificate No: 724a to EN 12094-4

Ceodeux Actuators

| Product Name | Description | LPCB Ref. No. |
|---------------------|-----------------------------|----------------------|
| B04420092 | Pneumatic / Manual Actuator | 724a/04 |
| B04420093 | Pneumatic Actuator | |

PART 4: SECTION 2.1
GASEOUS SYSTEM COMPONENTS

| Product Name | Description | LPCB Ref. No. |
|--------------|-----------------------------|---------------|
| B04420096 | Pneumatic Actuator | |
| B04420097 | Pneumatic Actuator | |
| B04425131 | Electrical Actuator | |
| B04425132 | Electrical Actuator | |
| B04420065 | Pneumatic / Manual Actuator | |
| B04420066 | Pneumatic Actuator | |
| B04420076 | Pneumatic Actuator | |
| B04420081 | Pneumatic Actuator | |
| B04420082 | Pneumatic Actuator | |
| B04420083 | Pneumatic / Manual Actuator | |
| B04425137 | Electrical Actuator | |

1. This range of equipment is suitable for storage temperatures from -20°C to +60°C and is approved for use with Ceodeux CO₂, 200 bar inert gas and 300 bar inert gas Container Valves.
2. This range of equipment is approved for use with Ceodeux Design Manual References: B04420065 Revision: B, B04420076 Revision: C and B04420575 Revision: C.

Eurotech Fire Protection Ltd, in collaboration with Firetec Systems Ltd

Unit 6, The Business Centre, Molly Millars Lane, Wokingham, Berkshire RG41 2QZ, United Kingdom

Tel: +44 1252 860606 • Fax: +44 1252 860606

E-mail: keith.goodall@EurotechFP.com • Website: www.firetec-systems.com

Certificate No: 1222f to an LPCB Schedule of requirements

Inertech Manifolds

| Product Name | Description | System pressure (bar) | LPCB Ref. No. |
|---|-------------------|-----------------------|---------------|
| NF33x ¹ x ² x ³ x ⁴ | Inertech Manifold | 60 | 1222f/01 |

According to the following:

x¹ = 5 for 267 +/- 5mm or 6 for 356 +/- 5mm diameter cylinders

xx² = 50 for DN50 or 80 for DN80

x³ = 1 for single row or 2 for double row

x⁴ = blank for BSPT or N for NPT

Notes:

Inertech manifolds are only for use with Inertech container valves when fitted with the 60 bar constant discharge regulator (Model Ref NF311250).

Eurotech227, Eurosafe227, Eurotech1230 & Eurosafe1230 Fire Fighting Components

- a. This range of equipment is suitable for storage temperatures of -20°C to 50°C and is approved for use with HFC227ea and FK 5-1-12 (Novec™ 1230)
- b. HFC227ea equipment is approved for use in conjunction with Eurotech Fire Protection Ltd Design Manual Reference 'Eurotech Fire HFC227 Manual' - Issue 13-03
- c. FK 5-1-12 equipment is approved for use in conjunction with Eurotech Fire Protection Ltd Design Manual Reference 'Eurotech Fire Novec1230 Manual' - Issue 13-04
- d. Nominal system pressure for HFC227ea components at 20°C is stated at 25 bar or 42 bar.
- e. Nominal system pressure for FK 5-1-12 components at 20°C is stated at 25 bar or 42 bar.

Certificate No: 1222b to EN 12094-4

Eurotech227, Eurosafe227, Eurotech1230 & Eurosafe1230 Container Valves

| Product Name | Description | LPCB Ref. No. |
|--------------|--|---------------|
| NF21330x (1) | 33mm Container Valve | 1222b/01 |
| NF21331x (1) | 33mm Container Valve with Integral Solenoid Actuator | 1222b/02 |
| NF21490x (1) | 49mm Container Valve | 1222b/03 |
| NF21491x (1) | 49mm Container Valve with Integral Solenoid Actuator | 1222b/04 |

1. Where 'x' in container valve part number is replaced with '2' for 25 bar nominal charge pressure or '4' for 42 bar nominal charge pressure.

PART 4: SECTION 2.1

GASEOUS SYSTEM COMPONENTS

Certificate No: 1222b to EN 12094-8

Eurotech227, Eurosafe227, Eurotech1230 & Eurosafe1230 Flexible Connectors

| Product Name | Description | LPCB Ref. No. |
|---------------------|--|----------------------|
| NF271xxx (1) | Pilot hose (Type 3 Connector) | 1222b/09 |
| NF2333xxx (1) | 33mm Discharge hose (Type 1 Connector) | 1222b/10 |
| NF2349xxx (1) | 49mm Discharge hose (Type 1 Connector) | 1222b/11 |

Notes:

1. Where 'xxx' in connector part number is replaced with the connector length in mm, up to a maximum of 999mm.

Certificate No: 1222b to EN 12094-13

Eurotech227, Eurosafe227, Eurotech1230 & Eurosafe1230 Check and Non Return Valves

| Product Name | Description | LPCB Ref. No. |
|---------------------|----------------------------|----------------------|
| NF2433x (2) | 33mm Discharge Check Valve | 1222b/12 |
| NF2449x (2) | 49mm Discharge Check Valve | 1222b/13 |

Notes:

2. Where 'x' in connector part number is replaced with replaced with '1' for BSPT thread or '2' for NPT thread.

Certificate No: 1222c to prEN 12094-7

Eurotech227, Eurosafe227, Eurotech1230 & Eurosafe1230 Nozzles

| Product Name | Description | LPCB Ref. No. |
|----------------------|--------------------|----------------------|
| NF2515 yzzzz (1,2,3) | 15mm Nozzle | 1222c/01 |
| NF2520 yzzzz (1,2,3) | 20mm Nozzle | 1222c/02 |
| NF2525 yzzzz (1,2,3) | 25mm Nozzle | 1222c/03 |
| NF2532 yzzzz (1,2,3) | 32mm Nozzle | 1222c/04 |
| NF2540 yzzzz (1,2,3) | 40mm Nozzle | 1222c/05 |
| NF2550 yzzzz (1,2,3) | 50mm Nozzle | 1222c/06 |

Notes:

- 1) Where 'x' in nozzle part number is replaced with '1' for NPT thread or '2' for BSPT thread.
- 2) Where 'y' in nozzle part number is replaced with '1' for 180° coverage pattern or '2' for 360° coverage pattern.
- 3) Approved drilling size range is 3mm to 14.5mm where 'zzzz' in nozzle part number is the nozzle drill size (00.0mm) in increments of 0.1mm up to 10mm and increments of 0.5mm for sizes above 10mm.

Inertech Firefighting Components

- a. This Range of equipment is suitable for storage temperatures of -20°C to 50°C and is approved for use with IG-01, IG-55, IG-100 and IG-541.
- b. Inertech equipment is approved for use in conjunction with Eurotech Fire Protection Ltd Design Manual Reference 'Eurotech Inertech Manual' Issue June 13
- c. Nominal system pressure for Inertech components at 15°C is stated at 200 bar or 300 bar

Certificate No: 1222d to EN 12094-4

Inertech Container Valves and Regulator

| Product Name | Description | LPCB Ref. No. |
|---------------------|--|----------------------|
| NF311202 | Inertech 200 bar Container Valve | 1222d/02 |
| NF311203 | Inertech 300 bar Container Valve | 1222d/03 |
| NF311250 | Inertech Discharge Constant Pressure Regulator | 1222d/05 |

Certificate No: 1222d to EN 12094-4

Eurotech227, Eurosafe227, Eurotech1230, Eurosafe1230 & Inertech Container Valve Actuators

| Product Name | Description | LPCB Ref. No. |
|--------------|--|---------------|
| NF26010 | Solenoid Actuator | 1222d/04 |
| NF26011 | Solenoid Actuator with reverse EMF diode | |
| NF26020 | Pneumatic Actuator | |
| NF26030 | Pneumatic/Manual Actuator | |

Certificate No: 1222b to EN 12094-8

Inertech Flexible Connectors

| Product Name | Description | LPCB Ref. No. |
|---------------|-------------------------|---------------|
| NF3312xxx (1) | Inertech Discharge Hose | 1222b/14 |
| NF370xxx (1) | Inertech Actuation Hose | 1222b/15 |

Note:

1. Where 'xxx' in connector part number is replaced with the connector length in mm; i.e. 300, 400 and 500mm for discharge connectors and 350, 450 and 600mm for actuation connectors.

Certificate No: 1222b to EN 12094-13

Inertech Check Valve

| Product Name | Description | LPCB Ref. No. |
|--------------|----------------------|---------------|
| NF34131 | Inertech Check Valve | 1222b/16 |

Certificate No: 1222c to prEN 12094-7

Inertech Nozzles

| Product Name | Description | LPCB Ref. No. |
|--------------|----------------------------------|---------------|
| NF35151 (1) | Inertech Nozzle DN15 180° & 360° | 1222c/07 |
| NF35152 (1) | Inertech Nozzle DN15 180° & 360° | |
| NF35201 | Inertech Nozzle DN20 180° & 360° | 1222c/08 |
| NF35251 | Inertech Nozzle DN25 180° & 360° | 1222c/09 |
| NF35321 | Inertech Nozzle DN32 180° & 360° | 1222c/10 |
| NF35401 | Inertech Nozzle DN40 180° & 360° | 1222c/11 |
| NF35501 | Inertech Nozzle DN50 180° & 360° | 1222c/12 |

Note:

1. Nozzle NF35152 is as NF35151 with additional strainer/filter to allow openings below 3mm.

Certificate No: 1222b to EN 12094-5

Selector Valves

| Product Name | Description | Working Pressure | LPCB Ref. No. |
|--------------|------------------------------|------------------|---------------|
| NF34015 (1) | Inertech Selector Valve DN15 | 60 bar | 1222b/17 |
| NF34020 (1) | Inertech Selector Valve DN20 | 60 bar | |
| NF34025 (1) | Inertech Selector Valve DN25 | 60 bar | |
| NF34032 (1) | Inertech Selector Valve DN32 | 60 bar | |
| NF34040 (1) | Inertech Selector Valve DN40 | 60 bar | |
| NF34050 (1) | Inertech Selector Valve DN50 | 60 bar | |

Firefighting Components - Selector Valves:

a. This range of equipment is suitable for storage temperatures of -20°C to 50°C and is approved for use with IG-01, IG-55, IG-100 and IG-541.

b. Inertech equipment is approved for use in conjunction with Eurotech Fire Protection Ltd Design Manual Reference 'Eurotech Inertech Manual' Issue June 2013.

PART 4: SECTION 2.1

GASEOUS SYSTEM COMPONENTS

c. Nominal system pressure for Inertech components at 15°C is stated at 200 bar or 300 bar.

d. This range of equipment is suitable for storage temperatures of -20°C to 50°C and is approved for use with HFC227ea and FK 5-1-12 (Novec™ 1230).

e. HFC227ea equipment is approved for use in conjunction with 'Eurotech Fire Protection Ltd Design Manual Reference 'Eurotech Fire HFC227 Manual' - Issue 13-03.

f. FK 5-1-12 equipment is approved for use in conjunction with 'Eurotech Fire Protection Ltd Design Manual Reference 'Eurotech Fire Novec1230 Manual' - Issue 13-04.

g. Nominal system pressure for HFC227ea components at 20°C is stated at 25 bar or 42 bar. Nominal system pressure for FK 5-1-12 components at 20°C is stated at 25 bar or 42 bar.

Notes:

Selector valves are only for use with Inertech agents when the container valves are fitted with the 60 bar constant discharge regulator (Model Ref NF311250). The Working Pressure is specified as ≤ 60 bar for all agents and temperatures in accordance with the Note in Table 1 of EN 12094-5.

Certificate No: 1222e to IS 7285-2:2004

Inertech Cylinders - PESO (Seamless)

| Product Name | Description | LPCB Ref. No. |
|------------------------|---|----------------------|
| 51152677-1-xxx (1,4,6) | Inertech 300 bar WP nominal 267mm diameter Seamless Cylinder (PESO) | 1222e/01 |
| 51173568-1-yyy (2,4,7) | Inertech 300 bar WP nominal 356mm diameter Seamless Cylinder (PESO) | 1222e/02 |
| 51126726-2-zzz (3,5,8) | Inertech 200 bar WP nominal 267mm diameter Seamless Cylinder (PESO) | 1222e/03 |

Notes:

1. Cylinders are approved for use in the Indian service market only in accordance with IS 7285-2:2004 by Chief Controller of Explosives (Reference G3(42)530/II) fitted with Valve Reference G3(4)201 [P/N NF311203]. The cylinders do not comply with European Directive 84/225/EEC or TPED.
2. Cylinders are approved for use in the Indian service market only in accordance with IS 7285-2:2004 by Chief Controller of Explosives (Reference G3(42)530/III) fitted with Valve Reference G3(4)201. [P/N NF311203] The cylinders do not comply with European Directive 84/225/EEC or TPED.
3. Cylinders are approved for use in the Indian service market only in accordance with IS 7285-2:2004 by Chief Controller of Explosives (Reference G3(42)530/I) fitted with Valve Reference G3(4)201. [P/N NF311203] The cylinders do not comply with European Directive 84/225/EEC or TPED.
4. Maximum Working Pressure 300 Bar @ 15°C.
5. Maximum Working Pressure 200 Bar @ 15°C.
6. Where, 'xxx' in the seamless cylinder part number is replaced with the cylinder capacity in litres; applicable sizes are 90, 95 or 100 litres only.
7. Where, 'yyy' in the seamless cylinder part number is replaced with the cylinder capacity in litres; applicable sizes are 120, 125, 130, 135, 140, 145, 150, 155, 160, 165, 170, 175, 180 litres only.
8. Where, 'zzz' in the seamless cylinder part number is replaced with the cylinder capacity in litres; applicable sizes are 35, 40, 45, 50, 56, 60, 68, 80 litres only.

Fike Safety Technology Ltd

Unit 31, Springvale Industrial Estate, Cwmbran, Gwent NP44 5BD, United Kingdom

Tel: +44 (0)1633 865558 • Fax: +44 (0)1633 866656

E-mail: fstinfo@fike.com • Website: www.fikesafetytechnology.co.uk

Certificate No: 980Ba to EN12094-10

Pressure gauges with switch

| Product Name | Description | LPCB Ref. No. |
|---------------------|--------------------|----------------------|
| 02-12391 | 0-40 bar range | 980Ba/01 |
| 02-14229 | 0-250 bar range | |

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| Product Name | Description | LPCB Ref. No. |
|--------------|-----------------|---------------|
| 02-14694 | 0-250 bar range | |
| 02-12562 | 0-250 bar range | |
| 02-12561 | 0-315 bar range | |
| 02-12560 | 0-400 bar range | |

Certificate No: 331v

PROINERT FIXED FIRE FIGHTING COMPONENTS

- This range of equipment is suitable for storage from -20° to 50°C
- Container pressure is specified as 200 bar or 300 bar @ 15°C.
- These components are suitable for use with (Proinert (IG55), IG01, IG100 AND IG541
- System pressure downstream of container valve is specified as 42 bar

Certificate No: 331v

PROINERT Container Valves

| Product Name | Description | LPCB Ref. No. |
|--------------|-------------|---------------|
| IG71-001-1 | 300 bar | 331v/01 |
| IG71-001-2 | 200 bar | |

Certificate No: 331v

PROINERT Container Valve Assemblies

| Product Name | Description | LPCB Ref. No. |
|------------------|--------------|---------------|
| IG71-006-300 | 10L-300 bar | 331v/09 |
| IG71-067-200 | 67L-200 bar | |
| IG71-080-200-01 | 80L-200 bar | |
| IG71-080-300-01 | 80L-300 bar | |
| IG71-080-200-55 | 80L-200 bar | |
| IG71-080-300-55 | 80L-300 bar | |
| IG71-080-200-100 | 80L-200 bar | |
| IG71-080-300-100 | 80L-300 bar | |
| IG71-080-200-541 | 80L-200 bar | |
| IG71-080-300-541 | 80L-300 bar | |
| IG71-103-200-55 | 80L-300 bar | |
| IG71-103-300-55 | 80L-300 bar | |
| IG71-103-200-100 | 80L-200 bar | |
| IG71-103-300-100 | 80L-300 bar | |
| IG71-103-200-541 | 80L-200 bar | |
| IG71-103-300-541 | 80L-300 bar | |
| IG71-140-200-01 | 140L-200 bar | |
| IG71-140-300-01 | 140L-300 bar | |
| IG71-140-200-55 | 140L-200 bar | |
| IG71-140-300-55 | 140L-300 bar | |
| IG71-140-200-100 | 140L-200 bar | |
| IG71-140-300-100 | 140L-300 bar | |
| IG71-140-200-541 | 140L-200 bar | |
| IG71-140-300-541 | 140L-300 bar | |

Certificate No: 331v

PROINERT Actuators

| Product Name | Description | LPCB Ref. No. |
|--------------|---|---------------|
| IG71-002 | Pneumatic actuator | 331v/02 |
| 02-13571 | Electrical/manual actuator | |
| 70-325-2 | Nitrogen Actuator Assembly (Normally Open Pressure Switch Contacts) | |
| 70-325-4 | Nitrogen Actuator Assembly (Normally Closed Pressure Switch Contacts) | |

PART 4: SECTION 2.1

GASEOUS SYSTEM COMPONENTS

Certificate No: 331v

PROINERT Pressure Gauges

| Product Name | Description | LPCB Ref. No. |
|---------------------|--------------------|----------------------|
| 02-10673 | Cylinder 300 bar | 331v/03 |
| 02-10672 | Cylinder 200 bar | |
| 02-10901 | 160 bar gauge | |

Certificate No: 331v

PROINERT Pilot Actuation Packages

| Product Name | Description | LPCB Ref. No. |
|---------------------|---|----------------------|
| IG71-017 | Solenoid actuation pack (with manual operation) | 331v/04 |
| IG71-019 | Slave actuation pack | |

Certificate No: 331v

PROINERT Flexible Connectors

| Product Name | Description | LPCB Ref. No. |
|---------------------|----------------------------------|----------------------|
| 02-10721 | Discharge hose - Inert gas | 331v/05 |
| 02-10798 | Pneumatic hose - Valve actuator | |
| 02-10801 | Pneumatic hose - Pilot actuator | |
| 02-13713 | Pneumatic hose - Pilot connector | |

Certificate No: 331v to EN 12094-13

PROINERT Check Valve

| Product Name | Description | LPCB Ref. No. |
|---------------------|--------------------|----------------------|
| IG71-008 | Check valve | 331v/06 |
| 02-10927 | Non-Return Valve | |

Certificate No: 331v

PROINERT Manifold

| Product Name | Description | LPCB Ref. No. |
|---------------------|--------------------|----------------------|
| IG71-004-2 | 2-way manifold | 331v/07 |
| IG71-004-3 | 3-way manifold | |
| IG71-004-4 | 4-way manifold | |
| IG71-004-5 | 5-way manifold | |

Certificate No: 331v

PROINERT Nozzles

| Product Name | Description | LPCB Ref. No. |
|---------------------|--------------------|----------------------|
| IG71-010-XXX | 15mm | 331v/08 |
| IG71-011-XXX | 20mm | |
| IG71-012-XXX | 25mm | |
| IG71-013-XXX | 40mm | |

Certificate No: 331v

PROINERT Selector Valves

| Product Name | Description | Working Pressure(bar) | LPCB Ref. No. |
|--------------|---------------------|-----------------------|---------------|
| IG71-025-SV3 | 25mm selector valve | 64 | 331v/10 |
| IG71-040-SV3 | 40mm selector valve | 64 | |
| IG71-050-SV3 | 50mm selector valve | 64 | |
| IG71-080-SV3 | 80mm selector valve | 64 | |

A manifold relief valve, rated at 55 bar, must be incorporated in any Fike ProInert system that includes any of these selector valves.

Minimum pneumatic operating pressure required is 8 bar.

Certificate No: 331x

CLEAN AGENT Pilot Actuation Packages

| Product Name | Description | LPCB Ref. No. |
|--------------|-----------------------------------|---------------|
| 70-172 | Clean Agent Solenoid Actuator Kit | 331x/01 |
| 70-173 | Clean Agent Slave Actuator Kit | |

Note:

This equipment is suitable for use at storage temperatures from -20°C to 50°C

Certificate No: 331x

CLEAN AGENT Flexible connectors

| Product Name | Description | LPCB Ref. No. |
|--------------|--------------------------------|---------------|
| 02-4977 | Actuator hose - Pilot Actuator | 331x/02 |

Note:

This equipment is suitable for use at storage temperatures from -20°C to 50°C

Certificate No: 331x

CLEAN AGENT 12mm Container Valve

| Product Name | Description | LPCB Ref. No. |
|--------------|-----------------------------|---------------|
| 70-187-X | 12mm Container Master Valve | 331x/03 |
| 70-188 | 12mm Container Slave Valve | |

Notes:

This equipment is suitable for use at storage temperatures from -20°C to 50°C

Containers are superpressurised to 25bar at 21°C with maximum system working pressures@ 50°C as follows;

HFC227ea - 34.6 bar; fill ratios 0.5 kg/l min. to 1.1 kg/l max.

HFC125 - 37.2 bar; fill ratios 0.4 kg/l min. to 0.8 kg/l max.

CO₂ - 140 bar

Certificate No: 331x

CLEAN AGENT SAV Container Valve

| Product Name | Description | LPCB Ref. No. |
|--------------|---------------------|---------------|
| 70-144-X | SAV Container Valve | 331x/04 |

Notes:

This equipment is suitable for use at storage temperatures from 0°C to 50°C;

Containers are superpressurised to 25bar at 21°C with maximum system working pressures@ 50°C as follows;

HFC227ea - 34.6 bar; fill ratios 0.5 kg/l min. to 1.1 kg/l max.

HFC125 - 37.2 bar; fill ratios 0.4 kg/l min. to 0.8 kg/l max.

Fike pneumatic actuation pack IG71-002 is used for actuation of these valves.

Certificate No: 331x

PART 4: SECTION 2.1

GASEOUS SYSTEM COMPONENTS

CLEAN AGENT Impulse Container Valves

| Product Name | Description | LPCB Ref. No. |
|---------------------|----------------------------|----------------------|
| 70-243 | 3" Impulse Container Valve | 331x/05 |
| 70-242 | 1" Impulse Container Valve | |

Notes:

The following equipment is suitable for use at storage temperatures from -20°C to 50°C;
Containers are superpressurised to 25bar at 21°C with maximum system working pressures@ 50°C as follows;
HFC227ea - 34.6 bar; fill ratios 0.5 kg/l min. to 1.1 kg/l max.
FK-5-1-12 – 34.5 bar; fill ratios 0.32 kg/l min. to 1.15 kg/l max.

Certificate No: 331x

CLEAN AGENT Container Valve Actuators

| Product Name | Description | LPCB Ref. No. |
|---------------------|-------------------------------|----------------------|
| 02-12728 | Electronic/manual actuator | 331x/06 |
| 02-12729 | Pneumatic actuator | |
| 70-290 | Impulse Releasing Interface | |
| 02-14231 | Direct Impulse Valve actuator | |

Certificate No: 331x

CLEAN AGENT Impulse Valve and Container Assemblies

| Product Name | Description | LPCB Ref. No. |
|---------------------|--------------------|----------------------|
| 70-348 | 1 Valve 5L | 331x/07 |
| 70-349 | 1 Valve 9L | |
| 70-350 | 1 Valve 16L | |
| 70-278 | 1" Valve 26L | |
| 70-255 | 1" Valve 45L | |
| 70-256 | 3" Valve 83L | |
| 70-257 | 3" Valve 150L | |

Fire Eater A/S

Vølundsvej 17, 3400 Hillerød, Denmark
Tel: +45 7022 2769 • Fax: +45 7023 2769
E-mail: mk@fire-eater.dk • Website: www.fire-eater.com

Certificate No: 1287a

Fire Eater Containers and Hand Wheel Valve Assemblies for INERGEN (200 bar) and (300 bar)

| Product Name | Description | Hand Wheel Valve Outlet Thread | LPCB Ref. No. |
|---------------------|------------------------------|---------------------------------------|----------------------|
| 200604 | 20 litre cylinder (200 bar) | W24.32 x 1¼ | 1287a/01 |
| 200606 | 30 litre cylinder (200 bar) | W24.32 x 1¼ | |
| 200610 | 50 litre cylinder (200 bar) | W24.32 x 1¼ | |
| 200616 | 80 litre cylinder (200 bar) | W24.32 x 1¼ | |
| 200609 | 30 litre cylinder (300 bar) | M25 x 1.5 | |
| 200615 | 50 litre cylinder (300 bar) | M25 x 1.5 | |
| 200624 | 80 litre cylinder (300 bar) | M25 x 1.5 | |
| 200642 | 140 litre cylinder (300 bar) | M25 x 1.5 | |

1. This range of equipment is suitable for storage and environmental conditions from -20°C to +65°C and is approved for use with INERGEN (IG541).
2. Nominal system pressure is specified as 200 bar and 300 bar at 15°C.

Certificate No: 1287a to EN12094-4

Fire Eater Discharge Valves

| Product Name | Description | LPCB Ref. No. |
|--------------|---|---------------|
| 305421 | Ci IV8 container valve (200 bar) | 1287a/02 |
| 305411 | Ci IV8 container valve (300 bar) | |
| 305420 | Ci IV8 container valve (200 bar) + Manoswitch | 1287a/03 |
| 305410 | Ci IV8 container valve (300 bar) + Manoswitch | |

1. This range of equipment is suitable for storage and environmental conditions from -20°C to +65°C and is approved for use with INERGEN (IG541).
2. Nominal system pressure is specified as 200 bar and 300 bar at 15°C.
3. The above discharge valves may be actuated by any of the actuators listed below or by built-in pneumatic actuator via pilot or manifold back-pressure.

Certificate No: 1287a to EN12094-4

Fire Eater Discharge Valve Actuators

| Product Name | Description | LPCB Ref. No. |
|--------------|--------------------------------------|---------------|
| 305450 | Ci IS8B solenoid actuator | 1287a/04 |
| 305451 | Ci IS8B solenoid and manual actuator | |
| 305442 | Ci IM8 manual actuator | |
| 305448 | Ci PA8 pneumatic actuator | |

1. This range of equipment is suitable for storage and environmental conditions from -20°C to +65°C and is approved for use with INERGEN (IG541).
2. Nominal system pressure is specified as 200 bar and 300 bar at 15°C.

Certificate No: 1287a to EN12094-10

Fire Eater Pressure Gauge and Switch

| Product Name | Description | LPCB Ref. No. |
|--------------|----------------------|---------------|
| 305373 | Manoswitch 0-284 bar | 1287a/05 |
| 305374 | Manoswitch 0-431 bar | |

1. This range of equipment is suitable for storage and environmental conditions from -20°C to +65°C and is approved for use with INERGEN (IG541).
2. Nominal system pressure is specified as 200 bar and 300 bar at 15°C.

Certificate No: 1287a to EN12094-8

Fire Eater Connectors

| Product Name | Description | LPCB Ref. No. |
|--------------|--|---------------|
| 303302 | Ci DN10 discharge hose with straight ends, 0.5 m | 1287a/06 |
| 303304 | Ci DN10 discharge hose with straight ends, 1 m | |
| 303306 | Ci DN10 discharge hose with straight ends, 1.5 m | |
| 303308 | Ci DN10 discharge hose with straight ends, 2 m | |
| 303309 | Ci DN10 discharge hose with straight ends, 2.5 m | |
| 303311 | Ci DN10 discharge hose with straight ends, 3 m | |
| 303313 | Ci DN10 discharge hose with straight ends, 4 m | |
| 303102 | Ci DN10 discharge hose with 90° elbow one end, 0.5 m | |
| 303104 | Ci DN10 discharge hose with 90° elbow one end, 1 m | |
| 303106 | Ci DN10 discharge hose with 90° elbow one end, 1.5 m | |
| 303108 | Ci DN10 discharge hose with 90° elbow one end, 2 m | |
| 303109 | Ci DN10 discharge hose with 90° elbow one end, 2.5 m | |
| 303111 | Ci DN10 discharge hose with 90° elbow one end, 3 m | |
| 303113 | Ci DN10 discharge hose with 90° elbow one end, 4 m | |
| 303162 | Ci DN6 pilot hose PA1 with straight ends, 0.18 m | 1287a/07 |
| 303166 | Ci DN6 pilot hose PA1 with straight ends, 0.22 m | |
| 303169 | Ci DN6 pilot hose PA1 with straight ends, 0.25 m | |

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GASEOUS SYSTEM COMPONENTS

| Product Name | Description | LPCB Ref. No. |
|---------------------|---|----------------------|
| 303172 | Ci DN6 pilot hose PA1 with straight ends, 0.28 m | |
| 303174 | Ci DN6 pilot hose PA1 with straight ends, 0.33 m | |
| 303180 | Ci DN6 pilot hose PA1 with straight ends, 0.5 m | |
| 205064 | Ci DN6 pilot hose PA1 with straight ends, 0.4 m | |
| 205063 | Ci DN6 pilot hose PA1 with straight ends, 1.0 m | |
| 303182 | Ci DN6 pilot hose PA2 with 90° elbow one end, 1 m | |
| 303183 | Ci DN6 pilot hose PA2 with 90° elbow one end, 3 m | |
| 303184 | Ci DN6 pilot hose PA2 with 90° elbow one end, 0.4 m | |
| 303155 | Ci DN6 pilot hose PA3 with 90° elbow each end, 0.35 m | |
| 303156 | Ci DN6 pilot hose PA3 with 90° elbow each end, 0.45 m | |

1. This range of equipment is suitable for storage and environmental conditions from -20°C to +65°C and is approved for use with INERGEN (IG541).
2. Nominal system pressure is specified as 200 bar and 300 bar at 15°C.

Certificate No: 1287a to EN12094-13

Fire Eater Manifold and Check Valve / Non Return Valve Assemblies

| Product Name | Description | LPCB Ref. No. |
|---------------------|---------------------------------|----------------------|
| 3057xx | Ci MT manifold assembly | 1287a/08 |
| 30517n | SV22 manifold kit | |
| 305302 | DN6 pilot line non-return valve | |

xx = number of discharge connectors up to a maximum of 10. Each connection is fitted with an integral check valve device
n = number of discharge connectors up to a maximum of 8. Each connection is fitted with an integral non-return valve device

1. This range of equipment is suitable for storage and environmental conditions from -20°C to +65°C and is approved for use with INERGEN (IG541).
2. Nominal system pressure is specified as 200 bar and 300 bar at 15°C.

Certificate No: 1287a to prEN12094-7 and LPCB schedule

Fire Eater Nozzles

| Product Name | Description | LPCB Ref. No. |
|---------------------|--|----------------------|
| 210203 | DN15 360° nozzle (1-3mm DN orifices) (1) | 1287a/09 |
| 210204 | DN15 360° nozzle (1) | |
| 210206 | DN20 360° nozzle (1) | |
| 210208 | DN25 360° nozzle (1) | |
| 210210 | DN32 360° nozzle (1) | |
| 210223 | DN15 360° nozzle (1-3mm DN orifices) (2) | |
| 210224 | DN15 360° nozzle (2) | |
| 210226 | DN20 360° nozzle (2) | |
| 210228 | DN25 360° nozzle (2) | |
| 210230 | DN32 360° nozzle (2) | |
| 210123 | ½" IN nozzle silencer 112 | |
| 210125 | ½" IN nozzle silencer | |
| 210126 | ¾" IN nozzle silencer | |
| 210128 | 1 IN nozzle silencer | |

(1) = ISO7/1 thread

(2) = NPT thread

1. This range of equipment is suitable for storage and environmental conditions from -20°C to +65°C and is approved for use with INERGEN (IG541).
2. Nominal system pressure is specified as 200 bar and 300 bar at 15°C.

Firetrace International LLC

Suite 2, 8435 N. 90th Street, Scottsdale, Arizona 85258, USA
Tel: +1 480 607 1218 • Fax: +1 480 315 1316
E-mail: info@firetrace.com • Website: <http://www.firetrace.com>

Certificate No: 1222Ab to EN 12094-4

Firetrace 1230 Container Valves

| Product Name | Description | LPCB Ref. No. |
|--------------|--|---------------|
| NF213302 | 33mm Container Valve | 1222Ab/01 |
| NF213312 | 33mm Container Valve with Integral Solenoid Actuator | 1222Ab/02 |
| NF214902 | 49mm Container Valve | 1222Ab/03 |
| NF214912 | 49mm Container Valve with Integral Solenoid Actuator | 1222Ab/04 |

Firetrace 1230 Firefighting Components:

- a. This range of equipment is suitable for storage temperatures of -20°C to 50°C and is approved for use with FK 5-1-12 (Novec™ 1230).
- b. FK 5-1-12 equipment is approved for use in conjunction with Firetrace International LLC; System Design Manual, reference 'Firetrace 1230 DIOM Manual' Part no. FTF000010 V01 Oct. 2014.
- c. Nominal system pressure for FK 5-1-12 components at 20°C is stated at 25 bar.

Certificate No: 1222Ab to EN 12094-8

Firetrace 1230 Flexible Connectors

| Product Name | Description | LPCB Ref. No. |
|---------------|--|---------------|
| NF271xxx (1) | Pilot hose (Type 3 Connector) | 1222Ab/09 |
| NF2333xxx (1) | 33mm Discharge hose (Type 1 Connector) | 1222Ab/10 |
| NF2349xxx (1) | 49mm Discharge hose (Type 1 Connector) | 1222Ab/11 |

Firetrace 1230 Firefighting components:

- a. This range of equipment is suitable for storage temperatures of -20°C to 50°C and is approved for use with FK 5-1-12 (Novec™ 1230).
- b. FK 5-1-12 equipment is approved for use in conjunction with Firetrace International LLC; System Design Manual, reference 'Firetrace 1230 DIOM Manual' Part no. FTF000010 V01 Oct. 2014.
- c. Nominal system pressure for FK 5-1-12 components at 20°C is stated at 25 bar.

Certificate No: 1222Ab to EN 12094-13

Firetrace 1230 Check and Non Return Valves

| Product Name | Description | LPCB Ref. No. |
|--------------|----------------------------|---------------|
| NF2433x (2) | 33mm Discharge Check Valve | 1222Ab/12 |
| NF2449x (2) | 49mm Discharge Check Valve | 1222Ab/13 |

Notes:

- 1. Where 'xxx' in connector part number is replaced by a code to indicate the connector length, up to a maximum of 1300mm.
- 2. Where 'x' in connector part number is replaced with '1' for BSPT thread or '2' for NPT thread.

Certificate No: 1222Ab to EN 12094-5

PART 4: SECTION 2.1

GASEOUS SYSTEM COMPONENTS

Selector Valves

| Product Name | Description | Working Pressure | LPCB Ref. No. |
|--------------|------------------------------|------------------|---------------|
| NF34015 (1) | Inertech Selector Valve DN15 | 60 bar | 1222Ab/17 |
| NF34020 (1) | Inertech Selector Valve DN20 | 60 bar | |
| NF34025 (1) | Inertech Selector Valve DN25 | 60 bar | |
| NF34032 (1) | Inertech Selector Valve DN32 | 60 bar | |
| NF34040 (1) | Inertech Selector Valve DN40 | 60 bar | |
| NF34050 (1) | Inertech Selector Valve DN50 | 60 bar | |

Firefighting Components - Selector Valves:

- This range of equipment is suitable for storage temperatures of -20°C to 50°C and is approved for use with FK 5-1-12 (Novec™ 1230).
- FK 5-1-12 equipment is approved for use in conjunction with Firetrace International LLC; System Design Manual, reference 'Firetrace 1230 DIOM Manual' Part no. FTF000010 V01 Oct. 2014.
- Nominal system pressure for FK 5-1-12 components at 20°C is stated at 25 bar.

Notes:

- The Working Pressure is specified as ≤ 60 bar for all agents and temperatures in accordance with the Note in Table 1 of EN 12094-5.

Certificate No: 1222Ac to prEN 12094-7

Firetrace 1230 Nozzles

| Product Name | Description | LPCB Ref. No. |
|-----------------------|-------------|---------------|
| NF2515xyzzz (1, 2, 3) | 15mm Nozzle | 1222Ac/01 |
| NF2520xyzzz (1, 2, 3) | 20mm Nozzle | 1222Ac/02 |
| NF2525xyzzz (1, 2, 3) | 25mm Nozzle | 1222Ac/03 |
| NF2532xyzzz (1, 2, 3) | 32mm Nozzle | 1222Ac/04 |
| NF2540xyzzz (1, 2, 3) | 40mm Nozzle | 1222Ac/05 |
| NF2550xyzzz (1, 2, 3) | 50mm Nozzle | 1222Ac/06 |

Firetrace 1230 Firefighting Components:

- This range of equipment is suitable for storage temperatures of -20°C to 50°C and is approved for use with FK 5-1-12 (Novec™ 1230).
- FK 5-1-12 equipment is approved for use in conjunction with Firetrace International LLC; System Design Manual, reference 'Firetrace 1230 DIOM Manual' Part no. FTF000010 V01 Oct. 2014.
- Nominal system pressure for FK 5-1-12 components at 20°C is stated at 25 bar.

Notes:

- Where 'x' in nozzle part number is replaced with '1' for NPT thread or '2' for BSPT thread.
- Where 'y' in nozzle part number is replaced with '1' for 180° coverage pattern or '2' for 360° coverage pattern.
- Approved drilling size range is 3mm to 14.5mm where 'zzz' in nozzle part number is the nozzle drill size (00.0mm) in increments of 0.1mm up to 10mm and increments of 0.5mm for sizes above 10mm.

Certificate No: 1222Ad to EN 12094-4

Firetrace 1230 Container Valve Actuators

| Product Name | Description | LPCB Ref. No. |
|--------------|--|---------------|
| NF26010 | Solenoid Actuator | 1222Ad/04 |
| NF26011 | Solenoid Actuator with reverse EMF diode | |
| NF26020 | Pneumatic Actuator | |
| NF26030 | Pneumatic/Manual Actuator | |

Firetrace 1230 Firefighting Components:

- a. This range of equipment is suitable for storage temperatures of -20°C to 50°C and is approved for use with FK 5-1-12 (Novac™ 1230).
- b. FK 5-1-12 equipment is approved for use in conjunction with Firetrace International LLC; System Design Manual, reference 'Firetrace 1230 DIOM Manual' Part no. FTF000010 V01 Oct. 2014.
- c. Nominal system pressure for FK 5-1-12 components at 20°C is stated at 25 bar.

FiWaRec Valves & Regulators GmbH & Co. KG

Europa-Allee 12, D54343 Föhren, Germany
 Tel: +49/6502 939512-16 • Fax: +49/6502 939512-12
 E-mail: felten.frank@fiwarec.de • Website: www.fiwarec.de

Certificate No: 1239a to EN12094-4

Container Valves DN12

| Product Name | Description | LPCB Ref. No. |
|--------------|---|---------------|
| F2020001 | DN12 Container Valve 50 bar, HFC227ea & FK-5-1-12 | 1239a/01 |
| F2020003 | DN12 Container Valve 50 bar, HFC227ea & FK-5-1-12 | |
| F2020005 | DN12 Container Valve 50 bar, HFC227ea & FK-5-1-12 | |
| F2021000 | DN12 Container Valve 250 bar, CO ₂ | |
| F2021001 | DN12 Container Valve 190 bar, CO ₂ | |
| F2021002 | DN12 Container Valve 190 bar, CO ₂ | |
| F2021003 | DN12 Container Valve 190 bar, CO ₂ | |
| F2021004 | DN12 Container Valve 190 bar, CO ₂ | |
| F2022000 | DN12 Container Valve 270 bar, Inert | |
| F2022001 | DN12 Container Valve 270 bar, Inert | |
| F2022002 | DN12 Container Valve 270 bar, Inert | |
| F2023000 | DN12 Container Valve 405 bar, Inert | |
| F2023001 | DN12 Container Valve 405 bar, Inert | |
| F2023002 | DN12 Container Valve 405 bar, Inert | |
| F2023003 | DN12 Container Valve 405 bar, Inert | |

All above items to be used in accordance with the relevant Instruction Manual

Certificate No: 1239a to EN12094-4

Container Valves DN33 and DN50 for use HFC125, HFC227ea & FK-5-1-12

| Product Name | Description | LPCB Ref. No. |
|--------------|--|---------------|
| F2050003 | DN33 Container Valve 50 bar, (60 bar burst disc) | 1239a/03 |
| F2050004 | DN33 Container Valve 50 bar, (95 bar burst disc) | |
| F2050005 | DN33 Container Valve 50 bar, (95 bar burst disc) | |
| F2050006 | DN33 Container Valve 50 bar, (95 bar burst disc) | |
| F2050007 | DN33 Container Valve 50 bar, (60 bar burst disc) | |
| F2050008 | DN33 Container Valve 50 bar, (60 bar burst disc) | |
| F2050009 | DN33 Container Valve 50 bar, (95 bar burst disc) | |
| F2060004 | DN50 Container Valve 50 bar, (60 bar burst disc) | 1239a/04 |
| F2060005 | DN50 Container Valve 50 bar, (95 bar burst disc) | |
| F2060007 | DN50 Container Valve 50 bar, (95 bar burst disc) | |
| F2060008 | DN50 Container Valve 50 bar, (95 bar burst disc) | |
| F2060009 | DN50 Container Valve 50 bar, (60 bar burst disc) | |
| F2060010 | DN50 Container Valve 50 bar, (60 bar burst disc) | |
| F2060011 | DN50 Container Valve 50 bar, (95 bar burst disc) | |

All above items to be used in accordance with the relevant Instruction Manual

Certificate No: 1239a to EN12094-4

PART 4: SECTION 2.1

GASEOUS SYSTEM COMPONENTS

Container Valve Actuators

| Product Name | Description | LPCB Ref. No. |
|---------------------|--|----------------------|
| F1120004 | Electrical actuator | 1239a/02 |
| F1120005 | Manual actuator | |
| F1120006 | Pneumatic /manual actuator | |
| F1120007 | Pneumatic actuator | |
| F1120008 | Pneumatic actuator | |
| F1120009 | Pneumatic /manual actuator (with plug) | |
| F1120010 | Pneumatic actuator (with plug) | |
| F1120011 | Pneumatic actuator | |
| F1120015 | Pneumatic actuator | |
| F1120016 | Pneumatic actuator | |
| F1120019 | Pneumatic actuator | |
| F1120020 | Manual actuator | |
| F1120021 | Electrical actuator | |
| F1120023 | Pneumatic /manual actuator | |
| F1120030 | Electrical actuator | |

All above items to be used in accordance with the relevant Instruction Manual

Certificate No: 1239a to EN12094-8

Connectors

| Product Name | Description | LPCB Ref. No. |
|---------------------|--|----------------------|
| F104xxxx | Pilot connector (type 3) inert gas (360 bar) DN5 150-1500mm | 1239a/05 |
| F105xxxx | Discharge connector (type 1) inert gas (360 bar) DN12 250-1200mm | |
| F106xxxx | Discharge connector (type 1) inert gas (360 bar) DN16 250-1200mm | |
| F107xxxx | Discharge connector (type 1) HFCs (70 bar) DN38 300-1500mm | |
| F108xxxx | Discharge connector (type 1) HFCs (70 bar) DN50 300-1500mm | |

Note:

Various combinations of 0° and 90° end fittings are available for the above items

Certificate No: 1239a to EN12094-13

Check Valves

| Product Name | Description | LPCB Ref. No. |
|---------------------|--------------------------|----------------------|
| F017 | DN12 inert gas (360 bar) | 1239a/06 |
| F018 | DN50 HFCs (70 bar) | |
| F019 | DN33 HFCs (70 bar) | |

Gielle S.r.l

Via Ferri Rocco, 32, Altamura (BA) 70022, Italy

Tel: +39.0803118998 • Fax: +39.0803101309

E-mail: info@gielle.it • Website: www.gielle.it

Certificate No: 1397a to EN12094-4

Gielle 40 Container Valve

| Product Name | Description | LPCB Ref. No. |
|---------------------|--------------------|----------------------|
| 76-2-190-0171 | 25 bar | 1397a/01 |

HFC FIXED FIRE FIGHTING COMPONENTS

- This range of equipment is suitable for storage from -20° to 50°C
- Container pressure is specified as 25 bar @ 21°C.
- These components are suitable for use with HFC227ea and FK 5-1-12

Certificate No: 1397a to EN12094-4

Container Valve Actuators

| Product Name | Description | LPCB Ref. No. |
|--------------|------------------|---------------|
| MNL000 | Manual | 1397a/02 |
| PNM040 | Pneumatic | |
| MNL001 | Manual/Pneumatic | |

HFC FIXED FIRE FIGHTING COMPONENTS

- This range of equipment is suitable for storage from -20° to 50°C
- Container pressure is specified as 25 bar @ 21°C.
- These components are suitable for use with HFC227ea and FK 5-1-12

International Security & Safety Systems Co.

49 Abbass El Akkad St, Nasr City, Cairo, Egypt
 Tel: +202 2401 7430 • Fax: +202 2262 7317
 E-mail: info@issystems.com • Website: www.issystems.com

Certificate No: 1222Cb to EN 12094-4

ISS CG2 HFC227ea Container Valves

| Product Name | Description | LPCB Ref. No. |
|--------------|--|---------------|
| NF21330x (1) | 33mm Container Valve | 1222Cb/01 |
| NF21331x (1) | 33mm Container Valve with Integral Solenoid Actuator | 1222Cb/02 |
| NF21490x (1) | 49mm Container Valve | 1222Cb/03 |
| NF21491x (1) | 49mm Container Valve with Integral Solenoid Actuator | 1222Cb/04 |

ISS CG² HFC227ea Firefighting Components

- a. This range of equipment is suitable for storage temperatures of -20°C to 50°C and is approved for use with HFC227ea.
- b. HFC227ea equipment is approved for use in conjunction with International Safety & Security Systems Co.; System Design Manual.
- c. Nominal system pressure for HFC227ea components at 21°C is stated at 25 or 42 bar.

Notes:

1. Where "x" in container valve part number is replaced with "2" for 25 bar nominal charge pressure or "4" for 42 bar nominal charge pressure.

Certificate No: 1222Cb to EN 12094-8

ISS CG2 HFC227ea Flexible Connectors

| Product Name | Description | LPCB Ref. No. |
|---------------|--|---------------|
| NF271xxx (1) | Pilot hose (Type 3 Connector) | 1222Cb/09 |
| NF2333xxx (1) | 33mm Discharge hose (Type 1 Connector) | 1222Cb/10 |
| NF2349xxx (1) | 49mm Discharge hose (Type 1 Connector) | 1222Cb/11 |

ISS CG² HFC227ea Firefighting Components

- a. This range of equipment is suitable for storage temperatures of -20°C to 50°C and is approved for use with HFC227ea.
- b. HFC227ea equipment is approved for use in conjunction with International Safety & Security Systems Co.; System Design Manual.
- c. Nominal system pressure for HFC227ea components at 21°C is stated at 25 or 42 bar.

Notes:

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GASEOUS SYSTEM COMPONENTS

1. Where "xxx" in connector part number is replaced with connector length in mm, up to a maximum of 999mm.

Certificate No: 1222Cb to EN 12094-13

ISS CG2 HFC227ea Check and Non Return Valves

| Product Name | Description | LPCB Ref. No. |
|---------------------|----------------------------|----------------------|
| NF2433x (2) | 33mm Discharge Check Valve | 1222Cb/12 |
| NF2449x (2) | 49mm Discharge Check Valve | 1222Cb/13 |

ISS CG² HFC227ea Firefighting Components

- a. This range of equipment is suitable for storage temperatures of -20°C to 50°C and is approved for use with HFC227ea.
- b. HFC227ea equipment is approved for use in conjunction with International Safety & Security Systems Co.; System Design Manual.
- c. Nominal system pressure for HFC227ea components at 21°C is stated at 25 or 42 bar.

Notes:

2. Where 'x' in connector part number is replaced with replaced with '1' for BSPT thread or '2' for NPT thread.

Certificate No: 1222Cb to EN 12094-5

Selector Valves

| Product Name | Description | Working Pressure | LPCB Ref. No. |
|---------------------|------------------------------|-------------------------|----------------------|
| NF34015 (1) | Inertech Selector Valve DN15 | 60 bar | 1222Cb/17 |
| NF34020 (1) | Inertech Selector Valve DN20 | 60 bar | |
| NF34025 (1) | Inertech Selector Valve DN25 | 60 bar | |
| NF34032 (1) | Inertech Selector Valve DN32 | 60 bar | |
| NF34040 (1) | Inertech Selector Valve DN40 | 60 bar | |
| NF34050 (1) | Inertech Selector Valve DN50 | 60 bar | |

ISS CG² HFC227ea Firefighting Components

- a. This range of equipment is suitable for storage temperatures of -20°C to 50°C and is approved for use with HFC227ea.
- b. HFC227ea equipment is approved for use in conjunction with International Safety & Security Systems Co.; System Design Manual.
- c. Nominal system pressure for HFC227ea components at 21°C is stated at 25 or 42 bar.

Notes:

1. The Working Pressure is specified as ≤ 60 bar for all agents and temperatures in accordance with the Note in Table 1 of EN 12094-5.

Certificate No: 1222Cc to prEN 12094-7

ISS CG2 HFC227ea Nozzles

| Product Name | Description | LPCB Ref. No. |
|-----------------------|--------------------|----------------------|
| NF2515xyzzz (1, 2, 3) | 15mm Nozzle | 1222Cc/01 |
| NF2520xyzzz (1, 2, 3) | 20mm Nozzle | 1222Cc/02 |
| NF2525xyzzz (1, 2, 3) | 25mm Nozzle | 1222Cc/03 |
| NF2532xyzzz (1, 2, 3) | 32mm Nozzle | 1222Cc/04 |
| NF2540xyzzz (1, 2, 3) | 40mm Nozzle | 1222Cc/05 |
| NF2550xyzzz (1, 2, 3) | 50mm Nozzle | 1222Cc/06 |

ISS CG² HFC227ea Firefighting Components:

- a. This range of equipment is suitable for storage temperatures of -20°C to 50°C and is approved for use with HFC227ea.

PART 4: SECTION 2.1
GASEOUS SYSTEM COMPONENTS

- b. HFC227ea equipment is approved for use in conjunction with International Safety & Security Systems Co.; System Design Manual.
- c. Nominal system pressure for HFC227ea components at 21°C is stated at 25 and 42 bar.

Notes:

1. Where 'x' in nozzle part number is replaced with '1' for NPT thread or '2' for BSPT thread.
2. Where 'y' in nozzle part number is replaced with '1' for 180° coverage pattern or '2' for 360° coverage pattern.
3. Approved drilling size range is 3mm to 14.5mm where 'zzz' in nozzle part number is the nozzle drill size (00.0mm) in increments of 0.1mm up to 10mm and increments of 0.5mm for sizes above 10mm.

Certificate No: 1222Cd to EN 12094-4

ISS CG2 HFC227ea Container Valve Actuators

| Product Name | Description | LPCB Ref. No. |
|--------------|--|---------------|
| NF26010 | Solenoid Actuator | 1222Cd/04 |
| NF26011 | Solenoid Actuator with reverse EMF diode | |
| NF26020 | Pneumatic Actuator | |
| NF26030 | Pneumatic/Manual Actuator | |

ISS CG² HFC227ea Firefighting Components:

- a. This range of equipment is suitable for storage temperatures of -20°C to 50°C and is approved for use with HFC227ea.
- b. HFC227ea equipment is approved for use in conjunction with International Safety & Security Systems Co.; System Design Manual.
- c. Nominal system pressure for HFC227ea components at 21°C is stated at 25 and 42 bar.

Kidde Fenwal Inc.

400 Main Street, Ashland, Massachusetts 01721, USA
 Tel: +1 508 881 2000 • Fax: +1 508 881 6729
 Website: www.kiddefiresystems.com and www.fenwalfire.com

ARGONITE C60 FIXED FIRE FIGHTING COMPONENTS

- ¹ This range of equipment is suitable for storage temperatures from -20°C to +50°C and is approved for use with Argonite.
- ² This range of equipment is approved for use in conjunction with the Kidde Fenwal design manual reference MA-01-9008-0102 (revision 0 dated July 2010)
- ³ System pressure is specified at 300 bar @ 15°C.
- ⁴ Cylinder is designed and manufactured in accordance with European Directive 1999/36/EEC (TPED) through compliance with EN1964-2
- ⁵ Actuation hoses are available in a variety of lengths

Certificate No: 273Bb

ARGONITE C60 Container and Container Bracket Assemblies

| Product Name | Description | Capacity (ltr) | System Pressure (bar) | LPCB Ref. No. |
|--------------|-------------------------------------|----------------|-----------------------|---------------|
| 01-1524-5900 | 80.0 Litre Container Valve Assembly | 80.0 | 300 (3), (4) | 273Bb/01 |

Certificate No: 273Bb

ARGONITE C60 Container Valves

| Product Name | Description | System pressure (bar) | LPCB Ref. No. |
|--------------|--------------------|-----------------------|---------------|
| 01-6481-0300 | Argonite C60 Valve | 300 | 273Bb/02 |

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GASEOUS SYSTEM COMPONENTS

Certificate No: 273Bb

ARGONITE C60 Valve Actuators & Release Units

| Product Name | Description | System pressure (bar) | LPCB Ref. No. |
|--------------|--------------------------------|-----------------------|---------------|
| 01-4181-0000 | Pneumatic Actuator | 300 | 273Bb/03 |
| 01-7172-8300 | Manual/Electrical Release Unit | 300 | |

Certificate No: 273Bb

ARGONITE C60 Manifolds

| Product Name | Description | No. cylinders | System Pressure | LPCB Ref. No. |
|------------------------------|--|---------------|-----------------|---------------|
| 01-3506-5112 to 01-3506-5116 | Single Row Argonite C60 Discharge Manifold | 2 to 6 | 60 | 273Bb/04 |
| 01-3506-5124 to 01-3506-5128 | Double Row Argonite C60 Discharge Manifold | 4 to 8 | 60 | |

Certificate No: 273Bb

ARGONITE C60 Manifold Check Valves

| Product Name | Description | Nominal bore (mm) | System pressure (bar) | LPCB Ref. No. |
|--------------|-----------------------------------|-------------------|-----------------------|---------------|
| 01-6546-0000 | Argonite C60 Manifold Check Valve | 14mm | 300 | 273Bb/05 |

Certificate No: 273Bb & 594Ba

ARGONITE Hoses

| Product Name | Description | Nominal bore (mm) | System pressure (bar) | LPCB Ref. No. |
|-------------------|-------------------------------|-------------------|-----------------------|---------------|
| 01-3288-0100 | Argonite C60 Discharge Hose | DN15 | 300 | 273Bb/06 |
| 01-3260-0100/1000 | Actuation Hose ⁽⁵⁾ | DN5 | 300 | 594Ba/03 |
| 01-3261-0100/1000 | Actuation Hose ⁽⁵⁾ | DN5 | 300 | |
| 01-3271-1100/1200 | Actuation Hose ⁽⁵⁾ | DN5 | 300 | |
| 01-3272-1100/1200 | Actuation Hose ⁽⁵⁾ | DN5 | 300 | |
| 01-3273-1100/1200 | Actuation Hose ⁽⁵⁾ | DN5 | 300 | |

Certificate No: 594Ba

ARGONITE Pilot Line Equipment

| Product Name | Description | Nominal Bore (mm) | System pressure (bar) | LPCB Ref. No. |
|--------------|----------------------------------|-------------------|-----------------------|---------------|
| 01-6363-0000 | 1/4" Pilot Line Check Valve | - | 300 | 594Ba/18 |
| 01-3388-0000 | Actuation Line Leak Bleeder Unit | - | 300 | |
| 15-8685-0651 | Actuation Line T-Piece | DN5 | - | |

Certificate No: 594Ba

ARGONITE Pressure Relief Devices

| Product Name | Description | System pressure (bar) | LPCB Ref. No. |
|-------------------|------------------------|-----------------------|---------------|
| 01-6653-0003/0103 | Pressure Relief Device | 300 | 594Ba/17 |

Certificate No: 594Ba

ARGONITE Pressure Monitoring Devices

| Product Name | Description | System pressure (bar) | LPCB Ref. No. |
|--------------|------------------------------|-----------------------|---------------|
| 01-7221-0300 | Manifold Pressure Gauge (½") | 300 | 594Ba/15 |
| 03-5713-0000 | Discharge Pressure Switch | 300 | |

Kidde Fire Protection

Station Road, High Bentham, Lancaster LA2 7NA, United Kingdom
 Tel: +44 (0)1494 480 410 • Fax: +44 (0)1494 480 449
 E-mail: general.enquiries@kiddco.uk • Website: www.kfp.co.uk

KIDDE GX20 RANGE OF FM200 FIXED FIRE FIGHTING COMPONENTS

- a. This range of equipment is suitable for storage temperatures from -20°C to +54°C and is approved for use with FM200.
- b. This range of equipment is approved for use in conjunction with the Kidde Fire Protection Ltd, FM200 Design Manual.
- c. System pressure is specified at 25 bar @ 20°C and max service pressure of 34.5 bar @ 55°C.
- d. Nitrogen pilot pressure is specified as 124 bar @ 20°C.

¹ Cylinders are designed and manufactured to 84/525/EEC or TRG 330

² Vertical mount cylinder with straight syphon tube

³ Horizontal mount cylinder with angled syphon tube continued

KIDDE GX20 Container Valve, Container and Container Bracket Assemblies

| Product Name | Description | Capacity (ltr) | Strap | Bracket No. |
|--------------|-------------------------|----------------|-----------|-------------|
| E7763-102 | Cyl & GCV40 Valve Assy | 8 (1), (2) | C6331-103 | D1162-002 |
| E7763-122 | Cyl & GCV40 Valve Assy | 8 (1), (3) | C6331-103 | D1162-002 |
| E7763-103 | Cyl & GCV40 Valve Assy | 16 (1), (2) | C6331-104 | D1162-003 |
| E7763-123 | Cyl & GCV40 Valve Assy | 16 (1), (3) | C6331-104 | D1162-003 |
| E7763-104 | Cyl & GCV40 Valve Assy | 28 (1), (2) | C6331-104 | D1162-004 |
| E7763-124 | Cyl & GCV40 Valve Assy | 28 (1), (3) | C6331-104 | D1162-004 |
| E7763-105 | Cyl & GCV40 Valve Assy | 51 (1), (2) | C6331-105 | |
| E7763-106 | Cyl & GCV50 Valve Assy | 81 (1), (2) | C6331-105 | |
| E7763-108 | Cyl & GCV50 Valve Assy | 142 (1), (2) | C6331-106 | |
| B6793-720 | Nitrogen Pilot Cylinder | 1.77 | | B6793-721 |
| E7763-101 | Cyl & GCV40 Valve Assy | 5 (1), (2) | C6331-103 | D1162-001 |
| E7763-121 | Cyl & GCV40 Valve Assy | 5 (1), (3) | C6331-103 | D1162-001 |

KIDDE GX20 Container Valves

| Product Name | Description |
|--------------|-------------|
| B6793-793 | GCV40 valve |
| B6793-792 | GCV50 valve |

KIDDE GX20 Discharge Hoses, Outlet Adapters, Discharge Manifolds, including Check Valves and Bracket

| Product Name | Description | Nominal bore (mm) |
|--------------|----------------------|-------------------|
| B6793-760 | GCV40 Outlet Hose | 40 |
| B6793-761 | GCV50 Outlet Hose | 50 |
| K63497-02 | GCV40 Outlet Adaptor | 40 |
| K63497-03 | GCV50 Outlet Adaptor | 50 |
| B6793-762 | Elbow Check | 50 |
| D1511-006 | 2 Port Manifold | 50 |
| D1511-007 | 2 Port Manifold | 80 |
| D1511-009 | 2 Port Manifold | 100 |
| D1511-008 | 3 Port Manifold | 80 |
| D1511-010 | 3 Port Manifold | 100 |

KIDDE GX20 Pressure Switches and Devices

| Product Name | Description |
|--------------|---|
| B6793-730 | Cylinder Contents Supervisory Pressure Switch |

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GASEOUS SYSTEM COMPONENTS

| Product Name | Description |
|---------------------|---|
| B6793-731 | Discharge Pressure Switch |
| B6793-732 | Discharge Pressure Switch (Explosion Proof) |
| | Pressure Switch |
| B6793-733 | Pressure Trip |

KIDDE GX20 Discharge Nozzles

| Product Name | Description | Nominal bore (mm) |
|---------------------|----------------------|--------------------------|
| C3333-301-xx | 180° Nozzle (4), (5) | 15 |
| C3333-302-xx | 180° Nozzle (4), (5) | 20 |
| C3333-303-xx | 180° Nozzle (4), (5) | 25 |
| C3333-304-xx | 180° Nozzle (4), (5) | 32 |
| C3333-305-xx | 180° Nozzle (4), (5) | 40 |
| C3333-306-xx | 180° Nozzle (4), (5) | 50 |
| C3333-307-xx | 360° Nozzle (4), (5) | 15 |
| C3333-308-xx | 360° Nozzle (4), (5) | 20 |
| C3333-309-xx | 360° Nozzle (4), (5) | 25 |
| C3333-310-xx | 360° Nozzle (4), (5) | 32 |
| C3333-311-xx | 360° Nozzle (4), (5) | 40 |
| C3333-312-xx | 360° Nozzle (4), (5) | 50 |

⁴ Nozzles drilled in accordance with system calculations.

⁵ Nozzles are manufactured from brass.

KIDDE GX20 Valve Actuators

| Product Name | Description |
|---------------------|--|
| B6793-701 | Electric Control Head |
| B6793-702 | Electric & Cable Control Head |
| B6793-703 | Cable & Electric Control Head (Flameproof) |
| B6793-704 | Cable Operated Control Head |
| B6793-705 | Lever Operated Control Head |
| B6793-706 | Pressure & Lever Operated Control Head |
| B6793-707 | Pressure Operated Control Head |
| B6793-708 | Pressure Operated Control Head (6) |
| B6793-709 | Electric Control Head (6) |

⁶ Stackable configuration

KIDDE GX20 Pilot Equipment

| Product Name | Description |
|---------------------|-----------------------------|
| B6793-770 | Master Cylinder Adaptor Kit |
| B6793-771 | 559mm Long Pilot hose |
| B6793-772 | 762mm Long Pilot hose |
| B6793-773 | Male Straight Adaptor |
| B6793-774 | Male Elbow Adaptor |
| B6793-775 | Male Branch Tee |

Certificate No: 273a/01

Kidde GX20 Check Valves

| Product Name | LPCB Ref. No. |
|---------------------|----------------------|
| B6793-808 | 273a/01 |
| B6793-809 | |
| B6793-810 | |
| B6793-811 | |
| B6793-812 | |

Notes:

- 1) This range of equipment is suitable for storage temperatures from -20°C to +50°C and is approved for use with HFC227ea (FM200).
- 2) This range of equipment is approved in conjunction with the Kidde GX20 Design, Installation, Operation and Maintenance Manual Ref. No. 59812-422 Issue D.
- 3) System pressure is specified as 25 bar @ 20°C and max. service pressure is 30 bar @ 50°C.

ARGONITE C SERIES FIXED FIRE FIGHTING COMPONENTS

1. This range of equipment is suitable for storage temperatures from -20°C to +50°C and is approved for use with Argonite.
2. This range of equipment is approved for use in conjunction with the Kidde Products Design manual reference: c60;- MA-01-9008-0100 (revision 1 dated November 2011)
3. System pressure is specified at 200 bar or 300 bar @ 15°C.
4. Cylinder is designed and manufactured in accordance with European Directive 2010/35/EU (TPED) through compliance with ISO 9809-2
5. A range of wall brackets, clamping bars, spacers and clamping bolts for secure container installation are also available.

Certificate No: 273b

ARGONITE C Series Container/Valve Assemblies

| Product Name | Description | Capacity (ltr) | System Pressure (bar) | LPCB Ref. No. |
|--------------|---------------------------|----------------|-----------------------|---------------|
| 01-1524-5900 | C60 - 80.0 Litre Cylinder | 80.0 | 300 (3), (4), (5) | 273b/01 |

Certificate No: 273b

ARGONITE C Series Single Area Manifolds

| Product Name | Description | No. cylinders | System pressure (bar) | LPCB Ref. No. |
|------------------------------|---|---------------|-----------------------|---------------|
| 01-3506-5112 to 01-3506-5116 | Single Row Argonite C Series Discharge Manifold | 2 to 6 | 60 | 273b/04 |
| 01-3506-5124 to 01-3506-5128 | Double Row Argonite C Series Discharge Manifold | 4 to 8 | 60 | |

Certificate No: 273b to EN 12094-13

ARGONITE C Series Manifold Check Valves

| Product Name | Description | Nominal bore (mm) | System pressure (bar) | LPCB Ref. No. |
|--------------|----------------------|---------------------|-----------------------|---------------|
| 01-6546-0000 | Manifold Check Valve | 1" BSPT x 3/4" BSPP | 300 | 273b/05 |

Certificate No: 273b to EN 12094-8

ARGONITE C Series Hoses

| Product Name | Description | Nominal bore (mm) | System pressure (bar) | LPCB Ref. No. |
|--------------|----------------|-------------------|-----------------------|---------------|
| 01-3288-0100 | Discharge Hose | DN15 | 300 | 273b/06 |

Certificate No: 273b to EN 12094-4

ARGONITE C Series Container Valves

| Product Name | Description | System Pressure (bar) | LPCB Ref. No. |
|--------------|--------------------|-----------------------|---------------|
| 01-6481-0300 | Argonite C60 Valve | 300 | 273b/02 |

Certificate No: 273b to EN 12094-4

ARGONITE C Series Valve Actuators & Release Units

| Product Name | Description | System pressure (bar) | LPCB Ref. No. |
|--------------|--------------------------------|-----------------------|---------------|
| 01-4181-0000 | Pneumatic Actuator | 300 | 273b/03 |
| 01-7172-8300 | Manual/Electrical Release Unit | 300 | |

PART 4: SECTION 2.1

GASEOUS SYSTEM COMPONENTS

Certificate No: 273b to EN12094 Part 10

Argonite C Series Pressure Monitoring Devices

| Product Name | Description | System Pressure (bar) | LPCB Ref. No. |
|--------------|---------------------|-----------------------|---------------|
| 01-7171-8300 | Pressure Gauge Unit | 300 | 273b/07 |

Certificate No: 273d to EN 12094 series part 4 and LPS 1024

KIDDE INERT GAS FIXED FIRE FIGHTING COMPONENTS

1. This range of equipment is suitable for storage temperatures -20°C to +50°C and is approved for use with Argonite® (IG55), IG01, IG100 and IG541.
2. This range of equipment is approved for use in conjunction with Kidde Products Design manual reference MA-01-9006-0100 (Revision 11 dated January 2015)
3. System pressure is specified at 150 bar, 200 bar and 300 bar @ 15°C.

Certificate No: 273d to Schedule of Requirements

Kidde Inert Gas - Container and Container Bracket Assemblies

| Product Name | Description | Capacity (ltr) | System Pressure (bar) | LPCB Ref. No. |
|------------------|----------------------|----------------|-----------------------|---------------|
| 01-1331-590X (7) | 15.9 Litre Cylinder | 15.9 | 150 (4), (5) | 273d/01 |
| 01-1311-590X (7) | 67.5 Litre Cylinder | 67.5 | 150 (4), (5) | |
| 01-1321-590X (7) | 80.0 Litre Cylinder | 80.0 | 150 (4), (5) | |
| 01-1332-590X (7) | 15.9 Litre Cylinder | 15.9 | 200 (4), (5) | |
| 01-1312-590X (7) | 67.5 Litre Cylinder | 67.5 | 200 (4), (5) | |
| 01-1322-590X (7) | 80.0 Litre Cylinder | 80.0 | 200 (4), (5) | |
| 01-1334-590X (7) | 15.9 Litre Cylinder | 15.9 | 300 (4), (5) | |
| 01-1314-590X (7) | 67.5 Litre Cylinder | 67.5 | 300 (4), (5) | |
| 01-1324-590X (7) | 80.0 Litre Cylinder | 80.0 | 300 (4), (5) | |
| 01-1394-590X (7) | 140.0 Litre Cylinder | 140.0 | 300 (4), (5) | |

4. Cylinder is designed and manufactured in accordance with European Directive 2010/35/EU (TPED) through compliance with ISO 9809-2

5. A range of wall brackets, clamping bars, spacers and clamping bolts for secure container installation are also available

6. Cylinder is designed and manufactured in accordance with BS 5045-1 and is for Indian service only. Cylinder is not compliant with European Directive 84/225/EEC and the TPED.

7. Where X can be: 0 - Argonite® (IG55), 2 - Nitrogen (IG-100), 4 - Argon (IG-01) & 5 - IG-541.

Certificate No: 273d to EN 12094 part 8

Kidde Inert Gas and Argonite® C Series - Hoses

| Product Name | Description | Nominal bore (mm) | System pressure (bar) | Length (mm) | LPCB Ref. No. |
|-------------------|----------------|-------------------|-----------------------|-------------|---------------|
| 01-3260-0200/1000 | Actuation hose | DN5 | 150, 200 & 300 | 200-1000 | 273d/03 |
| 01-3261-0200/1000 | Actuation Hose | DN5 | 150, 200 & 300 | 200-1000 | |
| 01-3271-1100/1200 | Actuation Hose | DN5 | 150, 200 & 300 | 200-300 | |
| 01-3272-1100/1200 | Actuation Hose | DN5 | 150, 200 & 300 | 250-500 | |
| 01-3273-1100/1200 | Actuation Hose | DN5 | 150, 200 & 300 | 350-700 | |

Certificate No: 273d to EN 12094 part 8

Kidde Inert Gas - Hoses

| Product Name | Description | Nominal bore (mm) | System pressure (bar) | Length (mm) | LPCB Ref. No. |
|-------------------|----------------|-------------------|-----------------------|-------------|---------------|
| 01-3284-0100/0200 | Discharge Hose | DN9 | 150, 200 & 300 | 400-700 | 273d/03 |

Certificate No: 273d to Schedule of Requirements

Kidde Inert Gas - Pressure Restrictor Assemblies

| Product Name | Description | Orifice size (mm) | System pressure (bar) | LPCB Ref. No. |
|----------------------------------|--------------------------|-------------------|-----------------------|---------------|
| 01-370X-1030/1070 (8), (9), (10) | ½" Restrictor Assembly | 3-7 | 150, 200 & 300 | 273d/04 |
| 01-370X-3050/3180 (9) | 1.0" Restrictor Assembly | 5-18 | 150, 200 & 300 | |
| 01-370X-4120/4270 (9) | 1½" Restrictor Assembly | 12-27 | 150, 200 & 300 | |
| 01-370X-5200/5360 (9) | 2.0" Restrictor Assembly | 20-36 | 150, 200 & 300 | |

⁸ Not available with NPT Female/NPT Female or NPT Female/BSP Female connections

⁹ Where X can be 1 for NPT Male/NPT Female, 2 for NPT Female/NPT Female, 3 for NPT Male/BSP Female or 4 for NPT Female/BSP Female

¹⁰ Also available with BSP Male/BSP Female (part no. 01-3706-1030/1070) or BSP Male/NPT Female connections (part no. 01-3705-1030/1070)

Certificate No: 273d to Schedule of Requirements

Kidde Inert Gas and Argonite® C Series - Pressure Regulator Assemblies

| Product Name | Description | Orifice Size (mm) | System pressure (bar) | LPCB Ref. No. |
|--------------|--------------------|-------------------|-----------------------|---------------|
| 01-6017-0000 | Pressure Regulator | N/A | 150, 200 & 300 | 273d/04 |

Certificate No: 273d to EN 12094 part 7

Kidde Inert Gas and Argonite® C Series - Discharge Nozzles

| Product Name | Description | Orifice size (mm) | Nozzle pressure (bar) | LPCB Ref. No. |
|--------------------------|---------------------|-------------------|-----------------------|---------------|
| 01-3465-X2030/X2100 (11) | ½" Nozzle Assembly | 3-10 | 60 | 273d/05 |
| 01-3465-X3070/X3140 (11) | ¾" Nozzle Assembly | 7-14 | 60 | |
| 01-3465-X4100/X4180 (11) | 1" Nozzle Assembly | 10-18 | 60 | |
| 01-3465-X5150/X5260 (11) | 1½" Nozzle Assembly | 15-26 | 60 | |

¹¹ Where X can be 1 for BSP or 2 for NPT connections

Certificate No: 273d to Schedule of Requirements

Kidde Inert Gas - Single Area Manifolds

| Product Name | Description | No. cylinders | System pressure (bar) | LPCB Ref. No. |
|------------------------------|-------------------------------|---------------|-----------------------|---------------|
| 01-3506-2011 to 01-3506-2019 | Single Row Discharge Manifold | 1 to 10 | 150, 200 | 273d/06 |
| 01-3506-2021 to 01-3506-2029 | Double Row Discharge Manifold | 4 to 20 | 150, 200 | |
| 01-3506-3011 to 01-3506-3019 | Single Row Discharge Manifold | 1 to 10 | 300 | |
| 01-3506-3021 to 01-3506-3029 | Double Row Discharge Manifold | 4 to 20 | 300 | |

Certificate No: 273d to Schedule of Requirements

Kidde Inert Gas and Argonite® C Series - Multi-Area Manifold Accessories

| Product Name | Description | System Pressure (bar) | LPCB Ref. No. |
|--------------|------------------------------------|-----------------------|---------------|
| 01-3508-0002 | Pilot Manifold (2 Diverter Valves) | 150, 200, 300 (12) | 273d/06 |
| 01-3508-0003 | Pilot Manifold (3 Diverter Valves) | 150, 200, 300 (12) | |
| 01-3508-0004 | Pilot Manifold (4 Diverter Valves) | 150, 200, 300 (12) | |
| 01-3508-0005 | Pilot Manifold (5 Diverter Valves) | 150, 200, 300 (12) | |

¹² Working Pressure Outlet 8 bar

Certificate No: 273d to EN 12094 part 5

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GASEOUS SYSTEM COMPONENTS

Kidde Inert Gas and Argonite® C Series - Diverter Valves

| Product Name | Description | Size | System pressure (bar) | LPCB Ref. No. |
|---------------------|--------------------|-------------|------------------------------|----------------------|
| 01-6240-1000 | Diverter Valve | ½" | 150, 200 & 300 | 273d/08 |
| 01-6242-1000 | Diverter Valve | 1" | 150, 200 & 300 | |
| 01-6244-1000 | Diverter Valve | 1½" | 150, 200 & 300 | |
| 01-6246-1000 | Diverter Valve | 2" | 150, 200 & 300 | |

Certificate No: 273d to EN 12094 part 13

Kidde Inert Gas - Manifold Check Valves

| Product Name | Description | Nominal bore (mm) | System pressure (bar) | LPCB Ref. No. |
|---------------------|----------------------|--------------------------|------------------------------|----------------------|
| 01-6454-0000 | Manifold Check Valve | ½" BSP & ¾" NPT | 150, 200 & 300 | 273d/09 |

Certificate No: 273d to EN 12094 part 4

Kidde Inert Gas - Container Valves

| Product Name | Description | System pressure (bar) | LPCB Ref. No. |
|---------------------|--------------------------|------------------------------|----------------------|
| 01-6471-0150 | Pneumatic Argonite Valve | 150 | 273d/10 |
| 01-6471-0200 | Pneumatic Argonite Valve | 200 | |
| 01-6471-0300 | Pneumatic Argonite Valve | 300 | |

Certificate No: 273d to EN 12094 part 4

Kidde Inert Gas - Release Units

| Product Name | Description | System pressure (bar) | LPCB Ref. No. |
|---------------------|--------------------|------------------------------|----------------------|
| 01-7172-1150 | Release Unit | 150 | 273d/11 |
| 01-7172-1200 | Release Unit | 200 | |
| 01-7172-1300 | Release Unit | 300 | |
| 01-7173-1150 | Release Unit | 150 | |
| 01-7173-1200 | Release Unit | 200 | |
| 01-7173-1300 | Release Unit | 300 | |

Certificate No: 273d to EN 12094 part 10

Kidde Inert Gas and Argonite® C Series - Pressure Monitoring Devices

| Product Name | Description | System pressure (bar) | LPCB Ref. No. |
|---------------------|----------------------------|-------------------------------|----------------------|
| 01-7221-0300 | Manifold Pressure Gauge ½" | 150, 200 & 300 | 273d/15 |
| 03-5713-0000 | Discharge Pressure Switch | Max operating pressure 90 bar | |

Certificate No: 273d to EN 12094 part 10

Kidde Inert Gas - Pressure Monitoring Devices

| Product Name | Description | System pressure (bar) | LPCB Ref. No. |
|---------------------|---------------------|------------------------------|----------------------|
| 01-7171-1500 | Pressure Gauge Unit | 150 | 273d/15 |
| 01-7171-1200 | Pressure Gauge Unit | 200 | |
| 01-7171-1300 | Pressure Gauge Unit | 300 | |

Certificate No: 273d to Schedule of Requirements

Kidde Inert Gas and Argonite® C Series - Pressure Relief Devices

| Product Name | Description | System pressure (bar) | LPCB Ref. No. |
|---------------------|------------------------|------------------------------|----------------------|
| 01-6653-0001/0101 | Pressure Relief Device | 150 | 273d/17 |

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GASEOUS SYSTEM COMPONENTS

| Product Name | Description | System pressure (bar) | LPCB Ref. No. |
|-------------------|------------------------|-----------------------|---------------|
| 01-6653-0002/0102 | Pressure Relief Device | 200 | |
| 01-6653-0003/0103 | Pressure Relief Device | 300 | |

Certificate No: 273d to EN 12094 part 13 and Schedule of Requirements

Kidde Inert Gas and Argonite® C Series - Pilot Line Equipment

| Product Name | Description | Nominal bore (mm) | System pressure (bar) | LPCB Ref. No. |
|--------------|----------------------------------|-------------------|-----------------------|---------------|
| 01-6363-0000 | Pilot Line Check Valve | ¼" BSP | 150, 200 & 300 | 273d/18 |
| 01-3388-0000 | Actuation Line Leak Bleeder Unit | - | 150, 200 & 300 | |
| 01-4131-0000 | Actuation Line T-Piece | DN5 | 150, 200 & 300 | |
| 01-4130-1000 | Actuation Line Cross | DN5 | 150, 200 & 300 | |

Certificate No: 273e to EN 12094-13

CO2 FIXED FIREFIGHTING COMPONENTS.

| Product Name | Description | Nominal Bore (mm) | System pressure (bar) | LPCB Ref. No. |
|--------------|-------------|-------------------|-----------------------|---------------|
| D8562-008 | Co2 NRV | DN2 | 140 | 273e/01 |

LPG Técnicas En Extinción De Incendios, S.L.

Mestre Joan Corrales 107-109, 08950 Esplugues de Llobregat, Barcelona, Spain
Tel: +34 93 480 2925 • Fax: +34 93 473 7492
E-mail: marketing@lpg.es • Website: www.lpg.es

Certificate No: 446a

LPG Discharge Valves for Inert (200 bar) and Inert (300 bar)

| Product Name | Description | LPCB Ref. No. |
|--------------|----------------------------------|---------------|
| 2000306V | 128-60 container valve (200 bar) | 446a/01 |
| 26512800 | 128-65 container valve (300 bar) | |

- a) This range of equipment is suitable for storage and environmental conditions from -20° to +50° and is approved for use with IG541, IG55, IG100 and IG01.
b) This range of equipment is approved for use with LPG Design Manual reference: MD/55/01/IN.
c) Inert(200 bar) & Inert (300 bar) Nominal system pressure is specified as 200 bar and 300 bar at 15°C.

Certificate No: 446a

LPG Container Valve Assemblies for Inert (200 bar)

| Product Name | Description | LPCB Ref. No. |
|--------------|--|---------------|
| 73131018H | 80L Container Valve Assembly, LPG128-60 IG541 (1) | 446a/24 |
| 73131018T | 80L Container Valve Assembly, LPG128-60 IG541 (1) | |
| 73131018 | 80L Container Valve Assembly, LPG128-60 IG541 (1) | |
| 73119039 | 80L Container Valve Assembly, LPG128-60 IG55 (1) | |
| 73119039H | 80L Container Valve Assembly, LPG128-60 IG55 (1) | |
| 73119039T | 80L Container Valve Assembly, LPG128-60 IG55 (1) | |
| 73119039F | 80L Container Valve Assembly, LPG128-60 IG55 (1) | |
| 73106035 | 80L Container Valve Assembly, LPG128-60 IG01 (1) | |
| 73106035T | 80L Container Valve Assembly, LPG128-60 IG01 (1) | |
| 73121036 | 80L Container Valve Assembly, LPG128-60 IG100 (1) | |
| 76131009 | 140L Container Valve Assembly, LPG128-60 IG541 (1) | |
| 76119012 | 140L Container Valve Assembly, LPG128-60 IG55 (1) | |
| 76119012H | 140L Container Valve Assembly, LPG128-60 IG55 (1) | |
| 76119012T | 140L Container Valve Assembly, LPG128-60 IG55 (1) | |
| 76119012F | 140L Container Valve Assembly, LPG128-60 IG55 (1) | |
| 76106008 | 140L Container Valve Assembly, LPG128-60 IG01 (1) | |

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GASEOUS SYSTEM COMPONENTS

| Product Name | Description | LPCB Ref. No. |
|--------------|--|---------------|
| 76106008T | 140L Container Valve Assembly, LPG128-60 IG01 (1) | |
| 73106034 | 80L Container Valve assembly, LPG128-60 IG01 (2) | |
| 73106034T | 80L Container Valve assembly, LPG128-60 IG01 (2) | |
| 73121035 | 80L Container Valve assembly, LPG128-60 IG100 (2) | |
| 76131015 | 140L Container Valve assembly, LPG128-60 IG100 (2) | |
| 76121010 | 140L Container Valve assembly, LPG128-60 IG100 (2) | |
| 76131009H | 140L Container Valve assembly, LPG128-60 IG541 (2) | |
| 76131009T | 140L Container Valve assembly, LPG128-60 IG541 (2) | |

Notes:

- (1) Includes pressure gauge + switch
- (2) Includes pressure gauge

a) This range of equipment is suitable for storage and environmental conditions from -20° to +50° and is approved for use with IG541, IG55, IG100 and IG01.

b) This range of equipment is approved for use with LPG Design Manual reference: MD/55/01/IN.

c) Inert(200 bar) & Inert (300 bar) Nominal system pressure is specified as 200 bar and 300 bar at 15°C.

Certificate No: 446a

LPG Container Valve Assemblies for Inert (300 bar)

| Product Name | Description | LPCB Ref. No. |
|--------------|--|---------------|
| 73130002 | 80L Container Valve Assembly, LPG128-65 IG541 (1) | 446a/25 |
| 73130002H | 80L Container Valve Assembly, LPG128-65 IG541 (1) | |
| 73130002T | 80L Container Valve Assembly, LPG128-65 IG541 (1) | |
| 73120025 | 80L Container Valve Assembly, LPG128-65 IG55 (1) | |
| 73120025H | 80L Container Valve Assembly, LPG128-65 IG55 (1) | |
| 73120025T | 80L Container Valve Assembly, LPG128-65 IG55 (1) | |
| 73120025F | 80L Container Valve Assembly, LPG128-65 IG55 (1) | |
| 73107018 | 80L Container Valve Assembly, LPG128-65 IG01 (1) | |
| 73107018T | 80L Container Valve Assembly, LPG128-65 IG01 (1) | |
| 73122018 | 80L Container Valve Assembly, LPG128-65 IG100 (1) | |
| 76130002 | 140L Container Valve Assembly, LPG128-65 IG541 (1) | |
| 76130002H | 140L Container Valve Assembly, LPG128-65 IG541 (1) | |
| 76130002T | 140L Container Valve Assembly, LPG128-65 IG541 (1) | |
| 76120005 | 140L Container Valve Assembly, LPG128-65 IG55 (1) | |
| 76120005H | 140L Container Valve Assembly, LPG128-65 IG55 (1) | |
| 76120005T | 140L Container Valve Assembly, LPG128-65 IG55 (1) | |
| 76120005F | 140L Container Valve Assembly, LPG128-65 IG55 (1) | |
| 76107001 | 140L Container Valve Assembly, LPG128-65 IG01 (1) | |
| 76107001T | 140L Container Valve Assembly, LPG128-65 IG01 (1) | |
| 76122005 | 140L Container Valve assembly, LPG128-65 IG100 (1) | |
| 73107017 | 80L Container Valve assembly, LPG128-65 IG01 (2) | |
| 73107017T | 80L Container Valve assembly, LPG128-65 IG01 (2) | |
| 73122017 | 80L Container Valve assembly, LPG128-65 IG100 (2) | |
| 76130004 | 140L Container Valve assembly, LPG128-65 IG541 (2) | |
| 76130007 | 140L Container Valve assembly, LPG128-65 IG100 (2) | |
| 73130030 | 80L PESO Container Valve Assembly, LPG128-65 IG541 (1) | |
| 73120017 | 80L PESO Container Valve assembly, LPG128-65 IG55 (1) | |
| 73130030H | 80L PESO Container Valve assembly, LPG128-65 IG541 (1) | |
| 73130030T | 80L PESO Container Valve assembly, LPG128-65 IG541 (1) | |

Notes:

- (1) Includes pressure gauge + switch
- (2) Includes pressure gauge

a) This range of equipment is suitable for storage and environmental conditions from -20° to +50° and is approved for use with IG541, IG55, IG100 and IG01.

b) This range of equipment is approved for use with LPG Design Manual reference: MD/55/01/IN.

c) Inert(200 bar) & Inert (300 bar) Nominal system pressure is specified as 200 bar and 300 bar at 15°C.

Certificate No: 446a

LPG Restrictors for Inert (200 bar) and Inert (300 bar)

| Product Name | Description | LPCB Ref. No. |
|--------------|----------------------------|---------------|
| 61350005 | ¾" Restrictor NPT x NPT | 446a/17 |
| 61350006 | 1 Restrictor NPT x NPT | |
| 61350007 | 1 ¼" Restrictor NPT x NPT | |
| 61350008 | 1 ½" Restrictor NPT x NPT | |
| 61350009 | 2 Restrictor NPT x NPT | |
| 61350012 | 2 ½" Restrictor NPT x NPT | |
| 61350013 | 3 Restrictor NPT x NPT | |
| 61350014 | 4 Restrictor NPT x NPT | |
| 61016121 | ¾" Restrictor NPT x BSPT | |
| 61016122 | 1 Restrictor NPT x BSPT | |
| 61016123 | 1 ¼" Restrictor NPT x BSPT | |
| 61016124 | 1 ½" Restrictor NPT x BSPT | |
| 61016125 | 2 Restrictor NPT x BSPT | |
| 61016126 | 2 ½" Restrictor NPT x BSPT | |
| 61016127 | 3 Restrictor NPT x BSPT | |
| 61016128 | 4 Restrictor NPT x BSPT | |

- a) This range of equipment is suitable for storage and environmental conditions from -20° to +50° and is approved for use with IG541, IG55, IG100 and IG01.
 b) This range of equipment is approved for use with LPG Design Manual reference: MD/55/01/IN.
 c) Inert(200 bar) & Inert (300 bar) Nominal system pressure is specified as 200 bar and 300 bar at 15°C.

Certificate No: 446a

LPG Discharge Hoses for Inert (200 bar) and Inert (300 bar)

| Product Name | Description | LPCB Ref. No. |
|--------------|------------------|---------------|
| 30522010 | ¾" flexible hose | 446a/18 |

- a) This range of equipment is suitable for storage and environmental conditions from -20° to +50° and is approved for use with IG541, IG55, IG100 and IG01.
 b) This range of equipment is approved for use with LPG Design Manual reference: MD/55/01/IN.
 c) Inert(200 bar) & Inert (300 bar) Nominal system pressure is specified as 200 bar and 300 bar at 15°C.

Certificate No: 446a

LPG Discharge Containers for Inert (200 bar) and Inert (300 bar)

| Product Name | Description | LPCB Ref. No. |
|--------------|------------------------------|---------------|
| 10800080 | 80 litre cylinder (200 bar) | 446a/19 |
| 11400060 | 140 litre cylinder (200 bar) | |
| 10800300 | 80 litre cylinder (300 bar) | |
| 11400300 | 140 litre cylinder (300 bar) | |

- a) This range of equipment is suitable for storage and environmental conditions from -20° to +50° and is approved for use with IG541, IG55, IG100 and IG01.
 b) This range of equipment is approved for use with LPG Design Manual reference: MD/55/01/IN.
 c) Inert(200 bar) & Inert (300 bar) Nominal system pressure is specified as 200 bar and 300 bar at 15°C.

Certificate No: 446a

LPG Check Valves for Inert (200 bar) and Inert (300 bar)

| Product Name | Description | LPCB Ref. No. |
|--------------|----------------|---------------|
| 20006050 | ¾" check valve | 446a/20 |

- a) This range of equipment is suitable for storage and environmental conditions from -20° to +50° and is approved for use with IG541, IG55, IG100 and IG01.
 b) This range of equipment is approved for use with LPG Design Manual reference: MD/55/01/IN.
 c) Inert(200 bar) & Inert (300 bar) Nominal system pressure is specified as 200 bar and 300 bar at 15°C.

Certificate No: 446a

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GASEOUS SYSTEM COMPONENTS

LPG Inerts Pressure Gauges for Inert (200bar) and Inert (300bar)

| Product Name | Description | LPCB Ref. No. |
|---------------------|----------------------------------|----------------------|
| 30245003 | 0-400 gauge + switch set 270 bar | 446a/22 |
| 30116035 | 0-315 gauge + switch set 180 bar | |
| 30116043 | 0-450 bar pressure gauge | |
| 3021316B | 0-315 bar pressure gauge | |

a) This range of equipment is suitable for storage and environmental conditions from -20° to +50° and is approved for use with IG541, IG55, IG100 and IG01.

b) This range of equipment is approved for use with LPG Design Manual reference: MD/55/01/IN.

c) Inert(200 bar) & Inert (300 bar) Nominal system pressure is specified as 200 bar and 300 bar at 15°C.

Certificate No: 446a

LPG Nozzles for Inert (200 bar),(300 bar), HFC23, HFC125 and HFC227ea

| Product Name | Description | LPCB Ref. No. |
|---------------------|--------------------|----------------------|
| 30400000 | 3/8" 360° nozzle | 446a/21 |
| 30400001 | 1/2" 360° nozzle | |
| 30400002 | 3/4" 360° nozzle | |
| 30400003 | 1" 360° nozzle | |
| 30400004 | 1 1/4" 360° nozzle | |
| 30400005 | 1 1/2" 360° nozzle | |
| 30400006 | 2" 360° nozzle | |
| 30400007 | 3/8" 180° nozzle | |
| 30400008 | 1/2" 180° nozzle | |
| 30400009 | 3/4" 180° nozzle | |
| 30400010 | 1" 180° nozzle | |
| 30400011 | 1 1/4" 180° nozzle | |
| 30400012 | 1 1/2" 180° nozzle | |
| 30400013 | 2" 180° nozzle | |

a) This range of equipment is suitable for storage from -20° to 50°C

b) Systems are specified as follows:

HFC23: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.85 kg/l.

HFC125: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.93 kg/l.

HFC227ea: System pressure is specified as 41 bar @ 20°C, maximum filling density 1.15 kg/l.

c) Systems with HFC23 are not superpressurised.

d) Components listed are appropriate for the gas as indicated.

Certificate No: 446a

LPG HFCS Discharge Valves, including syphon tube for HFC23

| Product Name | Description | LPCB Ref. No. |
|---------------------|--------------------|----------------------|
| 2131910B | LPG190-13 | 446a/03 |
| 2131450B | LPG145-13 | |
| 2131280B | LPG128-13 | |

a) This range of equipment is suitable for storage from -20° to 50°C

b) Systems are specified as follows:

HFC23: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.85 kg/l.

HFC125: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.93 kg/l.

HFC227ea: System pressure is specified as 41 bar @ 20°C, maximum filling density 1.15 kg/l.

c) Systems with HFC23 are not superpressurised.

d) Components listed are appropriate for the gas as indicated.

Certificate No: 446a

LPG HFCS Discharge Valves, including syphon tube for HFC125 and HFC227ea

| Product Name | Description | LPCB Ref. No. |
|---------------------|--------------------|----------------------|
| 2001910B | LPG190-00 | 446a/04 |
| 2001450B | LPG145-00 | |
| 2001280B | LPG128-00 | |

- a) This range of equipment is suitable for storage from - 20° to 50°C
 b) Systems are specified as follows:
 HFC23: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.85 kg/l.
 HFC125: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.93 kg/l.
 HFC227ea: System pressure is specified as 41 bar @ 20°C, maximum filling density 1.15 kg/l.
 c) Systems with HFC23 are not superpressurised.
 d) Components listed are appropriate for the gas as indicated.

Certificate No: 446a

LPG HFCs Discharge Containers for HFC23, HFC125 and HFC227ea

| Product Name | Description | LPCB Ref. No. |
|--------------|-------------------|---------------|
| 10120100 | 120 l. container | 446a/05 |
| 10950100 | 100 l. container | |
| 10750100 | 75 l. container | |
| 10670080 | 67 l. container | |
| 10400080 | 40.2 l. container | |
| 10260060 | 26.8 l. container | |
| 10130060 | 13.4 l. container | |
| 10050060 | 5.0 l. container | |

- a) This range of equipment is suitable for storage from - 20° to 50°C
 b) Systems are specified as follows:
 HFC23: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.85 kg/l.
 HFC125: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.93 kg/l.
 HFC227ea: System pressure is specified as 41 bar @ 20°C, maximum filling density 1.15 kg/l.
 c) Systems with HFC23 are not superpressurised.
 d) Components listed are appropriate for the gas as indicated.

Certificate No: 446a

LPG HFC227ea Container Valve Assemblies

| Product Name | Description | LPCB Ref. No. |
|--------------|---|---------------|
| 70102070 | 5L Container Valve Assembly, LPG128-00 (1) | 446a/23 |
| 70102076 | 13.4L Container Valve Assembly, LPG128-00 (1) | |
| 70102079 | 13.4L Container Valve Assembly, LPG128-00 (2) | |
| 70102057 | 26.8L Container Valve Assembly, LPG128-00 (1) | |
| 70102060 | 26.8L Container Valve Assembly, LPG128-00 (2) | |
| 70102063 | 40.2L Container Valve Assembly, LPG145-00 (1) | |
| 70102066 | 40.2L Container Valve Assembly, LPG145-00 (2) | |
| 71102019 | 67L Container Valve Assembly, LPG145-00 (1) | |
| 71102022 | 67L Container Valve Assembly, LPG145-00 (3) | |
| 71102024 | 67L Container Valve Assembly, LPG145-00 (2) | |
| 72102019 | 75L Container Valve Assembly, LPG190-00 (1) | |
| 72102023 | 75L Container Valve Assembly, LPG190-00 (3) | |
| 72102017 | 75L Container Valve Assembly, LPG190-00 (2) | |
| 74102016 | 100L Container Valve Assembly, LPG190-00 (1) | |
| 74102019 | 100L Container Valve Assembly, LPG190-00 (3) | |
| 74102020 | 100L Container Valve Assembly, LPG190-00 (2) | |
| 75102018 | 120L Container Valve Assembly, LPG190-00 (1) | |
| 75102021 | 120L Container Valve Assembly, LPG190-00 (3) | |
| 75102023 | 120L Container Valve Assembly, LPG190-00 (2) | |

Notes:

- (1) Master with solenoid actuator
 (2) Slave with blind cap w/out solenoid actuator
 (3) Master with 1/8 " solenoid actuator
 All above assemblies include pressure gauge + switch

- a) This range of equipment is suitable for storage from - 20° to 50°C
 b) Systems are specified as follows:
 HFC23: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.85 kg/l.
 HFC125: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.93 kg/l.
 HFC227ea: System pressure is specified as 41 bar @ 20°C, maximum filling density 1.15 kg/l.
 c) Systems with HFC23 are not superpressurised.
 d) Components listed are appropriate for the gas as indicated.

PART 4: SECTION 2.1

GASEOUS SYSTEM COMPONENTS

Certificate No: 446a

LPG HFCS Discharge Hoses for HFC23, HFC125 and HFC227ea

| Product Name | Description | LPCB Ref. No. |
|---------------------|--------------------------------|----------------------|
| 30508HFC | Rigid telescopic hose 1.5" (1) | 446a/06 |
| 30508080 | Rigid hose 1½" HG/MF (1) | |
| 30508000 | Rigid hose 1½" HG/HG (1) | |
| 30506HFC | Rigid telescopic hose 1" (1) | |
| 30502140 | R2F hose 400 G 1" HG/HF (1) | |
| 30506000 | R2F hose 320 G 1" HG/HG (1) | |
| 30506070 | R2F hose 400 G ¾" HG/HF (1) | |

(1) Maximum Working Pressure 160 bar

- a) This range of equipment is suitable for storage from - 20° to 50°C
- b) Systems are specified as follows:
 - HFC23: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.85 kg/l.
 - HFC125: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.93 kg/l.
 - HFC227ea: System pressure is specified as 41 bar @ 20°C, maximum filling density 1.15 kg/l.
- c) Systems with HFC23 are not superpressurised.
- d) Components listed are appropriate for the gas as indicated.

Certificate No: 446a

LPG HFCS Manifolds for HFC23, HFC125 and HFC227ea

| Product Name | Description | LPCB Ref. No. |
|---------------------|---------------------|----------------------|
| 3811VCCD | Single Row manifold | 446a/12 |

According to the following:

V denotes container size: '1' means 67L, '2' means 75L and '4' means 100L/120L

CC denotes number of ports

D denotes manifold diameter where '3' means 1 ¼", '4' means 1 ½", '5' means 2", '6' means 2 ½", '7' means 3" and '8' means 4"

- a) This range of equipment is suitable for storage from - 20° to 50°C
- b) Systems are specified as follows:
 - HFC23: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.85 kg/l.
 - HFC125: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.93 kg/l.
 - HFC227ea: System pressure is specified as 41 bar @ 20°C, maximum filling density 1.15 kg/l.
- c) Systems with HFC23 are not superpressurised.
- d) Components listed are appropriate for the gas as indicated.

Certificate No: 446a

LPG Discharge Pressure Switch for Inert 200 bar, Inert 300 bar, HFC23, HFC125 and HFC227ea

| Product Name | Description | LPCB Ref. No. |
|---------------------|---------------------------|----------------------|
| 30330010 | Discharge pressure switch | 446a/14 |

- a) This range of equipment is suitable for storage from - 20° to 50°C
- b) Systems are specified as follows:
 - HFC23: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.85 kg/l.
 - HFC125: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.93 kg/l.
 - HFC227ea: System pressure is specified as 41 bar @ 20°C, maximum filling density 1.15 kg/l.
- c) Systems with HFC23 are not superpressurised.
- d) Components listed are appropriate for the gas as indicated.

Certificate No: 446a

LPG HFCs Pressure Gauges for HFC23

| Product Name | Description | LPCB Ref. No. |
|--------------|---|---------------|
| 30216010 | 0-160 pressure gauge short socket | 446a/15 |
| 30116052 | 0-160 pressure gauge + switch, short socket, set 90 bar | |
| 30116053 | 0-160 pressure gauge + switch, long socket, set 90 bar | |
| 3021160B | 0-160 pressure gauge, long socket | |

- a) This range of equipment is suitable for storage from - 20° to 50°C
- b) Systems are specified as follows:
 - HFC23: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.85 kg/l.
 - HFC125: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.93 kg/l.
 - HFC227ea: System pressure is specified as 41 bar @ 20°C, maximum filling density 1.15 kg/l.
- c) Systems with HFC23 are not superpressurised.
- d) Components listed are appropriate for the gas as indicated.

Certificate No: 446a

LPG Pressure Gauge for Inert (100 bar)

| Product Name | Description | LPCB Ref. No. |
|--------------|-------------------------------|---------------|
| 30116054 | 0-160 pressure gauge + switch | 446a/27 |

Certificate No: 446a

LPG HFCs Pressure Gauges for HFC125 and HFC227ea

| Product Name | Description | LPCB Ref. No. |
|--------------|---|---------------|
| 30210100 | 0-100 pressure gauge short socket | 446a/16 |
| 3021100B | 0-100 pressure gauge long socket | |
| 30116040 | 0-100 pressure gauge + switch, short socket | |
| 30116037 | 0-100 pressure gauge + switch, long socket | |

- a) This range of equipment is suitable for storage from - 20° to 50°C
- b) Systems are specified as follows:
 - HFC23: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.85 kg/l.
 - HFC125: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.93 kg/l.
 - HFC227ea: System pressure is specified as 41 bar @ 20°C, maximum filling density 1.15 kg/l.
- c) Systems with HFC23 are not superpressurised.
- d) Components listed are appropriate for the gas as indicated.

Certificate No: 446a

LPG Check Valves for HFC23, HFC125 and HFC227ea

| Product Name | Description | LPCB Ref. No. |
|--------------|---|---------------|
| 20006060 | Ball check valve 1.0" (brass) (1) | 446a/07 |
| 20006067 | Ball check valve 1" (steel) (1) | |
| 20006HFC | Ball telescopic check valve 1.0" (brass) (1) | |
| 20007HFC | Ball telescopic check valve 1" (steel) (1) | |
| 20008000 | Piston check valve 2" (1) | |
| 2008HFC | Piston telescopic check valve 2" (1) | |
| 21006302 | Piston check valve 2" (U. L. version) (1) | |
| 21006303 | Piston telescopic check valve 2" (U.L. version) (1) | |

(1) these check valves are rated for a maximum working pressure of 160bar

- a) This range of equipment is suitable for storage from - 20° to 50°C
- b) Systems are specified as follows:
 - HFC23: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.85 kg/l.
 - HFC125: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.93 kg/l.
 - HFC227ea: System pressure is specified as 41 bar @ 20°C, maximum filling density 1.15 kg/l.
- c) Systems with HFC23 are not superpressurised.
- d) Components listed are appropriate for the gas as indicated.

PART 4: SECTION 2.1

GASEOUS SYSTEM COMPONENTS

Certificate No: 446a

LPG HFCS Brackets for HFC23, HFC125 and HFC227ea

| Product Name | Description | LPCB Ref. No. |
|---------------------|-----------------------------------|----------------------|
| 30620310 | Modular 3L | 446a/11 |
| 30621310 | Modular 5/7/13L | |
| 30625010 | Modular 26/40L | |
| 30626711 | Modular 67/75L | |
| 30621010 | Modular 100/120L | |
| 306XX6SS(1) | Single row 67L | |
| 306XX7SN(1) | Single row 75L | |
| 306021002 | Kit 2 bottles 100/120L single row | |
| 306031002 | Kit 3 bottles 100/120L single row | |

¹ XX denotes the number of containers.

² The number and combination of kits depends on the number of containers in the battery.

- a) This range of equipment is suitable for storage from - 20° to 50°C
- b) Systems are specified as follows:
 - HFC23: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.85 kg/l.
 - HFC125: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.93 kg/l.
 - HFC227ea: System pressure is specified as 41 bar @ 20°C, maximum filling density 1.15 kg/l.
- c) Systems with HFC23 are not superpressurised.
- d) Components listed are appropriate for the gas as indicated.

Certificate No: 446a

LPG Pneumatic Line Actuation for Inert 200 bar, Inert 300 bar, HFC23, HFC125 and HFC 227ea

| Product Name | Description | LPCB Ref. No. |
|---------------------|--|----------------------|
| 3023024B | Solenoid actuator 13W/24V | 446a/09 |
| 30130197 | Solenoid actuator 1/8" output | |
| 30180APB | Manual actuator | |
| 3018NAPB | Dual manual actuator | |
| 30118APB | 3 ways cone high pressure with blind plug (used with inert) | 446a/10 |
| 30116APBH | 3 ways cone high pressure with blind plug (used with HFCs) | |
| 302.200.075 | 1/4" relief valve | |
| 3080008C | Pressure relief screw (short) | |
| 3080008L | Pressure relief screw (long) | |
| 30522001 | PTFE hose 1/4" x 700mm (1) | |
| 30506014 | PTFE hose 1/4" x 580mm (1) | |
| 29012804 | 128-90 pilot container valve with pressure gauge + switch | |
| 29012804.SOL | 128-90 pilot container valve with pressure gauge and std solenoid | |
| 2901280B | 128-90 pilot container valve with pressure gauge | |
| 2901280B.SOL | 128-90 pilot container valve with pressure gauge and std solenoid | |
| 21114045 | 128-97 pilot container valve with pressure gauge + switch | |
| 21114045.SOL | 128-97 pilot container valve with pressure gauge + switch and std solenoid | |
| 21114008 | 128-97 pilot container valve with pressure gauge | |
| 21114008.SOL | 128-97 pilot container valve with pressure gauge and std solenoid | |

Notes:

- (1) Maximum working pressure = 140 bar

Certificate No: 446a

LPG Pilot Valve Assemblies (100 bar Nitrogen)

| Product Name | Description | LPCB Ref. No. |
|---------------------|---|----------------------|
| 10030000 | 3L Pilot Valve Assembly, LPG128-90, W28.8 DIN477 | 446a/26 |
| 10030NPT | 3L Pilot Valve Assembly, LPG128-97, 1 NGT | |
| 70100075 | 3L Pilot Valve Assembly, LPG128-90, W28.8 DIN477 | |
| 70100075H | 3L Pilot Valve Assembly, LPG128-90, W28.8, DIN477 | |
| 70100075F | 3L Pilot Valve Assembly, LPG128-90, W28.8, DIN477 | |
| 70100075T | 3L Pilot Valve Assembly, LPG128-90, W28.8 DIN477 | |
| 70100075TCH | 3L Pilot Valve Assembly, LPG128-90, W28.8, DIN477 | |
| 441403 | 3L Pilot Valve Assembly, LPG128-97, 1 NGT | |
| 70100082 | 13L Pilot Valve Assembly, LPG128-90 | |

PART 4: SECTION 2.1
GASEOUS SYSTEM COMPONENTS

| Product Name | Description | LPCB Ref. No. |
|--------------|--|---------------|
| 70100082H | 13L Pilot Valve Assembly, LPG128-90 | |
| 70100082F | 13L Pilot Valve Assembly, LPG128-90 | |
| 70100082T | 13L Pilot Valve Assembly, LPG128-90 | |
| 70100082TCH | 13L Pilot Valve Assembly, LPG128-90 | |
| 70121011 | 50L Pilot Valve Assembly, LPG128-90 | |
| 70121011H | 50L Pilot Valve Assembly, LPG128-90 | |
| 70121011T | 50L Pilot Valve Assembly, LPG128-90 | |
| 70121011TCH | 50L Pilot Valve Assembly, LPG128-90 | |
| 70121011F | 50L Pilot Valve Assembly, LPG128-90 | |
| 70121012 | 50L Pilot Valve Assembly, LPG128-90 | |
| 70100083 | 13L PESO Pilot Valve Assembly, LPG128-90 | |

Certificate No: 446c

LPG Sapphire (Novec 1230) Fixed Fire Fighting Components

- This range of equipment is suitable for storage temperatures -20°C to 50°C and is approved for use with Sapphire™ (Novec 1230)
- This range of equipment is approved for use in conjunction with the LPG Design Manual Reference : 14A-06L issue 5
- System pressure is specified @ 25bar @ 20°C
- Containers are designed to be mounted vertically
- All container assemblies with the exception of modular assemblies include container valve, container, siphon tube and pressure gauge.
- Modular assemblies include container valve, container, siphon tube, nozzle, bracket, pressure gauge and supervisory switch.

Certificate No: 446c

LPG Sapphire (Novec 1230) Container Valve Assemblies

| Product Name | Description | LPCB Ref. No. |
|--------------|--|---------------|
| 303.207.010 | 4.5 litre container assembly (DOT) (Welded) | 446c/02 |
| 303.207.001 | 8 litre container assembly (DOT) (Welded) | |
| 303.207.002 | 16 litre container assembly (DOT) (Welded) | |
| 303.207.003 | 32 litre container assembly (DOT) (Welded) | |
| 303.207.004 | 52 litre container assembly (DOT) (Welded) | |
| 303.207.005 | 106 litre container assembly (DOT) (Welded) | |
| 303.207.006 | 147 litre container assembly (DOT) (Welded) | |
| 303.207.007 | 180 litre container assembly (DOT) (Welded) | |
| 303.207.015 | 8 litre container assembly (TPED) (Welded) | |
| 303.207.016 | 16 litre container assembly (TPED) (Welded) | |
| 303.207.017 | 32 litre container assembly (TPED) (Welded) | |
| 303.207.012 | 52 litre container assembly (TPED) (Welded) | |
| 303.207.013 | 106 litre container assembly (TPED) (Welded) | |
| 303.207.014 | 147 litre container assembly (TPED) (Welded) | |
| 303.207.018 | 180 litre container assembly (TPED) (Welded) | |

Certificate No: 446c

LPG Sapphire (Novec 1230) Discharge Nozzles

| Product Name | Description | LPCB Ref. No. |
|-----------------|--|---------------|
| 310.207.101/102 | Aluminium nozzle - 15 mm 180°/360° (BSP) | 446c/04 |
| 310.207.103/104 | Aluminium nozzle - 20mm 180°/360° (BSP) | |
| 310.207.105/106 | Aluminium nozzle - 25mm 180°/360° (BSP) | |
| 310.207.107/108 | Aluminium nozzle - 32mm 180°/360° (BSP) | |
| 310.207.109/110 | Aluminium nozzle - 40mm 180°/360° (BSP) | |
| 310.207.111/112 | Aluminium nozzle - 50mm 180°/360° (BSP) | |
| 310.207.113/114 | Aluminium nozzle - 15mm 180°/360° (NPT) | |
| 310.207.115/116 | Aluminium nozzle - 20mm 180°/360° (NPT) | |
| 310.207.117/118 | Aluminium nozzle - 25mm 180°/360° (NPT) | |
| 310.207.119/120 | Aluminium nozzle - 32mm 180°/360° (NPT) | |
| 310.207.121/122 | Aluminium nozzle - 40mm 180°/360° (NPT) | |
| 310.207.123/124 | Aluminium nozzle - 50mm 180°/360° (NPT) | |
| 310.207.201/202 | Brass nozzle - 15 mm 180°/360° (BSP) | |
| 310.207.203/204 | Brass nozzle - 20mm 180°/360° (BSP) | |
| 310.207.205/206 | Brass nozzle - 25mm 180°/360° (BSP) | |
| 310.207.207/208 | Brass nozzle - 32mm 180°/360° (BSP) | |
| 310.207.209/210 | Brass nozzle - 40mm 180°/360° (BSP) | |

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GASEOUS SYSTEM COMPONENTS

| Product Name | Description | LPCB Ref. No. |
|---------------------|--------------------------------------|----------------------|
| 310.207.211/212 | Brass nozzle - 50mm 180°/360° (BSP) | |
| 310.207.213/214 | Brass nozzle - 15 mm 180°/360° (NPT) | |
| 310.207.215/216 | Brass nozzle - 20mm 180°/360° (NPT) | |
| 310.207.217/218 | Brass nozzle - 25mm 180°/360° (NPT) | |
| 310.207.219/220 | Brass nozzle - 32mm 180°/360° (NPT) | |
| 301.207.221/222 | Brass nozzle - 40mm 180°/360° (NPT) | |
| 310.207.223/224 | Brass nozzle - 50mm 180°/360° (NPT) | |

Certificate No: 446c

LPG Sapphire Container Labels

| Product Name | Description | LPCB Ref. No. |
|---------------------|--|----------------------|
| 314.207.064 | Sapphire™ (Novac 1230) Container Label, 32, 106, 147 & 180 litre | 446c/17 |
| 314.207.065 | Sapphire™ (Novac 1230) Container Label, 4.5, 8, 16 & 52 litre | |

Certificate No: 446c

LPG Sapphire Actuators

| Product Name | Description | LPCB Ref. No. |
|---------------------|---|----------------------|
| 304.001.001 | Electrical actuator - DIN plug and lead (suppression diode) | 446c/05 |
| 304.001.002 | Electrical actuator - DIN plug and lead (bridge rectifier) | |
| 304.205.001 | Electrical actuator - standard (suppression diode) | |
| 304.209.001 | Electrical actuator - standard (bridge rectifier) | |
| 304.205.002 | ATEX Electrical actuator (flameproof) | |
| 304.209.002 | Local manual actuator | |
| 304.209.004 | Pneumatic actuator | |
| 304.209.003 | Remote manual actuator | |

Certificate No: 446c

LPG Sapphire Pressure Gauges & Switches

| Product Name | Description | LPCB Ref. No. |
|---------------------|---|----------------------|
| 304.205.006 | Supervisory pressure switch - standard (open on fall) | 446c/06 |
| 305.209.005 | Supervisory pressure switch - special (close on fall) | |
| 305.209.002 | Supervisory pressure switch - 15 bar modular | |
| 305.205.004 | Supervisory pressure switch - ATEX | |
| 305.205.005 | Discharge pressure switch - standard | 446c/07 |
| 305.205.003 | Discharge pressure switch- ATEX | |
| 302.207.012 | Pressure Gauge (50mm) Sapphire™ (Novac 1230) 0-40 bar | 446c/08 |
| 302.207.010 | Pressure Gauge (50mm) Sapphire™ (Novac 1230) 0-60 bar | |
| 302.209.012 | Pilot Pressure Gauge (50mm) 0-100 bar | |

Certificate No: 446c

LPG Sapphire Discharge and Pilot Hoses

| Product Name | Description | LPCB Ref. No. |
|---------------------|----------------------|----------------------|
| 306.205.003 | Flexible pilot hose | 446c/09 |
| 306.207.001 | 25 mm discharge hose | |
| 306.207.002 | 50 mm discharge hose | |

Certificate No: 446c

LPG Sapphire Check and Non-Return Valves

| Product Name | Description | LPCB Ref. No. |
|---------------------|----------------------------|----------------------|
| 302.209.004 | 25 mm manifold check valve | 446c/10 |
| 302.209.005 | 50 mm manifold check valve | |
| 302.209.009 | Non return valve | |

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| Product Name | Description | LPCB Ref. No. |
|--------------|------------------------------------|---------------|
| 302.209.011 | Non return valve Male Adaptor | 446c/11 |
| 302.209.010 | Non return valve Standpipe adaptor | |

Certificate No: 446c

LPG Sapphire Manifolds and Accessories

| Product Name | Description | LPCB Ref. No. |
|-----------------|--|---------------|
| 307.209.022-024 | 65mm manifold BSPT - 2 to 4 Port | 446c/12 |
| 307.209.001-003 | 65 mm manifold NPT - 2 to 4 Port | |
| 307.209.025-29 | 80 mm manifold BSPT - 2 to 6 Port | |
| 307.209.004-008 | 80 mm manifold NPT - 2 to 6 Port | |
| 307.209.030-034 | 100 mm manifold BSPT - 2 to 6 Port | |
| 307.209.009-013 | 100 mm manifold NPT - 2 to 6 Port | |
| 307.209.014-021 | 150 mm manifold Flanged - 3 to 10 Port | |
| 302.200.016 | Vent valve | |
| 13281 | Manifold burst disc assembly | |

- 65 mm manifolds for use on 4.5/8/16/32 litre containers only
- 80/100/150 mm manifolds for use with 52/106/147/180 litre containers
- 150 mm manifolds require a DN150 300 lb carbon steel A105 mating flange to connect to the pipework
- Manifolds are supplied without check valve and end caps

Certificate No: 446c

LPG Sapphire Brackets

| Product Name | Description | LPCB Ref. No. |
|--------------|---|---------------|
| 311.205.020 | 4.5 litre container bracket (strap style) | 446c/13 |
| 311.205.013 | 8/16/32 litre container bracket (strap style) | |
| 311.205.014 | 52/106/147/180 litre container bracket (strap style) | |
| 311.205.021 | 40 litre container bracket (strap style) | |
| 311.205.017 | 67.5 litre container bracket (strap style) | |
| 311.205.018 | 80 litre container bracket (strap style) | |
| 311.209.002 | 8/16/32 litre container brackets (hoop style) | |
| 311.209.003 | 52/106/147/180 litre container bracket (hoop style) | |
| 304.209.011 | ATEX electrical actuator - 25 mm valve support brackets | 446c/14 |
| 304.209.012 | ATEX electrical actuator - 50 mm valve support brackets | |
| 311.205.015 | 65mm manifold bracket assembly | 446c/15 |
| 311.205.010 | 80mm manifold bracket assembly | |
| 311.205.011 | 100mm manifold bracket assembly | |
| 311.205.012 | 150mm manifold bracket assembly | |

Certificate No: 446c

LPG Sapphire Pilot Actuation and Accessories

| Product Name | Description | LPCB Ref. No. |
|--------------|--------------------|---------------|
| 302.200.076 | ¼" NPT Bleed valve | 446c/16 |
| 304.209.007 | Pilot cylinder | |

PART 4: SECTION 2.1

GASEOUS SYSTEM COMPONENTS

Macron Safety Systems (UK) Ltd

Burlingham House, Hewett Road, Gapton Hall Industrial Estate, Great Yarmouth, Norfolk NR31 0NN, United Kingdom

Tel: +44 (0)1493 417600 • Fax: +44 (0)1493 417700

E-mail: info@tycoint.com • Website: www.macron-safety.com

Certificate No: 587a

FM-200® 25bar CONTAINER ASSEMBLIES - DOT (WELDED)

| Product Name | Description | LPCB Ref. No. |
|--------------|--|---------------|
| 303.205.026 | 4.5 litre container assembly (DOT) (Welded) | 587a/01 |
| 303.205.015 | 8 litre container assembly (DOT) (Welded) | |
| 303.205.016 | 16 litre container assembly (DOT) (Welded) | |
| 303.205.017 | 32 litre container assembly (DOT) (Welded) | |
| 303.205.018 | 52 litre container assembly (DOT) (Welded) | |
| 303.205.019 | 106 litre container assembly (DOT) (Welded) | |
| 303.205.020 | 147 litre container assembly (DOT) (Welded) | |
| 303.205.021 | 180 litre container assembly (DOT) (Welded) | |
| 303.205.068 | 4.5 litre container assembly (DOT) (Welded) (ATEX) | |
| 303.205.069 | 8 litre container assembly (DOT) (Welded) (ATEX) | |
| 303.205.070 | 16 litre container assembly (DOT) (Welded) (ATEX) | |
| 303.205.071 | 32 litre container assembly (DOT) (Welded) (ATEX) | |
| 303.205.072 | 52 litre container assembly (DOT) (Welded) (ATEX) | |
| 303.205.073 | 106 litre container assembly (DOT) (Welded) (ATEX) | |
| 303.205.074 | 147 litre container assembly (DOT) (Welded) (ATEX) | |
| 303.205.075 | 180 litre container assembly (DOT) (Welded) (ATEX) | |

FM-200® Fixed Fire Fighting Components

1. The above products are supplied under the brand names TSP, Hygood, Fireater, Thorn
2. This range of equipment is suitable for storage temperatures 0 C to 50 C and is approved for use with FM-200®
- 3a. This range of equipment is approved for use in conjunction with TSP Design Manual Reference : 14A-03T issue 8
- 3b. This range of equipment is approved for use in conjunction with Hygood Design Manual Reference : 14A-03H issue 8
- 3c. This range of equipment is approved for use in conjunction with Fireater Design Manual Reference : 14A-03F issue 8
- 3d. This range of equipment is approved for use in conjunction with Thorn Design Manual Reference : 14A-03 issue 8
4. System pressure is specified @ 25bar @ 20 C
5. Containers are designed to be mounted vertically.

Certificate No: 587a

FM-200® 25bar CONTAINER ASSEMBLIES - TPED (WELDED)

| Product Name | Description | LPCB Ref. No. |
|--------------|--|---------------|
| 303.205.002 | 8 litre container assembly (TPED) | 587a/01 |
| 303.205.003 | 16 litre container assembly (TPED) | |
| 303.205.004 | 32 litre container assembly (TPED) | |
| 303.205.012 | 52 litre container assembly (TPED) | |
| 303.205.013 | 106 litre container assembly (TPED) | |
| 303.205.014 | 147 litre container assembly (TPED) | |
| 303.205.005 | 180 litre container assembly (TPED) | |
| 303.205.076 | 8 litre container assembly (TPED) (ATEX) | |
| 303.205.077 | 16 litre container assembly (TPED) (ATEX) | |
| 303.205.078 | 32 litre container assembly (TPED) (ATEX) | |
| 303.205.079 | 52 litre container assembly (TPED) (ATEX) | |
| 303.205.080 | 106 litre container assembly (TPED) (ATEX) | |
| 303.205.081 | 147 litre container assembly (TPED) (ATEX) | |
| 303.205.082 | 180 litre container assembly (TPED) (ATEX) | |

FM-200® Fixed Fire Fighting Components

1. The above products are supplied under the brand names TSP, Hygood, Fireater, Thorn
2. This range of equipment is suitable for storage temperatures 0 C to 50 C and is approved for use with FM-200®
- 3a. This range of equipment is approved for use in conjunction with TSP Design Manual Reference : 14A-03T issue 8
- 3b. This range of equipment is approved for use in conjunction with Hygood Design Manual Reference : 14A-03H issue 8

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- 3c. This range of equipment is approved for use in conjunction with Fireater Design Manual Reference : 14A-03F issue 8
- 3d. This range of equipment is approved for use in conjunction with Thorn Design Manual Reference : 14A-03 issue 8
4. System pressure is specified @ 25bar @ 20 C
5. Containers are designed to be mounted vertically.

Certificate No: 587a

SAPPHIRE™ (NOVEC 1230) 25bar CONTAINER ASSEMBLIES - DOT (WELDED)

| Product Name | Description | LPCB Ref. No. |
|--------------|--|---------------|
| 303.207.010 | 4.5 litre container assembly (DOT) (Welded) | 587a/02 |
| 303.207.001 | 8 litre container assembly (DOT) (Welded) | |
| 303.207.002 | 16 litre container assembly (DOT) (Welded) | |
| 303.207.003 | 32 litre container assembly (DOT) (Welded) | |
| 303.207.004 | 52 litre container assembly (DOT) (Welded) | |
| 303.207.005 | 106 litre container assembly (DOT) (Welded) | |
| 303.207.006 | 147 litre container assembly (DOT) (Welded) | |
| 303.207.007 | 180 litre container assembly (DOT) (Welded) | |
| 303.207.051 | 4.5 litre container assembly (DOT) (Welded) (ATEX) | |
| 303.207.052 | 8 litre container assembly (DOT) (Welded) (ATEX) | |
| 303.207.053 | 16 litre container assembly (DOT) (Welded) (ATEX) | |
| 303.207.054 | 32 litre container assembly (DOT) (Welded) (ATEX) | |
| 303.207.055 | 52 litre container assembly (DOT) (Welded) (ATEX) | |
| 303.207.056 | 106 litre container assembly (DOT) (Welded) (ATEX) | |
| 303.207.057 | 147 litre container assembly (DOT) (Welded) (ATEX) | |
| 303.207.058 | 180 litre container assembly (DOT) (Welded) (ATEX) | |

Sapphire™ (NOVEC 1230) Fixed Fire Fighting Components

1. The above products are supplied under the brand names TSP, Hygood, Fireater, Thorn
2. This range of equipment is suitable for storage temperatures -20 C to 50 C and is approved for use with Sapphire™ (Novec 1230)
- 3a. This range of equipment is approved for use in conjunction with the TSP Design Manual Reference : 14A-06T issue 8
- 3b. This range of equipment is approved for use in conjunction with the Hygood Design Manual Reference : 14A-06H issue 8
- 3c. This range of equipment is approved for use in conjunction with the Fireater Design Manual Reference : 14A-06F issue 8
- 3d. This range of equipment is approved for use in conjunction with the Thorn Design Manual Reference : 14A-06 issue 8
- 3e. This range of equipment is approved for use in conjunction with the LPG Design Manual Reference : 14A-06L issue 8
4. System pressure is specified @ 25bar @ 20 C or 41bar @ 20 C
5. Containers are designed to be mounted vertically.

Certificate No: 587a

SAPPHIRE™ (NOVEC 1230) 25bar CONTAINER ASSEMBLIES - TPED (WELDED)

| Product Name | Description | LPCB Ref. No. |
|--------------|--|---------------|
| 303.207.015 | 8 litre container assembly (TPED) | 587a/02 |
| 303.207.016 | 16 litre container assembly (TPED) | |
| 303.207.017 | 32 litre container assembly (TPED) | |
| 303.207.012 | 52 litre container assembly (TPED) | |
| 303.207.013 | 106 litre container assembly (TPED) | |
| 303.207.014 | 147 litre container assembly (TPED) | |
| 303.207.018 | 180 litre container assembly (TPED) | |
| 303.207.059 | 8 litre container assembly (TPED) (ATEX) | |
| 303.207.060 | 16 litre container assembly (TPED) (ATEX) | |
| 303.207.061 | 32 litre container assembly (TPED) (ATEX) | |
| 303.207.062 | 52 litre container assembly (TPED) (ATEX) | |
| 303.207.063 | 106 litre container assembly (TPED) (ATEX) | |
| 303.207.064 | 147 litre container assembly (TPED) (ATEX) | |
| 303.207.065 | 180 litre container assembly (TPED) (ATEX) | |

Sapphire™ (NOVEC 1230) Fixed Fire Fighting Components

1. The above products are supplied under the brand names TSP, Hygood, Fireater, Thorn
2. This range of equipment is suitable for storage temperatures -20 C to 50 C and is approved for use with Sapphire™ (Novec 1230)
- 3a. This range of equipment is approved for use in conjunction with the TSP Design Manual Reference : 14A-06T issue 8
- 3b. This range of equipment is approved for use in conjunction with the Hygood Design Manual Reference : 14A-06H issue 8
- 3c. This range of equipment is approved for use in conjunction with the Fireater Design Manual Reference : 14A-06F issue 8
- 3d. This range of equipment is approved for use in conjunction with the Thorn Design Manual Reference : 14A-06 issue 8
- 3e. This range of equipment is approved for use in conjunction with the LPG Design Manual Reference : 14A-06L issue 8
4. System pressure is specified @ 25bar @ 20 C or 41bar @ 20 C

PART 4: SECTION 2.1

GASEOUS SYSTEM COMPONENTS

5. Containers are designed to be mounted vertically.

Certificate No: 587a

SAPPHIRE™ (NOVEC 1230) 41 bar CONTAINER ASSEMBLIES - TPED (WELDED)

| Product Name | Description | LPCB Ref. No. |
|--------------|-------------------------------------|---------------|
| 303.207.030 | 8 litre container assembly (TPED) | 587a/20 |
| 303.207.031 | 16 litre container assembly (TPED) | |
| 303.207.032 | 32 litre container assembly (TPED) | |
| 303.207.033 | 52 litre container assembly (TPED) | |
| 303.207.034 | 106 litre container assembly (TPED) | |
| 303.207.035 | 147 litre container assembly (TPED) | |
| 303.207.036 | 180 litre container assembly (TPED) | |

Sapphire™ (NOVEC 1230) Fixed Fire Fighting Components

1. The above products are supplied under the brand names TSP, Hygood, Fireater, Thorn
2. This range of equipment is suitable for storage temperatures -20 C to 50 C and is approved for use with Sapphire™ (Novec 1230)
- 3a. This range of equipment is approved for use in conjunction with the TSP Design Manual Reference : 14A-06T issue 8
- 3b. This range of equipment is approved for use in conjunction with the Hygood Design Manual Reference : 14A-06H issue 8
- 3c. This range of equipment is approved for use in conjunction with the Fireater Design Manual Reference : 14A-06F issue 8
- 3d. This range of equipment is approved for use in conjunction with the Thorn Design Manual Reference : 14A-06 issue 8
- 3e. This range of equipment is approved for use in conjunction with the LPG Design Manual Reference : 14A-06L issue 8
4. System pressure is specified @ 25bar @ 20 C or 41bar @ 20 C
5. Containers are designed to be mounted vertically.

Certificate No: 587a

CONTAINERS BRACKETS (WELDED CONTAINERS)

| Product Name | Description | LPCB Ref. No. |
|--------------|--|---------------|
| 311.205.020 | 4.5 litre container bracket (strap style) | 587a/13 |
| 311.205.013 | 8/16/32 litre container bracket (strap style) | |
| 311.205.014 | 52/106/147/180 litre container bracket (strap style) | |
| 311.209.002 | 8/16/32 litre container brackets (hoop style) | |
| 311.209.003 | 52/106/147/180 litre container bracket (hoop style) | |

Certificate No: 587a

CONTAINER VALVES & ACTUATORS 25bar

| Product Name | Description | LPCB Ref. No. |
|--------------|---|---------------|
| 302.209.001 | 25mm container valve | 587a/05 |
| 302.209.002 | 50mm container valve | |
| 304.001.001 | Electrical actuator - DIN plug and lead (suppression diode) | 587a/05 |
| 304.001.002 | Electrical actuator - DIN plug and lead (bridge rectifier) | |
| 304.205.001 | Electrical actuator - standard (suppression diode) | |
| 304.209.001 | Electrical actuator - standard (bridge rectifier) | |
| 304.205.002 | ATEX Electrical actuator (flameproof) | |
| 304.209.002 | Local manual actuator | |
| 304.209.004 | Pneumatic actuator | |
| 304.209.011 | ATEX electrical actuator - 25 mm valve support brackets | 587a/14 |
| 304.209.012 | ATEX electrical actuator - 50 mm valve support brackets | |

Note:

System pressure is specified @25 bar @ 20 C

Certificate No: 587a

CONTAINER VALVES & ACTUATORS 41bar

| Product Name | Description | LPCB Ref. No. |
|--------------|--|---------------|
| 302.209.006 | 25mm valve assembly | 587a/18 |
| 302.209.022 | 25mm valve assembly (alternative burst disc) | |
| 302.209.007 | 50mm valve assembly | |
| 302.209.023 | 50mm valve assembly (alternative burst disc) | |

PART 4: SECTION 2.1

GASEOUS SYSTEM COMPONENTS

| Product Name | Description | LPCB Ref. No. |
|--------------|--|---------------|
| 304.205.010 | Electrical actuator (suppression diode UL) | |
| 304.207.003 | Remote manual actuator (mechanical) | |
| 304.209.002 | Local manual actuator | |
| 304.209.004 | Pneumatic actuator | |
| 304.205.001 | Electrical actuator - standard (suppression diode) | |
| 304.209.001 | Electrical actuator - standard (bridge rectifier) | |

Note:

System pressure is specified @41 bar @ 20 C

Certificate No: 587a

PRESSURE GAUGES and PRESSURE SWITCHES

| Product Name | Description | LPCB Ref. No. |
|--------------|--|---------------|
| 304.205.006 | Supervisory pressure switch - standard (open on fall) | 587a/06 |
| 305.209.005 | Supervisory pressure switch - special (close on fall) | |
| 305.205.004 | Supervisory pressure switch - ATEX | |
| 305.209.009 | Discharge pressure switch - standard | 587a/07 |
| 305.205.003 | Discharge pressure switch- ATEX | |
| 302.205.022 | Pressure Gauge (50mm) FM-200@ 0-60 bar | 587a/08 |
| 302.207.010 | Pressure Gauge (50mm) Sapphire™ (Novec 1230) 0-60 bar | |
| 302.207.011 | Pressure Gauge (50mm) Sapphire™ (Novec 1230) 0-100 bar | |
| 302.209.012 | Pilot Pressure Gauge (50mm) 0-100 bar | |
| 302.209.027 | Pressure Gauge 0-40 bar | |
| 302.209.026 | Pressure Gauge 0-60 bar | |

Certificate No: 587a

DISCHARGE AND PILOT HOSES

| Product Name | Description | LPCB Ref. No. |
|--------------|----------------------|---------------|
| 306.205.003 | Flexible pilot hose | 587a/09 |
| 306.207.002 | 25 mm discharge hose | |
| 306.207.003 | 50 mm discharge hose | |

Certificate No: 587a

CHECK VALVES

| Product Name | Description | LPCB Ref. No. |
|--------------|----------------------------|---------------|
| 302.209.004 | 25 mm manifold check valve | 587a/10 |
| 302.209.005 | 50 mm manifold check valve | |

Certificate No: 587a

MANIFOLDS

| Product Name | Description | LPCB Ref. No. |
|-----------------|--|---------------|
| 307.209.022-024 | 65mm manifold BSPT - 2 to 4 Port | 587a/12 |
| 307.209.001-003 | 65 mm manifold NPT - 2 to 4 Port | |
| 307.209.025-029 | 80 mm manifold BSPT - 2 to 6 Port | |
| 307.209.004-008 | 80 mm manifold NPT - 2 to 6 Port | |
| 307.209.030-034 | 100 mm manifold BSPT - 2 to 6 Port | |
| 307.209.009-013 | 100 mm manifold NPT - 2 to 6 Port | |
| 307.209.014-021 | 150 mm manifold Flanged - 3 to 10 Port | |

- 65 mm manifolds for use on 4.5/8/16/32 litre containers only

- 80/100/150 mm manifolds for use with 52/106/147/180 litre containers

- 150 mm manifolds require a DN150 300 lb carbon steel A105 mating flange to connect to the pipework

- Manifolds are supplied without check valve and end caps

PART 4: SECTION 2.1

GASEOUS SYSTEM COMPONENTS

Certificate No: 587a

MANIFOLD BRACKET ASSEMBLIES

| Product Name | Description | LPCB Ref. No. |
|---------------------|---------------------------------|----------------------|
| 311.205.015 | 65mm manifold bracket assembly | 587a/15 |
| 311.205.010 | 80mm manifold bracket assembly | |
| 311.205.011 | 100mm manifold bracket assembly | |
| 311.205.012 | 150mm manifold bracket assembly | |

Certificate No: 587a

FM-200® DISCHARGE NOZZLES

| Product Name | Description | LPCB Ref. No. |
|---------------------|--|----------------------|
| 310.205.101/102 | Aluminium nozzle - 10mm 180°/360° (BSP) | 587a/03 |
| 310.205.103/104 | Aluminium nozzle - 15 mm 180°/360° (BSP) | |
| 310.205.105/106 | Aluminium nozzle - 20mm 180°/360° (BSP) | |
| 310.205.107/108 | Aluminium nozzle - 25mm 180°/360° (BSP) | |
| 310.205.109/110 | Aluminium nozzle - 32mm 180°/360° (BSP) | |
| 310.205.111/112 | Aluminium nozzle - 40mm 180°/360° (BSP) | |
| 310.205.113/114 | Aluminium nozzle - 50mm 180°/360° (BSP) | |
| 310.205.115/116 | Aluminium nozzle - 10mm 180°/360° (NPT) | |
| 310.205.117/118 | Aluminium nozzle - 15mm 180°/360° (NPT) | |
| 310.205.119/120 | Aluminium nozzle - 20mm 180°/360° (NPT) | |
| 310.205.121/122 | Aluminium nozzle - 25mm 180°/360° (NPT) | |
| 310.205.123/124 | Aluminium nozzle - 32mm 180°/360° (NPT) | |
| 310.205.125/126 | Aluminium nozzle - 40mm 180°/360° (NPT) | |
| 310.205.127/128 | Aluminium nozzle - 50mm 180°/360° (NPT) | |
| 310.205.201/202 | Brass nozzle - 10mm 180°/360° (BSP) | |
| 310.205.203/204 | Brass nozzle - 15 mm 180°/360° (BSP) | |
| 310.205.205/206 | Brass nozzle - 20mm 180°/360° (BSP) | |
| 310.205.207/208 | Brass nozzle - 25mm 180°/360° (BSP) | |
| 310.205.209/210 | Brass nozzle - 32mm 180°/360° (BSP) | |
| 301.205.211/212 | Brass nozzle - 40mm 180°/360° (BSP) | |
| 310.205.213/214 | Brass nozzle - 50mm 180°/360° (BSP) | |
| 310.205.215/216 | Brass nozzle - 10mm 180°/360° (NPT) | |
| 310.205.217/218 | Brass nozzle - 15mm 180°/360° (NPT) | |
| 310.205.219/220 | Brass nozzle - 20mm 180°/360° (NPT) | |
| 310.205.221/222 | Brass nozzle - 25mm 180°/360° (NPT) | |
| 310.205.223/224 | Brass nozzle - 32mm 180°/360° (NPT) | |
| 301.205.225/226 | Brass nozzle - 40mm 180°/360° (NPT) | |
| 310.205.227/228 | Brass nozzle - 50mm 180°/360° (NPT) | |

FM-200® Fixed Fire Fighting Components

1. The above products are supplied under the brand names TSP, Hygood, Fireater, Thorn
2. This range of equipment is suitable for storage temperatures 0 C to 50 C and is approved for use with FM-200®
- 3a. This range of equipment is approved for use in conjunction with TSP Design Manual Reference : 14A-03T issue 8
- 3b. This range of equipment is approved for use in conjunction with Hygood Design Manual Reference : 14A-03H issue 8
- 3c. This range of equipment is approved for use in conjunction with Fireater Design Manual Reference : 14A-03F issue 8
- 3d. This range of equipment is approved for use in conjunction with Thorn Design Manual Reference : 14A-03 issue 8
4. System pressure is specified @ 25bar @ 20 C
5. Containers are designed to be mounted vertically.

Certificate No: 587a

SAPPHIRE™ (NOVEC 1230) DISCHARGE NOZZLES

| Product Name | Description | LPCB Ref. No. |
|---------------------|--|----------------------|
| 310.207.101/102 | Aluminium nozzle - 15 mm 180°/360° (BSP) | 587a/04 |
| 310.207.103/104 | Aluminium nozzle - 20mm 180°/360° (BSP) | |
| 310.207.105/106 | Aluminium nozzle - 25mm 180°/360° (BSP) | |
| 310.207.107/108 | Aluminium nozzle - 32mm 180°/360° (BSP) | |
| 310.207.109/110 | Aluminium nozzle - 40mm 180°/360° (BSP) | |
| 310.207.111/112 | Aluminium nozzle - 50mm 180°/360° (BSP) | |
| 310.207.113/114 | Aluminium nozzle - 15mm 180°/360° (NPT) | |
| 310.207.115/116 | Aluminium nozzle - 20mm 180°/360° (NPT) | |

PART 4: SECTION 2.1
GASEOUS SYSTEM COMPONENTS

| Product Name | Description | LPCB Ref. No. |
|-----------------|---|---------------|
| 310.207.117/118 | Aluminium nozzle - 25mm 180°/360° (NPT) | |
| 310.207.119/120 | Aluminium nozzle - 32mm 180°/360° (NPT) | |
| 310.207.121/122 | Aluminium nozzle - 40mm 180°/360° (NPT) | |
| 310.207.123/124 | Aluminium nozzle - 50mm 180°/360° (NPT) | |
| 310.207.201/202 | Brass nozzle - 15 mm 180°/360° (BSP) | |
| 310.207.203/204 | Brass nozzle - 20mm 180°/360° (BSP) | |
| 310.207.205/206 | Brass nozzle - 25mm 180°/360° (BSP) | |
| 310.207.207/208 | Brass nozzle - 32mm 180°/360° (BSP) | |
| 310.207.209/210 | Brass nozzle - 40mm 180°/360° (BSP) | |
| 310.207.211/212 | Brass nozzle - 50mm 180°/360° (BSP) | |
| 310.207.213/214 | Brass nozzle - 15 mm 180°/360° (NPT) | |
| 310.207.215/216 | Brass nozzle - 20mm 180°/360° (NPT) | |
| 310.207.217/218 | Brass nozzle - 25mm 180°/360° (NPT) | |
| 310.207.219/220 | Brass nozzle - 32mm 180°/360° (NPT) | |
| 301.207.221/222 | Brass nozzle - 40mm 180°/360° (NPT) | |
| 310.207.223/224 | Brass nozzle - 50mm 180°/360° (NPT) | |

Sapphire™ (NOVEC 1230) Fixed Fire Fighting Components

- The above products are supplied under the brand names TSP, Hygood, Fireater, Thorn
- This range of equipment is suitable for storage temperatures -20 C to 50 C and is approved for use with Sapphire™ (Novec 1230)
- 3a. This range of equipment is approved for use in conjunction with the TSP Design Manual Reference : 14A-06T issue 8
- 3b. This range of equipment is approved for use in conjunction with the Hygood Design Manual Reference : 14A-06H issue 8
- 3c. This range of equipment is approved for use in conjunction with the Fireater Design Manual Reference : 14A-06F issue 8
- 3d. This range of equipment is approved for use in conjunction with the Thorn Design Manual Reference : 14A-06 issue 8
- 3e. This range of equipment is approved for use in conjunction with the LPG Design Manual Reference : 14A-06L issue 8
4. System pressure is specified @ 25bar @ 20 C or 41bar @ 20 C
5. Containers are designed to be mounted vertically.

Certificate No: 587a

PILOT CYLINDER AND ACCESSORIES

| Product Name | Description | LPCB Ref. No. |
|--------------|--|---------------|
| 302.209.011 | Non return valve 1/4" BSPT x 10mm male adaptor | 587a/11 |
| 302.209.010 | Non return valve 6mm x 10mm Standpipe reducer | |
| 302.209.009 | Non return valve | 587a/10 |
| 302.200.016 | Vent valve | 587a/12 |
| 13281 | Manifold burst disc assembly | |
| 302.200.076 | 1/4" NPT Bleed valve | 587a/16 |
| 304.209.007 | Pilot cylinder | |

Certificate No: 587a

FM-200® CONTAINER LABELS

| Product Name | Description | LPCB Ref. No. |
|--------------|--|---------------|
| 314.205.025 | Hygood Container Label - 32, 106, 147, 180 & 343 litre | 587a/17 |
| 314.205.026 | Hygood Container Label - 4.5, 8, 16 & 52 litre | |
| 314.205.029 | TSP Container Label - 32, 106, 147, 180 & 343 litre | |
| 314.205.030 | TSP Container Label - 4.5, 8, 16 & 52 litre | |
| 314.205.027 | Fireater Container Label - 32, 106, 147, 180 & 343 litre | |
| 314.205.028 | Fireater Container Label - 4.5, 8, 16 & 52 litre | |
| 314.205.031 | Thorn Container Label - 32, 106, 147, 180 & 343 litre | |
| 314.205.032 | Thorn Container Label - 4.5, 8, 16 & 52 litre | |

FM-200® Fixed Fire Fighting Components

- The above products are supplied under the brand names TSP, Hygood, Fireater, Thorn
- This range of equipment is suitable for storage temperatures 0 C to 50 C and is approved for use with FM-200®
- 3a. This range of equipment is approved for use in conjunction with TSP Design Manual Reference : 14A-03T issue 8
- 3b. This range of equipment is approved for use in conjunction with Hygood Design Manual Reference : 14A-03H issue 8
- 3c. This range of equipment is approved for use in conjunction with Fireater Design Manual Reference : 14A-03F issue 8
- 3d. This range of equipment is approved for use in conjunction with Thorn Design Manual Reference : 14A-03 issue 8
4. System pressure is specified @ 25bar @ 20 C
5. Containers are designed to be mounted vertically.

PART 4: SECTION 2.1

GASEOUS SYSTEM COMPONENTS

Certificate No: 587a

SAPPHIRE™ (NOVEC 1230) 25bar CONTAINER LABELS

| Product Name | Description | LPCB Ref. No. |
|--------------|--|---------------|
| 314.207.017 | Hygood Container Label - 32, 106, 147, 180 & 343 litre | 587a/17 |
| 314.207.018 | Hygood Container Label - 4.5, 8, 16 & 52 litre | |
| 314.207.023 | TSP Container Label - 32, 106, 147, 180 & 343 litre | |
| 314.207.024 | TSP Container Label - 4.5, 8, 16, 52 litre | |
| 314.207.019 | Fireater Container Label - 32, 106, 147, 180 & 343 litre | |
| 314.207.020 | Fireater Container Label - 4.5, 8, 16, 52 litre | |
| 314.207.021 | Thorn Container Label - 32, 106, 147, 180 & 343 litre | |
| 314.207.022 | Thorn Container Label - 4.5, 8, 16, 52 litre | |
| 314.207.073 | LPG Container Label - 32, 106, 147, 180 & 343 litre | |
| 314.207.074 | LPG Container Label - 4.5, 8, 16, 52 litre | |
| 314.207.064 | LPG Container Label - 32, 106, 147, 180 litre (ESP) | |
| 314.207.065 | LPG Container Label - 4.5, 8, 16, 52 litre (ESP) | |

Sapphire™ (NOVEC 1230) Fixed Fire Fighting Components

1. The above products are supplied under the brand names TSP, Hygood, Fireater, Thorn
2. This range of equipment is suitable for storage temperatures -20 C to 50 C and is approved for use with Sapphire™ (Novec 1230)
- 3a. This range of equipment is approved for use in conjunction with the TSP Design Manual Reference : 14A-06T issue 8
- 3b. This range of equipment is approved for use in conjunction with the Hygood Design Manual Reference : 14A-06H issue 8
- 3c. This range of equipment is approved for use in conjunction with the Fireater Design Manual Reference : 14A-06F issue 8
- 3d. This range of equipment is approved for use in conjunction with the Thorn Design Manual Reference : 14A-06 issue 8
- 3e. This range of equipment is approved for use in conjunction with the LPG Design Manual Reference : 14A-06L issue 8
4. System pressure is specified @ 25bar @ 20 C or 41bar @ 20 C
5. Containers are designed to be mounted vertically.

Certificate No: 587a

SAPPHIRE™ (NOVEC 1230) 42bar CONTAINER LABELS

| Product Name | Description | LPCB Ref. No. |
|--------------|---|---------------|
| 314.207.058 | Hygood Container Label - 32, 106, 147 & 180 litre | 587a/17 |
| 314.207.099 | Hygood (India) Container Label - 80 & 120 litre | |
| 314.207.059 | Hygood Container Label - 8, 16 & 52 litre | |
| 314.207.056 | TSP Container Label - 32, 106, 147 & 180 litre | |
| 314.207.057 | TSP Container Label - 8, 16, 52 litre | |
| 314.207.052 | Fireater Container Label - 32, 106, 147 & 180 litre | |
| 314.207.053 | Fireater Container Label - 8, 16, 52 litre | |
| 314.207.054 | Thorn Container Label - 32, 106, 147 & 180 litre | |
| 314.207.055 | Thorn Container Label - 8, 16, 52 litre | |
| 314.207.087 | LPG Container Label - 32, 106, 147 & 180 litre | |
| 314.207.088 | LPG Container Label - 8, 16, 52 litre | |
| 314.207.091 | LPG Container Label - 32, 106, 147, 180 litre (ESP) | |
| 314.207.092 | LPG Container Label - 8, 16, 52 litre (ESP) | |

Sapphire™ (NOVEC 1230) Fixed Fire Fighting Components

1. The above products are supplied under the brand names TSP, Hygood, Fireater, Thorn
2. This range of equipment is suitable for storage temperatures -20 C to 50 C and is approved for use with Sapphire™ (Novec 1230)
- 3a. This range of equipment is approved for use in conjunction with the TSP Design Manual Reference : 14A-06T issue 8
- 3b. This range of equipment is approved for use in conjunction with the Hygood Design Manual Reference : 14A-06H issue 8
- 3c. This range of equipment is approved for use in conjunction with the Fireater Design Manual Reference : 14A-06F issue 8
- 3d. This range of equipment is approved for use in conjunction with the Thorn Design Manual Reference : 14A-06 issue 8
- 3e. This range of equipment is approved for use in conjunction with the LPG Design Manual Reference : 14A-06L issue 8
4. System pressure is specified @ 25bar @ 20 C or 41bar @ 20 C
5. Containers are designed to be mounted vertically.

Certificate No: 587a

SELECTOR VALVES

| Product Name | Description | Connection | Working Pressure (bar) | LPCB Ref. No. |
|--------------|---------------------|--------------|------------------------|---------------|
| 308.209.001 | 40mm Selector valve | NPT Threaded | 49 | 587a/19 |

PART 4: SECTION 2.1
GASEOUS SYSTEM COMPONENTS

| Product Name | Description | Connection | Working Pressure (bar) | LPCB Ref. No. |
|--------------|----------------------|---------------|------------------------|---------------|
| 308.209.002 | 50mm Selector valve | NPT Threaded | 49 | |
| 308.209.003 | 65mm Selector valve | NPT Threaded | 49 | |
| 308.209.004 | 80mm Selector valve | NPT Threaded | 49 | |
| 308.209.005 | 100mm Selector valve | NPT Threaded | 49 | |
| 308.209.007 | 40mm Selector valve | BSPT Threaded | 49 | |
| 308.209.008 | 50mm Selector valve | BSPT Threaded | 49 | |
| 308.209.009 | 65mm Selector valve | BSPT Threaded | 49 | |
| 308.209.010 | 80mm Selector valve | BSPT Threaded | 49 | |
| 308.209.011 | 100mm Selector valve | BSPT Threaded | 49 | |

Certificate No: 587a

LPG Discharge Valves for Inert (200 bar) and Inert (300 bar)

| Product Name | Description | LPCB Ref. No. |
|--------------|----------------------------------|---------------|
| 2000306V | 128-60 container valve (200 bar) | 587a/21 |
| 26512800 | 128-65 container valve (300 bar) | |

LPG 200 bar and 300 bar Inert Fixed fire Fighting Components

1. This range of equipment is suitable for storage and environmental conditions from -20° to +50° and is approved for use with IG541, IG55, IG100 and IG01.
2. This range of equipment is approved for use with LPG Design Manual reference: MD/55/01/IN.
3. Nominal system pressure is specified as 200 bar and 300 bar at 15°C.

Certificate No: 587a

LPG Container Valve Assemblies for Inert (200 bar)

| Product Name | Description | LPCB Ref. No. |
|--------------|--|---------------|
| 73131018 | 80L Container Valve Assembly, LPG128-60 IG541 (1) | 587a/22 |
| 73131018H | 80L Container Valve Assembly, LPG128-60 IG541 (1) | |
| 73131018T | 80L Container Valve Assembly, LPG128-60 IG541 (1) | |
| 73119039 | 80L Container Valve Assembly, LPG128-60 IG55 (1) | |
| 73119039H | 80L Container Valve Assembly, LPG128-60 IG55 (1) | |
| 73119039T | 80L Container Valve Assembly, LPG128-60 IG55 (1) | |
| 73119039F | 80L Container Valve Assembly, LPG128-60 IG55 (1) | |
| 73106035 | 80L Container Valve Assembly, LPG128-60 IG01 (1) | |
| 73106035T | 80L Container Valve Assembly, LPG128-60 IG01 (1) | |
| 73121036 | 80L Container Valve Assembly, LPG128-60 IG100 (1) | |
| 76131009 | 140L Container Valve Assembly, LPG128-60 IG541 (1) | |
| 76131009H | 140L Container Valve assembly, LPG128-60 IG541 (1) | |
| 76131009T | 140L Container Valve assembly, LPG128-60 IG541 (1) | |
| 76119012 | 140L Container Valve Assembly, LPG128-60 IG55 (1) | |
| 76119012H | 140L Container Valve Assembly, LPG128-60 IG55 (1) | |
| 76119012T | 140L Container Valve Assembly, LPG128-60 IG55 (1) | |
| 76119012F | 140L Container Valve Assembly, LPG128-60 IG55 (1) | |
| 76106008 | 140L Container Valve Assembly, LPG128-60 IG01 (1) | |
| 76106008T | 140L Container Valve Assembly, LPG128-60 IG01 (1) | |
| 76121010 | 140L Container Valve assembly, LPG128-60 IG100 (1) | |
| 73106034 | 80L Container Valve assembly, LPG128-60 IG01 (2) | |
| 73106034T | 80L Container Valve assembly, LPG128-60 IG01 (2) | |
| 73121035 | 80L Container Valve assembly, LPG128-60 IG100 (2) | |
| 76131015 | 140L Container Valve assembly, LPG128-60 IG100 (2) | |

Notes:

- (1) includes pressure gauge + switch
- (2) includes pressure gauge

LPG 200 bar and 300 bar Inert Fixed fire Fighting Components

1. This range of equipment is suitable for storage and environmental conditions from -20° to +50° and is approved for use with IG541, IG55, IG100 and IG01.
2. This range of equipment is approved for use with LPG Design Manual reference: MD/55/01/IN.

PART 4: SECTION 2.1

GASEOUS SYSTEM COMPONENTS

- Nominal system pressure is specified as 200 bar and 300 bar at 15°C.

Certificate No: 587a

LPG Container Valve Assemblies for Inert (300 bar)

| Product Name | Description | LPCB Ref. No. |
|---------------------|--|----------------------|
| 73130002 | 80L Container Valve Assembly, LPG128-65 IG541 (1) | 587a/23 |
| 73130002H | 80L Container Valve Assembly, LPG128-65 IG541 (1) | |
| 73130002T | 80L Container Valve Assembly, LPG128-65 IG541 (1) | |
| 73120025 | 80L Container Valve Assembly, LPG128-65 IG55 (1) | |
| 73120025H | 80L Container Valve Assembly, LPG128-65 IG55 (1) | |
| 73120025T | 80L Container Valve Assembly, LPG128-65 IG55 (1) | |
| 73120025F | 80L Container Valve Assembly, LPG128-65 IG55 (1) | |
| 73107018 | 80L Container Valve Assembly, LPG128-65 IG01 (1) | |
| 73107018T | 80L Container Valve Assembly, LPG128-65 IG01 (1) | |
| 73122018 | 80L Container Valve Assembly, LPG128-65 IG100 (1) | |
| 76130002 | 140L Container Valve Assembly, LPG128-65 IG541 (1) | |
| 76130002H | 140L Container Valve Assembly, LPG128-65 IG541 (1) | |
| 76130002T | 140L Container Valve Assembly, LPG128-65 IG541 (1) | |
| 76120005 | 140L Container Valve Assembly, LPG128-65 IG55 (1) | |
| 76120005H | 140L Container Valve Assembly, LPG128-65 IG55 (1) | |
| 76120005T | 140L Container Valve Assembly, LPG128-65 IG55 (1) | |
| 76120005F | 140L Container Valve Assembly, LPG128-65 IG55 (1) | |
| 76107001 | 140L Container Valve Assembly, LPG128-65 IG01 (1) | |
| 76107001T | 140L Container Valve Assembly, LPG128-65 IG01 (1) | |
| 76122005 | 140L Container Valve assembly, LPG128-65 IG100 (1) | |
| 73107017 | 80L Container Valve assembly, LPG128-65 IG01 (2) | |
| 73107017T | 80L Container Valve assembly, LPG128-65 IG01 (2) | |
| 73122017 | 80L Container Valve assembly, LPG128-65 IG100 (2) | |
| 76130004 | 140L Container Valve assembly, LPG128-65 IG541 (2) | |
| 76130007 | 140L Container Valve assembly, LPG128-65 IG100 (2) | |
| 73130030 | 80L PESO Container Valve Assembly, LPG128-65 IG541 (1) | |
| 73130030H | 80L PESO Container Valve assembly, LPG128-65 IG541 (1) | |
| 73130030T | 80L PESO Container Valve assembly, LPG128-65 IG541 (1) | |
| 73120017 | 80L PESO Container Valve assembly, LPG128-65 IG55 (1) | |

Notes:

- includes pressure gauge + switch
- includes pressure gauge

LPG 200 bar and 300 bar Inert Fixed fire Fighting Components

- This range of equipment is suitable for storage and environmental conditions from -20° to +50° and is approved for use with IG541, IG55, IG100 and IG01.
- This range of equipment is approved for use with LPG Design Manual reference: MD/55/01/IN.
- Nominal system pressure is specified as 200 bar and 300 bar at 15°C.

LPG Restrictors for Inert (200 bar) and Inert (300 bar)

| Product Name | Description | LPCB Ref. No. |
|---------------------|-------------------------------|----------------------|
| 61350005 | ¾" Restrictor NPT x NPT | 587a/24 |
| 61350006 | 1 Restrictor NPT x NPT | |
| 61350007 | 1 ¼" Restrictor NPT x NPT | |
| 61350008 | 1 ½" Restrictor NPT x NPT | |
| 61350009 | 2 Restrictor NPT x NPT | |
| 61350012 | 2 ½" Restrictor NPT x NPT (1) | |
| 61350013 | 3 Restrictor NPT x NPT (1) | |
| 61350014 | 4 Restrictor NPT x NPT (1) | |
| 61016121 | ¾" Restrictor NPT x BSPT | |
| 61016122 | 1 Restrictor NPT x BSPT | |
| 61016123 | 1 ¼" Restrictor NPT x BSPT | |
| 61016124 | 1 ½" Restrictor NPT x BSPT | |
| 61016125 | 2 Restrictor NPT x BSPT | |

PART 4: SECTION 2.1
GASEOUS SYSTEM COMPONENTS

| Product Name | Description | LPCB Ref. No. |
|--------------|--------------------------------|---------------|
| 61016126 | 2 ½" Restrictor NPT x BSPT (1) | |
| 61016127 | 3 Restrictor NPT x BSPT (1) | |
| 61016128 | 4 Restrictor NPT x BSPT (1) | |

Notes:

(1) 200 bar only

LPG 200 bar and 300 bar Inert Fixed fire Fighting Components

1. This range of equipment is suitable for storage and environmental conditions from -20° to +50° and is approved for use with IG541, IG55, IG100 and IG01.
2. This range of equipment is approved for use with LPG Design Manual reference: MD/55/01/IN.
3. Nominal system pressure is specified as 200 bar and 300 bar at 15°C.

Certificate No: 587a

LPG Discharge Hoses for Inert (200 bar) and Inert (300 bar)

| Product Name | Description | LPCB Ref. No. |
|--------------|------------------|---------------|
| 30522010 | ¾" flexible hose | 587a/25 |

LPG 200 bar and 300 bar Inert Fixed fire Fighting Components

1. This range of equipment is suitable for storage and environmental conditions from -20° to +50° and is approved for use with IG541, IG55, IG100 and IG01.
2. This range of equipment is approved for use with LPG Design Manual reference: MD/55/01/IN.
3. Nominal system pressure is specified as 200 bar and 300 bar at 15°C.

Certificate No: 587a

LPG Discharge Containers for Inert (200 bar) and Inert (300 bar)

| Product Name | Description | LPCB Ref. No. |
|--------------|------------------------------|---------------|
| 10800080 | 80 litre cylinder (200 bar) | 587a/26 |
| 11400060 | 140 litre cylinder (200 bar) | |
| 10800300 | 80 litre cylinder (300 bar) | |
| 11400300 | 140 litre cylinder (300 bar) | |

LPG 200 bar and 300 bar Inert Fixed fire Fighting Components

1. This range of equipment is suitable for storage and environmental conditions from -20° to +50° and is approved for use with IG541, IG55, IG100 and IG01.
2. This range of equipment is approved for use with LPG Design Manual reference: MD/55/01/IN.
3. Nominal system pressure is specified as 200 bar and 300 bar at 15°C.

PART 4: SECTION 2.1

GASEOUS SYSTEM COMPONENTS

Certificate No: 587a

LPG Check Valves for Inert (200 bar) and Inert (300 bar)

| Product Name | Description | LPCB Ref. No. |
|---------------------|--------------------|----------------------|
| 20006050 | ¾" check valve | 587a/27 |

LPG 200 bar and 300 bar Inert Fixed fire Fighting Components

1. This range of equipment is suitable for storage and environmental conditions from -20° to +50° and is approved for use with IG541, IG55, IG100 and IG01.
2. This range of equipment is approved for use with LPG Design Manual reference: MD/55/01/IN.
3. Nominal system pressure is specified as 200 bar and 300 bar at 15°C.

Certificate No: 587a

LPG Inerts Pressure Gauges for Inert (200bar) and Inert (300bar)

| Product Name | Description | LPCB Ref. No. |
|---------------------|----------------------------------|----------------------|
| 30245003 | 0-400 gauge + switch set 270 bar | 587a/28 |
| 30116035 | 0-315 gauge + switch set 180 bar | |
| 30116043 | 0-450 bar pressure gauge | |
| 3021316B | 0-315 bar pressure gauge | |

LPG 200 bar and 300 bar Inert Fixed fire Fighting Components

1. This range of equipment is suitable for storage and environmental conditions from -20° to +50° and is approved for use with IG541, IG55, IG100 and IG01.
2. This range of equipment is approved for use with LPG Design Manual reference: MD/55/01/IN.
3. Nominal system pressure is specified as 200 bar and 300 bar at 15°C.

Certificate No: 587a

LPG Nozzles for Inert (200 bar),(300 bar), HFC23, HFC125 and HFC227ea

| Product Name | Description | LPCB Ref. No. |
|---------------------|--------------------|----------------------|
| 30400000 | ⅜" 360° nozzle | 587a/29 |
| 30400001 | ½" 360° nozzle | |
| 30400002 | ¾" 360° nozzle | |
| 30400003 | 1" 360° nozzle | |
| 30400004 | 1 ¼" 360° nozzle | |
| 30400005 | 1 ½" 360° nozzle | |
| 30400006 | 2" 360° nozzle | |
| 30400007 | ⅜" 180° nozzle | |
| 30400008 | ½" 180° nozzle | |
| 30400009 | ¾" 180° nozzle | |
| 30400010 | 1" 180° nozzle | |
| 30400011 | 1 ¼" 180° nozzle | |
| 30400012 | 1 ½" 180° nozzle | |
| 30400013 | 2" 180° nozzle | |

LPG 200 bar and 300 bar Inert Fixed fire Fighting Components

1. This range of equipment is suitable for storage and environmental conditions from -20° to +50° and is approved for use with IG541, IG55, IG100 and IG01.
2. This range of equipment is approved for use with LPG Design Manual reference: MD/55/01/IN.
3. Nominal system pressure is specified as 200 bar and 300 bar at 15°C.

LPG HFCs Fixed Fire Fighting Components

1. This range of equipment is suitable for storage from -20° to 55°C
2. Systems are specified as follows:
 HFC23: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.85 kg/l.
 HFC125: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.93 kg/l.
 HFC227ea: System pressure is specified as 41 bar @ 20°C, maximum filling density 1.15 kg/l.
3. Systems with HFC23 are not superpressurised.
4. Components listed are appropriate for the gas as indicated.

Certificate No: 587a

LPG HFCs Discharge Valves, including syphon tube for HFC23

| Product Name | Description | LPCB Ref. No. |
|--------------|-------------|---------------|
| 2131910B | LPG190-13 | 587a/30 |
| 2131450B | LPG145-13 | |
| 2131280B | LPG128-13 | |

LPG HFCs Fixed Fire Fighting Components

1. This range of equipment is suitable for storage from -20° to 55°C
2. Systems are specified as follows:
 HFC23: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.85 kg/l.
 HFC125: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.93 kg/l.
 HFC227ea: System pressure is specified as 41 bar @ 20°C, maximum filling density 1.15 kg/l.
3. Systems with HFC23 are not superpressurised.
4. Components listed are appropriate for the gas as indicated.

Certificate No: 587a

LPG HFCs Discharge Valves, including syphon tube for HFC125 and HFC227ea

| Product Name | Description | LPCB Ref. No. |
|--------------|-------------|---------------|
| 2001910B | LPG190-00 | 587a/31 |
| 2001450B | LPG145-00 | |
| 2001280B | LPG128-00 | |

LPG HFCs Fixed Fire Fighting Components

1. This range of equipment is suitable for storage from -20° to 55°C
2. Systems are specified as follows:
 HFC23: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.85 kg/l.
 HFC125: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.93 kg/l.
 HFC227ea: System pressure is specified as 41 bar @ 20°C, maximum filling density 1.15 kg/l.
3. Systems with HFC23 are not superpressurised.
4. Components listed are appropriate for the gas as indicated.

Certificate No: 587a

PART 4: SECTION 2.1

GASEOUS SYSTEM COMPONENTS

LPG HFCS Discharge Containers for HFC23, HFC125 and HFC227ea

| Product Name | Description | LPCB Ref. No. |
|---------------------|--------------------|----------------------|
| 10120100 | 120 l. container | 587a/32 |
| 10950100 | 100 l. container | |
| 10750100 | 75 l. container | |
| 10670080 | 67 l. container | |
| 10400080 | 40.2 l. container | |
| 10260060 | 26.8 l. container | |
| 10130060 | 13.4 l. container | |
| 10050060 | 5.0 l. container | |

LPG HFCS Fixed Fire Fighting Components

1. This range of equipment is suitable for storage from -20° to 55°C
2. Systems are specified as follows:
HFC23: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.85 kg/l.
HFC125: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.93 kg/l.
HFC227ea: System pressure is specified as 41 bar @ 20°C, maximum filling density 1.15 kg/l.
3. Systems with HFC23 are not superpressurised.
4. Components listed are appropriate for the gas as indicated.

Certificate No: 587a

LPG HFC227ea Container Valve Assemblies

| Product Name | Description | LPCB Ref. No. |
|---------------------|---|----------------------|
| 70102070 | 5L Container Valve Assembly, LPG128-00 (1) | 587a/33 |
| 70102076 | 13.4L Container Valve Assembly, LPG128-00 (1) | |
| 70102079 | 13.4L Container Valve Assembly, LPG128-00 (2) | |
| 70102057 | 26.8L Container Valve Assembly, LPG128-00 (1) | |
| 70102060 | 26.8L Container Valve Assembly, LPG128-00 (2) | |
| 70102063 | 40.2L Container Valve Assembly, LPG145-00 (1) | |
| 70102066 | 40.2L Container Valve Assembly, LPG145-00 (2) | |
| 71102019 | 67L Container Valve Assembly, LPG145-00 (1) | |
| 71102022 | 67L Container Valve Assembly, LPG145-0 (3) | |
| 71102024 | 67L Container Valve Assembly, LPG145-00 (2) | |
| 72102019 | 75L Container Valve Assembly, LPG190-00 (1) | |
| 72102023 | 75L Container Valve Assembly, LPG190-00 (3) | |
| 72102017 | 75L Container Valve Assembly, LPG190-00 (2) | |
| 74102016 | 100L Container Valve Assembly, LPG190-00 (1) | |
| 74102019 | 100L Container Valve Assembly, LPG190-00 (3) | |
| 74102020 | 100L Container Valve Assembly, LPG190-00 (2) | |
| 75102018 | 120L Container Valve Assembly, LPG190-00 (1) | |
| 75102021 | 120L Container Valve Assembly, LPG190-00 (3) | |
| 75102023 | 120L Container Valve Assembly, LPG190-00 (2) | |

Notes:

- (1) Master with solenoid actuator
- (2) Slave with blind cap w/out solenoid actuator
- (3) Master with 1/8 " solenoid actuator

All above assemblies include pressure gauge + switch

LPG HFCS Fixed Fire Fighting Components

1. This range of equipment is suitable for storage from -20° to 55°C
2. Systems are specified as follows:
HFC23: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.85 kg/l.
HFC125: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.93 kg/l.
HFC227ea: System pressure is specified as 41 bar @ 20°C, maximum filling density 1.15 kg/l.
3. Systems with HFC23 are not superpressurised.

4. Components listed are appropriate for the gas as indicated.

Certificate No: 587a

LPG HFCS Discharge Hoses for HFC23, HFC125 and HFC227ea

| Product Name | Description | LPCB Ref. No. |
|--------------|--------------------------------|---------------|
| 30508HFC | Rigid telescopic hose 1.5" (1) | 587a/34 |
| 30508080 | Rigid hose 1½" HG/MF (1) | |
| 30508000 | Rigid hose 1½" HG/HG (1) | |
| 30506HFC | Rigid hose 1" (1) | |
| 30502140 | R2F hose 400 G 1" HG/HF (1) | |
| 30506000 | R2F hose 320 G 1" HG/HG (1) | |
| 30506070 | R2F hose 400 G ¾" HG/HF (1) | |

Notes:

- (1) Maximum Working Pressure 160 bar

LPG HFCS Fixed Fire Fighting Components

- This range of equipment is suitable for storage from -20° to 55°C
- Systems are specified as follows:
 HFC23: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.85 kg/l.
 HFC125: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.93 kg/l.
 HFC227ea: System pressure is specified as 41 bar @ 20°C, maximum filling density 1.15 kg/l.
- Systems with HFC23 are not superpressurised.
- Components listed are appropriate for the gas as indicated.

Certificate No: 587a

LPG HFCS Manifolds for HFC23, HFC125 and HFC227ea

| Product Name | Description | LPCB Ref. No. |
|--------------|---------------------|---------------|
| 3811VCCD | Single Row manifold | 587a/35 |

Notes: According to the following:

V denotes container size: '1' means 67L, '2' means 75L and '4' means 100L/120L
 CC denotes number of ports
 D denotes manifold diameter where '3' means 1 ¼", '4' means 1 ½", '5' means 2", '6' means 2 ½", '7' means 3" and '8' means 4"

LPG HFCS Fixed Fire Fighting Components

- This range of equipment is suitable for storage from -20° to 55°C
- Systems are specified as follows:
 HFC23: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.85 kg/l.
 HFC125: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.93 kg/l.
 HFC227ea: System pressure is specified as 41 bar @ 20°C, maximum filling density 1.15 kg/l.
- Systems with HFC23 are not superpressurised.
- Components listed are appropriate for the gas as indicated.

PART 4: SECTION 2.1

GASEOUS SYSTEM COMPONENTS

Certificate No: 587a

LPG Discharge Pressure Switches for Inert 200 bar, Inert 300 bar, HFC23, HFC125 and HFC227ea

| Product Name | Description | LPCB Ref. No. |
|---------------------|---------------------------|----------------------|
| 30330010 | Discharge Pressure Switch | 587a/36 |

LPG HFCS Fixed Fire Fighting Components

1. This range of equipment is suitable for storage from -20° to 55°C
2. Systems are specified as follows:
HFC23: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.85 kg/l.
HFC125: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.93 kg/l.
HFC227ea: System pressure is specified as 41 bar @ 20°C, maximum filling density 1.15 kg/l.
3. Systems with HFC23 are not superpressurised.
4. Components listed are appropriate for the gas as indicated.

Certificate No: 587a

LPG HFCS Pressure Gauges for HFC23

| Product Name | Description | LPCB Ref. No. |
|---------------------|---|----------------------|
| 30216010 | 0-160 pressure gauge short socket | 587a/37 |
| 302160B | 0-160 pressure gauge, long socket | |
| 30116052 | 0-160 pressure gauge + switch, short socket, set 90 bar | |
| 30116053 | 0-160 pressure gauge + switch, long socket, set 90 bar | |

LPG HFCS Fixed Fire Fighting Components

1. This range of equipment is suitable for storage from -20° to 55°C
2. Systems are specified as follows:
HFC23: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.85 kg/l.
HFC125: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.93 kg/l.
HFC227ea: System pressure is specified as 41 bar @ 20°C, maximum filling density 1.15 kg/l.
3. Systems with HFC23 are not superpressurised.
4. Components listed are appropriate for the gas as indicated.

Certificate No: 587a

LPG HFCS Pressure Gauges for HFC125 and HFC227ea

| Product Name | Description | LPCB Ref. No. |
|---------------------|---|----------------------|
| 30210100 | 0-100 pressure gauge short socket | 587a/38 |
| 3021100B | 0-100 pressure gauge long socket | |
| 30116040 | 0-100 pressure gauge + switch, short socket | |
| 30116037 | 0-100 pressure gauge + switch, long socket | |

LPG HFCS Fixed Fire Fighting Components

1. This range of equipment is suitable for storage from -20° to 55°C
2. Systems are specified as follows:

PART 4: SECTION 2.1
GASEOUS SYSTEM COMPONENTS

HFC23: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.85 kg/l.
HFC125: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.93 kg/l.
HFC227ea: System pressure is specified as 41 bar @ 20°C, maximum filling density 1.15 kg/l.

3. Systems with HFC23 are not superpressurised.
4. Components listed are appropriate for the gas as indicated.

Certificate No: 587a

LPG Pressure Gauge for Inert (100 bar)

| Product Name | Description | LPCB Ref. No. |
|--------------|-------------------------------|---------------|
| 30116054 | 0-160 pressure gauge + switch | 587a/39 |

Certificate No: 587a

LPG Check Valves for HFC23, HFC125 & HFC227ea

| Product Name | Description | LPCB Ref. No. |
|--------------|---|---------------|
| 20006060 | Ball check valve 1.0" (brass) (1) | 587a/40 |
| 20006067 | Ball check valve 1" (steel) (1) | |
| 20006HFC | Ball telescopic check valve 1.0" (brass) (1) | |
| 20007HFC | Ball telescopic check valve 1" (steel) (1) | |
| 20008000 | Piston check valve 2"(1) | |
| 20008HFC | Piston telescopic check valve 2" (1) | |
| 21006302 | Pistonvalve 2" (U. L. version) (1) | |
| 21006303 | Piston telescopic check valve 2" (U.L. version) (1) | |

Notes:

- (1) These check valves are rated for a maximum working pressure of 160bar

Certificate No: 587a

LPG HFCS Brackets for HFC23, HFC125 and HFC227ea

| Product Name | Description | LPCB Ref. No. |
|--------------|-----------------------------------|---------------|
| 30620310 | Modular 3L | 587a/41 |
| 30621310 | Modular 5/7/13L | |
| 30625010 | Modular 26/40L | |
| 30626711 | Modular 67/75L | |
| 30621010 | Modular 100/120L | |
| 306XX6SS(1) | Single row 67L | |
| 306XX7SN(1) | Single row 75L | |
| 306021002 | Kit 2 bottles 100/120L single row | |
| 306031002 | Kit 3 bottles 100/120L single row | |

Notes:

1. XX denotes the number of containers
2. The number and combination of kits depends on the number of containers in the battery.

LPG HFCS Fixed Fire Fighting Components

1. This range of equipment is suitable for storage from -20° to 55°C
2. Systems are specified as follows:
HFC23: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.85 kg/l.
HFC125: System pressure is specified as 41 bar @ 20°C, maximum filling density 0.93 kg/l.

PART 4: SECTION 2.1

GASEOUS SYSTEM COMPONENTS

HFC227ea: System pressure is specified as 41 bar @ 20°C, maximum filling density 1.15 kg/l.

3. Systems with HFC23 are not superpressurised.
4. Components listed are appropriate for the gas as indicated.

Certificate No: 587a

LPG Pneumatic Line Actuation for Inert 200 bar, Inert 300 bar, HFC23, HFC125 and HFC 227ea

| Product Name | Description | LPCB Ref. No. |
|---------------------|------------------------------|----------------------|
| 3023024B | Solenoid actuator 13W/24V | 587a/42 |
| 30130197 | Solenoid actuator 1/8 output | |
| 30180APB | Manual actuator | |
| 3018NAPB | Dual manual actuator | |

Certificate No: 587a

LPG Pneumatic Line Actuation for Inert 200 bar, Inert 300 bar, HFC23, HFC125 and HFC 227ea

| Product Name | Description | LPCB Ref. No. |
|---------------------|--|----------------------|
| 30027200 | Pneumatic cone (used with HFCs) | 587a/43 |
| 30027201 | Pneumatic cone (used with Inerts) | |
| 35116429 | Tee for pneumatic cone (3 way + 1/4" plug) | |
| 302.200.075 | 1/4" relief valve | |
| 30027301 | Decompression screw (short) | |
| 30506014 | PTFE hose 1/4" x 580mm (1) | |
| 30522001 | PTFE hose 1/4" x 700mm (1) | |
| 29012804 | 128-90 pilot container valve with pressure gauge + switch | |
| 29012804.SOL | 128-90 pilot container valve with pressure gauge and std solenoid | |
| 2901280B | 128-90 pilot container valve with pressure gauge | |
| 2901280B.SOL | 128-90 pilot container valve with pressure gauge and std solenoid | |
| 21114045 | 128-97 pilot container valve with pressure gauge + switch | |
| 21114045.SOL | 128-97 pilot container valve with pressure gauge + switch and std solenoid | |
| 21114008 | 128-97 pilot container valve with pressure gauge | |
| 21114008.SOL | 128-97 pilot container valve with pressure gauge and std solenoid | |

Notes:

- (1) Maximum working pressure = 140 bar

Certificate No: 587a

LPG Pilot Valve Assemblies (100 bar Nitrogen)

| Product Name | Description | LPCB Ref. No. |
|---------------------|---|----------------------|
| 70100075 | 3L Pilot Valve Assembly, LPG128-90, W28.8, DIN477 | 587a/44 |
| 70100082 | 13L Pilot Valve Assembly, LPG128-90, DIN 477 | |
| 70121011 | 50L Pilot Valve Assembly, LPG128-90, DIN 477 | |
| 70100083 | 13L PESO Pilot Valve Assembly, LPG128-90, DIN 477 | |
| 70121012 | 50L PESO Pilot Valve Assembly, LPG128-90, DIN 477 | |

NAFFCO FZ Co

PO Box 17014, Jebel Ali, Dubai, United Arab Emirates
 Tel: +971 4815111 • Fax: +971 48151222
 E-mail: natfire@emirates.net.ae • Website: www.naffco.com

Certificate No: 463I

NAFFCO 200 bar Inert Container valves

| Product Name | Part Number | LPCB Ref. No. |
|-------------------------------|-------------|---------------|
| 200 bar Inert Container Valve | NF-IG-CV200 | 463I/01 |

- This range of equipment is suitable for storage temperatures from -20°C to +50°C and is approved for use with 200 bar inert gas
- System pressure is specified as 200 bar at +15°C

Certificate No: 463I

NAFFCO 300 bar Inert Container valves

| Product Name | Part number | LPCB Ref. No. |
|-------------------------------|-------------|---------------|
| 300 bar Inert Container valve | NF-IG-CV300 | 463I/02 |

- This range of equipment is suitable for storage temperatures from -20°C to +50°C and is approved for use with 300 bar inert gas
- System pressure is specified as 300 bar at +15°C

Certificate No: 463I

NAFFCO Actuators

| Product Name | Part number | LPCB Ref. No. |
|-----------------------------|-----------------|---------------|
| Electrical Actuator | NF-IG-EMA | 463I/03 |
| Pneumatic / Manual Actuator | NF-IG-PMA | |
| Pneumatic Actuator | NF-IG-PA (PN20) | |
| | NF-IG-PA (PN10) | |

- This range of equipment is suitable for storage temperatures from -20°C to +50°C and is approved for use with NAFFCO 200 bar inert gas and 300 bar inert gas container valves

Nitin Fire Protection Industries Ltd (NITIE)

501 Delta, Technology Street, Hiranani Gardens, Powai, Mumbai 400 076, India
 Tel: +91 22 40457000 • Fax: +91 22 66920910
 E-mail: systems@nitinfire.com • Website: www.nitinfire.com

Certificate No: 855h to IS 7285-2:2004

Inertech Cylinders - PESO (Seamless)

| Product Name | Description | LPCB Ref. No. |
|------------------------|---|---------------|
| 51152677-1-xxx (1,4,6) | Inertech 300 bar WP nominal 267mm diameter Seamless Cylinder (PESO) | 855h/01 |
| 51173568-1-yyy (2,4,7) | Inertech 300 bar WP nominal 356mm diameter Seamless Cylinder (PESO) | 855h/02 |
| 51126726-2-zzz (3,5,8) | Inertech 200 bar WP nominal 267mm diameter Seamless Cylinder (PESO) | 855h/03 |

Notes:

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1. Cylinders are approved for use in the Indian service market only in accordance with IS 7285-2:2004 by Chief Controller of Explosives (Reference G3(42)530/II) fitted with Valve Reference G3(4)201 [P/N NF311203]. The cylinders do not comply with European Directive 84/225/EEC or TPED.
2. Cylinders are approved for use in the Indian service market only in accordance with IS 7285-2:2004 by Chief Controller of Explosives (Reference G3(42)530/III) fitted with Valve Reference G3(4)201. [P/N NF311203] The cylinders do not comply with European Directive 84/225/EEC or TPED.
3. Cylinders are approved for use in the Indian service market only in accordance with IS 7285-2:2004 by Chief Controller of Explosives (Reference G3(42)530/I) fitted with Valve Reference G3(4)201. [P/N NF311203]The cylinders do not comply with European Directive 84/225/EEC or TPED.
4. Maximum Working Pressure 300 Bar @ 15°C.
5. Maximum Working Pressure 200 Bar @ 15°C.
6. Where, 'xxx' in the seamless cylinder part number is replaced with the cylinder capacity in litres; applicable sizes are 90, 95 or 100 litres only.
7. Where, 'yyy' in the seamless cylinder part number is replaced with the cylinder capacity in litres; applicable sizes are 120, 125, 130, 135, 140, 145, 150, 155, 160, 165, 170, 175, 180 litres only.
8. Where, 'zzz' in the seamless cylinder part number is replaced with the cylinder capacity in litres; applicable sizes are 35, 40, 45, 50, 56, 60, 68, 80 litres only.

Certificate No: 855g to EN 12094-4

Inertech Container Valves and Regulator

| Product Name | Description | LPCB Ref. No. |
|---------------------|--|----------------------|
| NF311202 | Inertech 200 bar Container Valve | 855g/02 |
| NF311203 | Inertech 300 bar Container Valve | 855g/03 |
| NF311250 | Inertech Discharge Constant Pressure Regulator | 855g/05 |

Inertech Firefighting components:

- a. This range of equipment is suitable for storage temperatures of -20 to 50°C and is approved for use with IG-01, IG-55, IG-100 and IG-541.
- b. Inertech equipment is approved for use in conjunction with Eurotech Fire Protection Ltd Design Manual Reference 'Eurotech Inertech Manual' Issue June 2013.
- c. Nominal system pressure for Inertech components at 15°C is stated at 200 bar or 300 bar.

Certificate No: 855e

Nitin227 & Nitin1230 Fire Fighting Components

- a. This range of equipment is suitable for storage temperatures of -20°C to 50°C and is approved for use with HFC227ea and FK 5-1-12 (Novec™ 1230)
- b. HFC227ea equipment is approved for use in conjunction with Nitin Fire Protection Industries Ltd Design Manual Reference 'Nitin Fire HFC227 Manual' - Issue 09-06 'June 2009'.
- c. FK 5-1-12 equipment is approved for use in conjunction with Nitin Fire Protection Industries Ltd Design Manual Reference 'Nitin Fire Novec1230 Manual' - Issue 09-06 'June 2009'.
- d. Nominal system pressure for HFC227ea components at 20°C is stated at 25 bar or 42 bar.
- e. Nominal system pressure for FK 5-1-12 components at 20°C is stated at 25 bar or 42 bar.

Certificate No: 855e

Nitin227 & Nitin1230 Container Valves

| Product Name | Description | LPCB Ref. No. |
|---------------------|---|----------------------|
| NF21330x | 33mm Container Valve ^(1,2) | 855e/01 |
| NF21331x | 33mm Container Valve with Integral Solenoid Actuator ⁽¹⁾ | 855e/02 |
| NF21490x | 49mm Container Valve | 855e/03 |

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| Product Name | Description | LPCB Ref. No. |
|--------------|--|---------------|
| NF21491x | 49mm Container Valve with Integral Solenoid Actuator | 855e/04 |

Certificate No: 855g to EN 12094-4

Nitin227, Nitin1230 & Inertech Container Valve Actuators

| Product Name | Description | LPCB Ref. No. |
|--------------|--|---------------|
| NF26010 | Solenoid Actuator | 855g/04 |
| NF26011 | Solenoid Actuator with reverse EMF diode | |
| NF26020 | Pneumatic Actuator | |
| NF26030 | Pneumatic/Manual Actuator | |

Nitin227 & Nitin1230 Firefighting Components:

This range of equipment is suitable for storage temperatures of -20°C to 50°C and is approved for use with HFC227ea and FK 5-1-12 (Novec™ 1230).

- a. HFC227ea equipment is approved for use in conjunction with Eurotech Fire Protection Ltd Design Manual Reference 'Eurotech Fire HFC227 Manual' - Issue 13-03.
- b. FK 5-1-12 equipment is approved for use in conjunction with Eurotech Fire Protection Ltd Design Manual Reference 'Eurotech Fire Novec1230 Manual' - Issue 13-04.
- c. Nominal system pressure for HFC227ea components at 20°C is stated at 25 bar or 42 bar.
- d. Nominal system pressure for FK 5-1-12 components at 20°C is stated at 25 bar or 42 bar.

Certificate No: 855e

Nitin227 & Nitin1230 Flexible Connectors

| Product Name | Description | LPCB Ref. No. |
|--------------|---|---------------|
| NF271xxx | Pilot hose (Type 3 Connector) ⁽²⁾ | 855e/09 |
| NF2333xxx | 33mm Discharge hose (Type 1 Connector) ⁽²⁾ | 855e/10 |
| NF2349xxx | 49mm Discharge hose (Type 1 Connector) ⁽²⁾ | 855e/11 |

Certificate No: 855e

Nitin227 & Nitin1230 Check and Non Return Valves

| Product Name | Description | LPCB Ref. No. |
|--------------|---|---------------|
| NF2433x | 33mm Discharge Check Valve ⁽³⁾ | 855e/12 |
| NF2449x | 49mm Discharge Check Valve ⁽³⁾ | 855e/13 |

Certificate No: 855f

Nitin227 & Nitin1230 Nozzles

| Product Name | Description | LPCB Ref. No. |
|--------------|----------------------------------|---------------|
| NF2515 xyzzz | 15mm Nozzle ^(4, 5, 6) | 855f/01 |
| NF2520 xyzzz | 20mm Nozzle ^(4, 5, 6) | 855f/02 |
| NF2525 xyzzz | 25mm Nozzle ^(4, 5, 6) | 855f/03 |
| NF2532 xyzzz | 32mm Nozzle ^(4, 5, 6) | 855f/04 |
| NF2540 xyzzz | 40mm Nozzle ^(4, 5, 6) | 855f/05 |
| NF2500 xyzzz | 50mm Nozzle ^(4, 5, 6) | 855f/06 |

Notes:

- 1) Where 'x' in container valve part number is replaced with '2' for 25 bar nominal charge pressure or '4' for 42 bar nominal charge pressure.
- 2) Where 'xxx' in connector part number is replaced with the connector length in mm.
- 3) Where 'x' in check valve part number is replaced with '1' for BSPT thread or '2' for NPT thread.
- 4) Where 'x' in nozzle part number is replaced with '1' for NPT thread or '2' for BSPT thread.

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- 5) Where 'y' in nozzle part number is replaced with '1' for 180° coverage pattern or '2' for 360° coverage pattern.
6) Where 'zzz' in nozzle part number is the nozzle drilling in 0.00mm (Minimum approved drilling size 3mm).

Certificate No: 855e to EN 12094-5

Inertech Selector Valves

| Product Name | Description | LPCB Ref. No. |
|---------------------|------------------------------|----------------------|
| NF34015 | Inertech Selector Valve DN15 | 855e/17 |
| NF34020 | Inertech Selector Valve DN20 | |
| NF34025 | Inertech Selector Valve DN25 | |
| NF34032 | Inertech Selector Valve DN32 | |
| NF34040 | Inertech Selector Valve DN40 | |
| NF34050 | Inertech Selector Valve DN50 | |

Note: Selector valves for use with Inertech 60 bar constant discharge regulator (Model Ref NF311250) only. Specified pressure in accordance with note in EN 12094-5 Table 1 is \leq 60 bar for all agents and temperatures.

Nitin Ventures FZE

P.O. Box 262294, Jebel Ali Free Zone, Dubai, United Arab Emirates

Tel: +97 148865858/859 • Fax: +97 148865800

E-mail: sales@nitinventures.com • Website: www.nitinfire.com

Inertech Fire Fighting Components

- This Range of equipment is suitable for storage temperatures of -20°C to 50°C and is approved for use with IG-55, IG-541, IG-100 and IG-01
- Inertech equipment is approved for use in conjunction with Nitin Ventures Design Manual Reference 'Eurotech Inertech Manual' Issue 'May2012'
- Nominal system pressure for Inertech components at 15°C is stated at 200 bar or 300 ba

Certificate No: 724Ca

Inertech Container Valves and Regulator

| Product Name | Description | LPCB Ref. No. |
|---------------------|--|----------------------|
| NF311202 | Inertech 200 bar Container Valve | 724Ca/02 |
| NF311203 | Inertech 300 bar Container Valve | 724Ca/03 |
| NF311250 | Inertech Discharge Constant Pressure Regulator | 724Ca/05 |

Certificate No: 724Ca

Eurosafe227, Eurosafe1230 & Inertech Container Valve Actuators

| Product Name | Description | LPCB Ref. No. |
|---------------------|--|----------------------|
| NF26010 | Solenoid Actuator | 724Ca/04 |
| NF26011 | Solenoid Actuator with reverse EMF diode | |
| NF26020 | Pneumatic Actuator | |
| NF26030 | Pneumatic/Manual Actuator | |

Certificate No: 855Be

Inertech Flexible Connectors

| Product Name | Description | LPCB Ref. No. |
|---------------------|-------------------------|----------------------|
| NF3312xxx | Inertech Discharge Hose | 855Be/14 |
| NF370xxx | Inertech Actuation Hose | 855Be/15 |

Inertech Notes:

Where 'xxx' in connector part number is replaced with the connector length in mm; i.e. 300, 400 and 500mm for discharge connectors and 350, 450 and 600mm for actuation connectors.

Certificate No: 855Be

Inertech Check Valve

| Product Name | Description | LPCB Ref. No. |
|--------------|----------------------|---------------|
| NF34131 | Inertech Check Valve | 855Be/16 |

Certificate No: 855Bf

Inertech Nozzles

| Product Name | Description | LPCB Ref. No. |
|--------------|---------------------------|---------------|
| NF35150 | Inertech Nozzle DN15 360° | 855Bf/07 |
| NF35152 | Inertech Nozzle DN15 360° | |
| NF35200 | Inertech Nozzle DN20 360° | 855Bf/08 |
| NF35250 | Inertech Nozzle DN25 360° | 855Bf/09 |
| NF35320 | Inertech Nozzle DN32 360° | 855Bf/10 |
| NF35400 | Inertech Nozzle DN40 360° | 855Bf/11 |
| NF35500 | Inertech Nozzle DN50 360° | 855Bf/12 |

Inertech Notes:

Nozzle NF35152 is as NF35150 with additional strainer/filter to allow openings below 3mm.

Certificate No: 855Be to EN 12094-5

Inertech Selector Valves

| Product Name | Description | LPCB Ref. No. |
|--------------|------------------------------|---------------|
| NF34015 | Inertech Selector Valve DN15 | 855Be/17 |
| NF34020 | Inertech Selector Valve DN20 | |
| NF34025 | Inertech Selector Valve DN25 | |
| NF34032 | Inertech Selector Valve DN32 | |
| NF34040 | Inertech Selector Valve DN40 | |
| NF34050 | Inertech Selector Valve DN50 | |

Note: Selector valves for use with Inertech 60 bar constant discharge regulator (Model Ref NF311250) only. Specified pressure in accordance with note in EN 12094-5 Table 1 is ≤ 60 bar for all agents and temperatures.

Regulus Fire Systems

Suite 2, 8435 N. 90th Street, Scottsdale, Arizona 85258, USA

Tel: +1 480 607 1218 • Fax: +1 480 315 1316

E-mail: info@regulusfire.com • Website: www.regulusfire.com

Certificate No: 1222Bb to EN 12094-4

Regulus 1230 Container Valves

| Product Name | Description | LPCB Ref. No. |
|--------------|--|---------------|
| NF213302 | 33mm Container Valve | 1222Bb/01 |
| NF213312 | 33mm Container Valve with Integral Solenoid Actuator | 1222Bb/02 |
| NF214902 | 49mm Container Valve | 1222Bb/03 |
| NF214912 | 49mm Container Valve with Integral Solenoid Actuator | 1222Bb/04 |

Regulus 1230 Firefighting Components:

- a. This range of equipment is suitable for storage temperatures of -20°C to 50°C and is approved for use with FK 5-1-12 (Novec™ 1230).
- b. FK 5-1-12 equipment is approved for use in conjunction with Regulus Fire Systems; System Design Manual, reference 'Regulus 1230 DIOM Manual' Part no. 01-001347 rev000.
- c. Nominal system pressure for FK 5-1-12 components at 20°C is stated at 25 bar.

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GASEOUS SYSTEM COMPONENTS

Certificate No: 1222Bc to prEN 12094-7

Regulus 1230 Nozzles

| Product Name | Description | LPCB Ref. No. |
|-----------------------|--------------------|----------------------|
| NF2515xyzzz (1, 2, 3) | 15mm Nozzle | 1222Bc/01 |
| NF2520xyzzz (1, 2, 3) | 20mm Nozzle | 1222Bc/02 |
| NF2525xyzzz (1, 2, 3) | 25mm Nozzle | 1222Bc/03 |
| NF2532xyzzz (1, 2, 3) | 32mm Nozzle | 1222Bc/04 |
| NF2540xyzzz (1, 2, 3) | 40mm Nozzle | 1222Bc/05 |
| NF2550xyzzz (1, 2, 3) | 50mm Nozzle | 1222Bc/06 |

Regulus 1230 Firefighting Components:

- This range of equipment is suitable for storage temperatures of -20°C to 50°C and is approved for use with FK 5-1-12 (Novec™ 1230).
- FK 5-1-12 equipment is approved for use in conjunction with Regulus Fire Systems; System Design Manual, reference 'Regulus 1230 DIOM Manual' Part no. 01-001347 rev000.
- Nominal system pressure for FK 5-1-12 components at 20°C is stated at 25 bar.

Notes:

- Where 'x' in nozzle part number is replaced with '1' for NPT thread or '2' for BSPT thread.
- Where 'y' in nozzle part number is replaced with '1' for 180° coverage pattern or '2' for 360° coverage pattern.
- Approved drilling size range is 3mm to 14.5mm where 'zzz' in nozzle part number is the nozzle drill size (00.0mm) in increments of 0.1mm up to 10mm and increments of 0.5mm for sizes above 10mm.

Certificate No: 1222Bd to EN 12094-4

Regulus 1230 Container Valve Actuators

| Product Name | Description | LPCB Ref. No. |
|---------------------|--|----------------------|
| NF26010 | Solenoid Actuator | 1222Bd/04 |
| NF26011 | Solenoid Actuator with reverse EMF diode | |
| NF26020 | Pneumatic Actuator | |
| NF26030 | Pneumatic/Manual Actuator | |

Regulus 1230 Firefighting Components:

- This range of equipment is suitable for storage temperatures of -20°C to 50°C and is approved for use with FK 5-1-12 (Novec™ 1230).
- FK 5-1-12 equipment is approved for use in conjunction with Regulus Fire Systems; System Design Manual, reference 'Regulus 1230 DIOM Manual' Part no. 01-001347 rev000.
- Nominal system pressure for FK 5-1-12 components at 20°C is stated at 25 bar.

Certificate No: 1222Bb to EN 12094-8

Regulus 1230 Flexible Connectors

| Product Name | Description | LPCB Ref. No. |
|---------------------|--|----------------------|
| NF271xxx (1) | Pilot hose (Type 3 Connector) | 1222Bb/09 |
| NF2333xxx (1) | 33mm Discharge hose (Type 1 Connector) | 1222Bb/10 |
| NF2349xxx (1) | 49mm Discharge hose (Type 1 Connector) | 1222Bb/11 |

Regulus 1230 Firefighting components:

- This range of equipment is suitable for storage temperatures of -20°C to 50°C and is approved for use with FK 5-1-12 (Novec™ 1230).
- FK 5-1-12 equipment is approved for use in conjunction with Regulus Fire Systems; System Design Manual, reference 'Regulus 1230 DIOM Manual' Part no. 01-001347 rev000.
- Nominal system pressure for FK 5-1-12 components at 20°C is stated at 25 bar.

Certificate No: 1222Bb to EN 12094-13

Regulus 1230 Check and Non Return Valves

| Product Name | Description | LPCB Ref. No. |
|--------------|----------------------------|---------------|
| NF2433x (2) | 33mm Discharge Check Valve | 1222Bb/12 |
| NF2449x (2) | 49mm Discharge Check Valve | 1222Bb/13 |

Notes:

- Where 'xxx' in connector part number is replaced by a code to indicate the connector length, up to a maximum of 1300mm.
- Where 'x' in connector part number is replaced with '1' for BSPT thread or '2' for NPT thread.

RG Green Systems

P.I.Villalonquejar, Calle Merindad De Montija No.6, Burgos 09001, Spain

Tel: +34.947.281.108 - 115 • Fax: +34.947.281.112

E-mail: jgonzalez@komtes.com

Certificate No: 1475a to EN 12094-4;2004

Constant Flow Container Valves

| Product Name | Description | Max. Working Pressure, bar | Max. Outlet Pressure, bar | LPCB Ref. No. |
|--------------|---|----------------------------|---------------------------|---------------|
| RGS-MAM-RD9 | max free cross sectional area 70.9mm ² | 360 | 60 | 1475a/01 |
| RGS-MAM-RD11 | max free cross sectional area 103.9mm ² | 360 | 60 | 1475a/02 |

Notes:

The above components are suitable for use with IG55 and IG541 at service temperatures of -20°C to +50°C.

Container pressure is specified as 150, 200 or 300 bar at 15°C.

System pressure downstream of the container valves is specified as a maximum of 60bar.

Certificate No: 1475b to EN 12094-4;2004

Container Valve Actuators

| Product Name | Description | Max. Working Pressure, bar | LPCB Ref. No. |
|--------------|---|----------------------------|---------------|
| RGS-MAM-03 | Pilot cartridge valve adaptor | 190 | 1475b/01 |
| 227 SOLR | Electrical (mounted on RGS-MAM-03) | 65 | 1475b/02 |
| 227 SOLCR | Electrical (mounted on RGS-MAM-03) | 200 | 1475b/03 |
| 227 DM | Manual (mounted on electrical actuator) | 360 | 1475b/04 |
| 227 DMS | Manual (mounted on electrical actuator) | 360 | 1475b/05 |

Notes:

The above components are suitable for use with IG55 and IG541 at service temperatures of -20°C to +50°C.

Container pressure is specified as 150, 200 or 300 bar at 15°C.

System pressure downstream of the container valves is specified as a maximum of 60bar.

Certificate No: 1475c to EN 12094-4;2004

Pilot Cylinder Valves

| Product Name | Description | Max. Working Pressure, bar | LPCB Ref. No. |
|---------------|--|----------------------------|---------------|
| RGS-MAM-11-4 | max free cross sectional area 113mm ² | 190 | 1475c/01 |
| RGS-MAM-12-4* | max free cross sectional area 113mm ² | 190 | 1475c/02 |

Notes:

The above components are suitable for use with IG55 and IG541 at service temperatures of -20°C to +50°C.

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Container pressure is specified as 150, 200 or 300 bar at 15°C.

System pressure downstream of the container valves is specified as a maximum of 60bar.

*with additional pressure switch port and pilot port

Certificate No: 1475d to EN 12094-4:2004

Pilot Cylinder Valve Actuators

| Product Name | Description | Max. Working Pressure, bar | LPCB Ref. No. |
|---------------------|--------------------|-----------------------------------|----------------------|
| 227 SOL | Electrical | 65 | 1475d/01 |
| 227 SOLC | Electrical | 200 | 1475d/02 |
| 227 CN | Pneumatic | 360 | 1475d/03 |

Notes:

The above components are suitable for use with IG55 and IG541 at service temperatures of -20°C to +50°C.

Container pressure is specified as 150, 200 or 300 bar at 15°C.

System pressure downstream of the container valves is specified as a maximum of 60bar.

Certificate No: 1475e to EN 12094-10:2003

Pressure Gauges & Pressure Gauges + Switch

| Product Name | Description | Pressure ranges, bar | LPCB Ref. No. |
|---------------------|---------------------------------|-------------------------------------|----------------------|
| PGS.11.040 | Pressure gauge + switch 1/8 NPT | 0-60, 0-100, 0-250, 0-315 and 0-400 | 1475e/01 |

Notes:

The above components are suitable for use with IG55 and IG541 at service temperatures of -20°C to +50°C.

Container pressure is specified as 150, 200 or 300 bar at 15°C.

System pressure downstream of the container valves is specified as a maximum of 60bar.

Certificate No: 1475f to EN 12094-11:2003

Mechanical Weighing Device

| Product Name | Description | Min/Max Permissible Gross Load, kg | LPCB Ref. No. |
|---------------------|----------------------------|---|----------------------|
| SIEX-WD | Weight monitor with switch | 56-338 | 1475f/01 |

Notes:

The above components are suitable for use with IG55 and IG541 at service temperatures of -20°C to +50°C.

Container pressure is specified as 150, 200 or 300 bar at 15°C.

System pressure downstream of the container valves is specified as a maximum of 60bar.

Certificate No: 1475g to EN 12094-8:2006

Connectors

| Product Name | Description | Max. Working Pressure, bar | LPCB Ref. No. |
|---------------------|---------------------------------------|-----------------------------------|----------------------|
| FH-15CO | Flexible discharge connector (type 1) | 275 | 1475g/01 |
| FH-20HC | Flexible discharge connector (type 1) | 215 | 1475g/02 |
| FH-20A | Flexible discharge connector (type 1) | 360 | 1475g/03 |
| FH-21A | Flexible discharge connector (type 1) | 360 | 1475g/04 |
| DH 21 | Flexible discharge connector (type 1) | 280 | 1475g/05 |
| DH 21* | Flexible discharge connector (type 1) | 280 | 1475g/06 |
| FH-6PO | Flexible actuator hose (type 3) | 224 | 1475g/07 |
| FH-7PO | Flexible actuator hose (type 3) | 360 | 1475g/08 |
| DH 10 | Flexible actuator hose (type 3) | 280 | 1475g/09 |
| DH 10I* | Flexible actuator hose (type 3) | 280 | 1475g/10 |
| DH 11 | Flexible actuator hose (type 3) | 450 | 1475g/11 |

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GASEOUS SYSTEM COMPONENTS

| Product Name | Description | Max. Working Pressure, bar | LPCB Ref. No. |
|--------------|---------------------------------|----------------------------|---------------|
| DH 111* | Flexible actuator hose (type 3) | 450 | 1475g/12 |

Notes:

The above components are suitable for use with IG55 and IG541 at service temperatures of -20°C to +50°C.

Container pressure is specified as 150, 200 or 300 bar at 15°C.

System pressure downstream of the container valves is specified as a maximum of 60bar.

*connections made with AISI 306 stainless steel

Certificate No: 1475h to EN 12094-13:2001

Check Valves and Non-Return Valves

| Product Name | Description | Max. Working Pressure, bar | LPCB Ref. No. |
|----------------|---------------------|----------------------------|---------------|
| VALAN-15CO | Check valve ½" | 240 | 1475h/01 |
| VALAN-21A | Check valve ¾" | 360 | 1475h/02 |
| VALAN-22A | Check valve ¾" | 360 | 1475h/03 |
| VALAN-WFR8 | Non-return valve ¼" | 240 | 1475h/04 |
| VALAN-WFR8-316 | Non-return valve ¼" | 240 | 1475h/05 |

Notes:

The above components are suitable for use with IG55 and IG541 at service temperatures of -20°C to +50°C.

Container pressure is specified as 150, 200 or 300 bar at 15°C.

System pressure downstream of the container valves is specified as a maximum of 60bar.

Certificate No: 1475i to EN 12094-5:2006

Selector Valves for IG55 & IG541

| Product Name | Description | Max. Working Pressure, bar | LPCB Ref. No. |
|--------------|---|----------------------------|---------------|
| SVD20 | Selector Valve, CO ₂ , HFC-125, HFC-227ea, FK-5-1-12 | 140 | 1475i/01 |
| SVD25 | Selector Valve, CO ₂ , HFC-125, HFC-227ea, FK-5-1-12 | 140 | 1475i/02 |
| SVD32 | Selector Valve, CO ₂ , HFC-125, HFC-227ea, FK-5-1-12 | 140 | 1475i/03 |
| SVD40 | Selector Valve, CO ₂ , HFC-125, HFC-227ea, FK-5-1-12 | 140 | 1475i/04 |
| SVD50 | Selector Valve, CO ₂ , HFC-125, HFC-227ea, FK-5-1-12 | 140 | 1475i/05 |
| SVDA25 | Selector Valve, inert gas | 360 | 1475i/06 |
| SVDA32 | Selector Valve, inert gas | 360 | 1475i/07 |
| SVDA40 | Selector Valve, inert gas | 360 | 1475i/08 |
| SVDA50 | Selector Valve, inert gas | 360 | 1475i/09 |
| SVDA65 | Selector Valve, inert gas | 360 | 1475i/10 |

Notes:

The above components are suitable for use with IG55 and IG541 at service temperatures of -20°C to +50°C.

Container pressure is specified as 150, 200 or 300 bar at 15°C.

System pressure downstream of the container valves is specified as a maximum of 60bar.

Certificate No: 1475j & 1475k to prEN 12094-7:2006

Nozzles

| Product Name | Description | Size | LPCB Ref. No. |
|--------------|-------------|---------|---------------|
| FEDR10 | 360°nozzle | G 3/8 | 1475j/01 |
| FEDR10A | 360°nozzle | G 3/8 | 1475j/02 |
| FEDR15 | 360°nozzle | G 1/2 | 1475j/03 |
| FEDR15A | 360°nozzle | G 3/4 | 1475j/04 |
| FEDR20 | 360°nozzle | G 3/4 | 1475j/05 |
| EDR20A | 360°nozzle | G 3/4 | 1475j/06 |
| FEDR25 | 360°nozzle | G 1 | 1475j/07 |
| FEDR25A | 360°nozzle | G 1 | 1475j/08 |
| FEDR32 | 360°nozzle | G 1 1/4 | 1475j/09 |

PART 4: SECTION 2.1

GASEOUS SYSTEM COMPONENTS

| Product Name | Description | Size | LPCB Ref. No. |
|---------------------|--------------------|-------------|----------------------|
| FEDR32A | 360°nozzle | G 11/4 | 1475j/10 |
| FEDR40 | 360°nozzle | G 11/2 | 1475j/11 |
| FEDR40A | 360°nozzle | G 11/2 | 1475j/12 |
| FEDR50 | 360°nozzle | G 2 | 1475j/13 |
| FEDR10180 | 180°nozzle | G 3/8 | 1475k/01 |
| FEDR10180A | 180°nozzle | G 3/8 | 1475k/02 |
| FEDR15180 | 180°nozzle | G 1/2 | 1475k/03 |
| FEDR15180A | 180°nozzle | G 1/2 | 1475k/04 |
| FEDR20180 | 180°nozzle | G 3/4 | 1475k/05 |
| FEDR20180A | 180°nozzle | G 3/4 | 1475k/06 |
| FEDR25180 | 180°nozzle | G 1 | 1475k/07 |
| FEDR25180A | 180°nozzle | G 1 | 1475k/08 |
| FEDR32180 | 180°nozzle | G 11/4 | 1475k/09 |
| FEDR32180A | 180°nozzle | G 11/4 | 1475k/10 |
| FEDR40180 | 180°nozzle | G 11/2 | 1475k/11 |
| FEDR40180A | 180°nozzle | G 11/2 | 1475k/12 |
| FEDR50180 | 180°nozzle | G 2 | 1475k/13 |

Notes:

The above components are suitable for use with IG55 and IG541 at service temperatures of -20°C to +50°C.

Container pressure is specified as 150, 200 or 300 bar at 15°C.

System pressure downstream of the container valves is specified as a maximum of 60bar.

Safety Hi-Tech Srl

Via Cavour, 96 - 67051 Avezzano (AQ), Italy

Tel: +39 0863 18289 • Fax: +39 0863 1940724

E-mail: mail@safetyhitech.com • Website: www.safetyhitech.com

Certificate No: 969a to EN12094

NAF S 125 & NAF S 227 Fixed Fire Fighting Components

- This range of equipment is suitable for storage from -20° to 50°C (HFC125) or 0° to 50°C (HFC227ea), (See Note 2).
- Nominal system pressure for HFC 227ea and HFC 125 components at 21°C is stated at 42 bar.

Certificate No: 969a

NAF S 125 & NAF S 227 Container Valves

| Product Name | Description | Agent | LPCB Ref. No. |
|---------------------|--------------------|--------------|----------------------|
| SH20025128 | SHT V20 | NAF S 125 | 969a/01 |
| SH20025129 | SHT V20 | NAF S 227 | |
| SH20025145 | SHT V25 | NAF S 125 | |
| SH20025146 | SHT V25 | NAF S 227 | |
| SH20025190 | SHT V40 | NAF S 125 | |
| SH20025191 | SHT V40 | NAF S 227 | |
| SH20012128 | SHT V20-N2 | Nitrogen | |

Certificate No: 969a

NAF S 125 & NAF S 227 Container Valve Actuators

| Product Name | Description | LPCB Ref. No. |
|---------------------|-----------------------------------|----------------------|
| SH31009401 | Manual actuator | 969a/02 |
| SH30027302 | 1 way high pressure cone | |
| SH30027303 | 2 way high pressure cone | |
| SH21006403 | Solenoid actuator | |
| SH21006404 | Solenoid actuator 1/8" connection | |
| SH31009402 | Manual / Pneumatic actuator | |

Certificate No: 969a

NAF S 125 & NAF S 227 Discharge Connectors

| Product Name | Description | LPCB Ref. No. |
|--------------|--|---------------|
| SH30506000 | 1 x 320 mm flexible connector type 1 ⁽¹⁾ | 969a/03 |
| SH30502140 | 1 x 400 mm flexible connector type 1 ⁽²⁾ | |
| SH30506070 | ¾" x 400 mm flexible connector type 1 ⁽³⁾ | |
| SH30503290 | 1/8 x 160 mm PTFE flexible connector type 3 ⁽⁴⁾ | |
| SH30506014 | ¼" x 580 mm PTFE flexible connector type 3 ⁽⁴⁾ | |
| SH30522001 | ¼" x 700 mm PTFE flexible connector type 3 ⁽⁴⁾ | |
| SH30508080 | 1 ½" rigid connector type 5 ⁽⁴⁾ | |
| SH30508000 | 1 ½" rigid connector type 5 ⁽⁴⁾ | |

⁽¹⁾ Max Working Pressure 69 bar

⁽²⁾ Max Working Pressure 185 bar

⁽³⁾ Max Working Pressure 240 bar

⁽⁴⁾ Max Working Pressure 132 bar

Certificate No: 969a

NAF S 125 & NAF S 227 Check Valves

| Product Name | Description | LPCB Ref. No. |
|--------------|---------------|---------------|
| SH20006060 | 1 Check Valve | 969a/04 |
| SH21006302 | 2 Check Valve | |

Siemens SAS, Building Technologies

617, rue Fourny, BP 20, 78531, Buc, France

Tel: +33 1 30 84 66 00 • Fax: +33 1 39 56 42 08

Website: www.sbt.siemens.com

Siemens Sinorix™ 227 Fire Fighting Components

1. This range of equipment is suitable for storage temperatures of -20°C to 50°C and is approved for use with HFC227ea
2. This range of equipment is approved for us in conjunction with Siemens Design manual reference 'RTF_EXPORT_HFC227ea_C' - Revision: July 2005
3. Nominal system pressure at 20°C is stated at 42 bar absolute.

Certificate No: 126aj

Siemens Sinorix™ 227 Nozzles

| Product Name | Description | LPCB Ref. No. |
|--------------------|-------------|---------------|
| BFFP Type Nozzle | ¾ Nozzle | 126aj/01 |
| | 1 Nozzle | |
| BUCEFA Type Nozzle | ¾ Nozzle | 126aj/02 |
| | 1 Nozzle | |
| | 1¼ Nozzle | |

Certificate No: 126aj

Siemens Sinorix™ 227 Flexible Connectors

| Product Name | Description | LPCB Ref. No. |
|--------------|--------------------------|---------------|
| FLEJIC 3 | Pilot line hose (Type 3) | 126aj/03 |
| FLEJIC 4 | Pilot line hose (Type 3) | |
| FLEJIC 5 | Pilot line hose (Type 3) | |
| FRF33 | Manifold Hose (Type 1) | 126aj/04 |

PART 4: SECTION 2.1

GASEOUS SYSTEM COMPONENTS

Certificate No: 126aj

Siemens Sinorix™ 227 Check and Non Return Valves

| Product Name | Description | LPCB Ref. No. |
|---------------------|--------------------|----------------------|
| CARF 33 | Check Valve | 126aj/05 |

Certificate No: 126aj

Siemens Sinorix™ 227 Container Valves and Actuators

| Product Name | Description | LPCB Ref. No. |
|---------------------|--------------------|----------------------|
| VS12F | Container Valve | 126aj/06 |

Certificate No: 126aj

Siemens Sinorix™ 227 Container Valves and Actuators

| Product Name | Description | LPCB Ref. No. |
|---------------------|----------------------------|----------------------|
| VS33 | Container Valve | 126aj/07 |
| DEMA FM | Electro-pneumatic actuator | 126aj/08 |
| CP16 | Pneumatic actuator | 126aj/09 |
| DEPYM | Pneumatic actuator | 126aj/10 |
| CM | Manual actuator | 126aj/11 |

Siemens Switzerland Limited

Dornierstrasse, 9423. Altenrhein, Switzerland
Tel: +41 71 858 23 23 • Fax: +41 71 858 23 20
Website: www.sbt.siemens.com

Siemens Sinorix™ CO2 Fire Fighting Components

1. This range of equipment is suitable for storage temperatures from -20°C to +60°C and is approved for use with CO2
2. This range of equipment is approved for use with Siemens Building Technologies data sheet 04-01-902 Revision: 0
3. System pressure is specified as 60 bar at +20°C

Certificate No: 126z

Siemens Sinorix™ CO2 Container valves

| Product Name | Description | LPCB Ref. No. |
|---------------------|---------------------|----------------------|
| CX505127 | CO2 Container Valve | 126z/10 |

Siemens Sinorix™ Cerexen ® Fire Fighting Components

1. This range of equipment is suitable for storage temperatures from -20°C to +60°C and is approved for use with 200 bar inert gas
2. This range of equipment is approved for use with Siemens Building Technologies data sheet 04-02-901 Revision: 0
3. System pressure is specified as 200 bar at +15°C

Certificate No: 126z

Siemens Sinorix™ Cerexen ® 200 bar Inert Container valves

| Product Name | Description | LPCB Ref. No. |
|---------------------|-------------------------------|----------------------|
| CX505120 | 200 bar Inert Container Valve | 126z/07 |

Siemens Sinorix™ Cerexen ® 300 bar Inert Container valves

4. This range of equipment is suitable for storage temperatures from -20°C to +60°C and is approved for use with 300 bar inert gas
5. This range of equipment is approved for use with Siemens Building Technologies data sheet 04-02-902 Revision: 0
6. System pressure is specified as 300 bar at +15°C

Certificate No: 126z

Siemens Sinorix™ Cerexen ® 300 bar Inert Container valves

| Product Name | Description | LPCB Ref. No. |
|--------------|-------------------------------|---------------|
| CX505135 | 300 bar Inert Container Valve | 126z/08 |

Certificate No: 724a

Siemens Sinorix Cerexen Inert Container Valves Discharge Regulator

| Product Name | Description | LPCB Ref. No. |
|----------------|---------------------------------------|---------------|
| S54476-B263-A1 | Discharge Constant Pressure Regulator | 724a/05 |

Siemens Sinorix™ Cerexen ® Actuators

7. This range of equipment is suitable for storage temperatures from -20°C to +60°C and is approved for use with Siemens CX505127, CX505120 and CX505135 Container Valves.
8. This range of equipment is approved for use with Siemens Building Technologies data sheet 04-03-900 Revision: 0

Certificate No: 126z

Siemens Sinorix™ Cerexen ® Actuators

| Product Name | Description | LPCB Ref. No. |
|--------------|---------------------------|---------------|
| CX505131 | Pneumatic Actuator | 126z/09 |
| CX505130 | Pneumatic Actuator | |
| CX505132 | Pneumatic/Manual Actuator | |
| CX505134 | Electrical Actuator | |

Siemens Sinorix™ Cerexen ® Selector Valves

9. This range of equipment is suitable for storage temperatures of -20°C to 50°C and is approved for use with Cerexen
10. This range of equipment is approved for use in conjunction with Siemens Design manual reference 000010_a. - Revision: March 2005
11. Nominal system pressure at 15°C is stated at 200 bar.

Certificate No: 126z

Siemens Sinorix™ Cerexen ® 200 bar and 300 bar Inert Container Valve Assemblies

| Product Name | Description | LPCB Ref. No. |
|----------------|---|---------------|
| S54476-C3-C2 | 10 litre Container Valve Assembly - (Nitrogen/200 bar) | 126z/06 |
| S54476-C1-C5 | 80 litre Container Valve Assembly - (Nitrogen/200 bar) | |
| S54476-C2-C1 | 140 litre Container Valve Assembly - (Nitrogen/200 bar) | |
| S54476-C1-C15 | 80 litre Container Valve Assembly - (Nitrogen/300 bar) | |
| S54476-C140-A1 | 140 litre Container Valve Assembly - (Nitrogen/300 bar) | |
| S54476-C8-C2 | 80 litre Container Valve Assembly - (Argon/200 bar) | |
| S54476-C9-C1 | 140 litre Container Valve Assembly - (Argon/200 bar) | |
| S54476-C8-C4 | 80 litre Container Valve Assembly - (Argon/300 bar) | |
| S54476-C140-A2 | 140 litre Container Valve Assembly - (Argon/300 bar) | |
| S54476-C9-A1 | 80 litre Container Valve Assembly - (IG541/300 bar) | |
| S54476-C140-A3 | 140 litre Container Valve Assembly - (IG541/300 bar) | |

PART 4: SECTION 2.1

GASEOUS SYSTEM COMPONENTS

Certificate No: 126z

Siemens Sinorix™ Cerexen® Selector Valves

| Product Name | Description | LPCB Ref. No. |
|---------------------|--------------------|----------------------|
| 1½" Selector Valve | 1½" Selector Valve | 126z/01 |
| 2" Selector Valve | 2 Selector Valve | |

Siemens Sinorix™ Cerexen® Nozzles

9. This range of equipment is suitable for storage temperatures of -20°C to 50°C and is approved for use with Cerexen
10. This range of equipment is approved for us in conjunction with Siemens Design manual reference 000010_a. - Revision: March 2005
11. Nominal system pressure at 15°C is stated at 200 bar.

Certificate No: 126z

Siemens Sinorix™ Cerexen® Nozzles

| Product Name | Description | LPCB Ref. No. |
|------------------------------|--------------------|----------------------|
| Cerexen Type Nozzle - 2 Hole | Nozzle | 126z/02 |
| | ½" Nozzle | |
| | ¾" Nozzle | |
| | 1 Nozzle | |
| | 1 ¼" Nozzle | |
| | 1 ½" Nozzle | |
| Cerexen Type Nozzle - 4 Hole | 2 Nozzle | 126z/03 |
| | Nozzle | |
| | ½" Nozzle | |
| | ¾" Nozzle | |
| | 1 Nozzle | |
| | 1 ¼" Nozzle | |
| | 1 ½" Nozzle | |
| | 2 Nozzle | |

Siemens Sinorix™ Cerexen® Flexible Connectors

9. This range of equipment is suitable for storage temperatures of -20°C to 50°C and is approved for use with Cerexen
10. This range of equipment is approved for us in conjunction with Siemens Design manual reference 000010_a. - Revision: March 2005
11. Nominal system pressure at 15°C is stated at 200 bar.

Certificate No: 126z

Siemens Sinorix™ Cerexen® Flexible Connectors

| Product Name | Description | LPCB Ref. No. |
|----------------------|--------------------------|----------------------|
| MTD2040N-P 1006KP | Pilot line hose (Type 3) | 126z/04 |
| MTD2040N-P 1010KP | Pilot line hose (Type 3) | |
| MTKH60000-P 1112KZ2P | Manifold hose (Type 1) | |

Siemens Sinorix™ Cerexen® Pressure Reduction Devices

9. This range of equipment is suitable for storage temperatures of -20°C to 50°C and is approved for use with Cerexen
10. This range of equipment is approved for us in conjunction with Siemens Design manual reference 000010_a. - Revision: March 2005
11. Nominal system pressure at 15°C is stated at 200 bar.

Certificate No: 126z

Siemens Sinorix™ Cerexen® Pressure Reduction Devices

| Product Name | Description | LPCB Ref. No. |
|-------------------------|--------------------|----------------------|
| Cerexen Blende Type 1½" | 1½" Orifice Plate | 126z/05 |
| Cerexen Blende Type 2" | 2 Orifice Plate | |

Tyco Fire and Integrated Solutions (the trading company for Tyco Fire and Integrated Solutions (UK) Limited)

Tyco Park, Grimshaw Lane, Newton Heath, Manchester M40 2WL, United Kingdom

Tel: +44 (0)161 205 2321 • Fax: +44 (0)161 455 4459

Website: www.tycofis.com

Inergen Fire Fighting Components

- a. This range of equipment is suitable for storage temperatures of -20°C to +50°C and is approved for use with Inergen.
- b. This range of equipment is approved for use in conjunction with Tyco Fire and Integrated Solutions Design Manual Reference 'Inergen 300 bar Manual'.
- c. System pressure is specified as 300 bar at 15°C.
- d. A range of mounting brackets and retention assemblies for secure container are also available.

Certificate No: 014a

INERGEN Container and Container Bracket Assemblies

| Product Name | Description | Capacity (ltr) | LPCB Ref. No. |
|--------------|-------------|----------------|---------------|
| SL93035 | 80 litre | 80 | 014a/01 |
| SL93036 | 67 litre | 67 | |
| SL93037 | 40 litre | 40 | |
| SL93038 | 27 litre | 27 | |

Certificate No: 014a

INERGEN Discharge Manifolds

| Product Name | Description | Nominal Bore (mm) | LPCB Ref. No. |
|--------------|---------------------|-------------------|---------------|
| SL94063 | 560-6 Manifold | 50 | 014a/02 |
| SL94064 | 840-9 Manifold | 50 | |
| SL94065 | 1120-12 Manifold | 50 | |
| SL94066 | 1400-15 Manifold | 50 | |
| SL94146 | DOS Manifold 900-3 | 25 | |
| SL94147 | DOS Manifold 1200-4 | 25 | |
| SL94148 | DOS Manifold 1500-5 | 25 | |

Certificate No: 014a

INERGEN Check Valves

| Product Name | Description | Nominal Bore (mm) | LPCB Ref. No. |
|--------------|-------------------------|-------------------|---------------|
| SL94228 | Check Valve | DN7 | 014a/03 |
| SL93812 | Pilot Cylinder Assembly | - | |

Certificate No: 014a

INERGEN Orifice Units

| Product Name | Description | Orifice Size | LPCB Ref. No. |
|--------------|------------------|--------------|---------------|
| SL94076 | 2" Orifice Unit | 3mm - 30mm | 014a/04 |
| SL94092 | 3" Orifice Unit | 20mm 56mm | |
| SL94143 | DOS Orifice Unit | 1mm 5mm | |

Certificate No: 014a

PART 4: SECTION 2.1

GASEOUS SYSTEM COMPONENTS

INERGEN Nozzles

| Product Name | Description | Orifice Size | LPCB Ref. No. |
|---------------------|--------------------|---------------------|----------------------|
| SL93943 | ½" 360° NPT | 3mm - 10mm | 014a/05 |
| SL93938 | 1" 360° NPT | 10mm - 20mm | |
| SL93773 | 1½" 360° NPT | 8mm - 28mm | |

Nozzles sized in accordance with system calculations.

Certificate No: 014a

INERGEN Connectors

| Product Name | Description | Nominal Bore (mm) | LPCB Ref. No. |
|---------------------|--------------------|--------------------------|----------------------|
| SL94061 | Discharge Hose | DN10 | 014a/06 |
| SL94049 | Actuation Hose | DN8 | |
| SL94050 | Pilot hose | DN6 | |

Certificate No: 724Aa

INERGEN Container Valves

| Product Name | Description | LPCB Ref. No. |
|---------------------|-------------------------------|----------------------|
| BL0480 2007 | 300 bar Inert Container Valve | 724Aa/03 |

Certificate No: 724Aa

INERGEN Actuators

| Product Name | Description | LPCB Ref. No. |
|---------------------|---------------------------|----------------------|
| SL94045 | Electric Actuator | 724Aa/04 |
| SL94046 | Pneumatic Actuator | |
| SL94047 | Pneumatic/Manual Actuator | |
| SL942124 | Manual Actuator | 014a/07 |

Certificate No: 014a

INERGEN Pressure Gauge

| Product Name | Description | LPCB Ref. No. |
|---------------------|--------------------|----------------------|
| SL94059 | Cylinder 300 bar | 014a/08 |

Tyco Fire Protection Products (Barcelona)

Mestre Joan Corrales 107-109, 08950 Esplugues de Llobregat, Barcelona M40 2WL, Spain

E-mail: TFFP_EMEA_Communications@tyco-bspd.com • Website: www.tffpemea.com

Tyco 200 bar and 300 bar Inert Fixed fire Fighting Components

1. This range of equipment is suitable for storage and environmental conditions from -20° to +50° and is approved for use with Inert 55 and all combinations of Argon and Nitrogen.
2. This range of equipment is approved for use with Tyco Design Manual reference: MD/55/01/IN/TY.
3. Nominal system pressure is specified as 200 bar and 300 bar at 15°C.

Certificate No: 446Ba

PART 4: SECTION 2.1
GASEOUS SYSTEM COMPONENTS

Tyco Discharge Valves for Inert (200 bar) and Inert (300 bar)

| Product Name | Description | LPCB Ref. No. |
|--------------|----------------------------------|---------------|
| 2000306V | 128-60 container valve (200 bar) | 446Ba/01 |
| 26512800 | 128-65 container valve (330 bar) | |
| 2000280V | 128-80 container valve (200 bar) | 446Ba/02 |
| 28512800 | 128-85 container valve (330 bar) | |

Certificate No: 446Ba

Tyco Restrictors for Inert (200 bar) and Inert (300 bar)

| Product Name | Description | LPCB Ref. No. |
|--------------|-----------------|---------------|
| 61350005 | ¾" Restrictor | 446Ba/17 |
| 61350006 | 1 Restrictor | |
| 61350007 | 1 ¼" Restrictor | |
| 61350008 | 1 ½" Restrictor | |
| 61350009 | 2 Restrictor | |

Certificate No: 446Ba

Tyco Discharge Containers for Inert (200 bar) and Inert (300 bar)

| Product Name | Description | LPCB Ref. No. |
|--------------|------------------------------|---------------|
| 10800080 | 80 litre cylinder (200 bar) | 446Ba/19 |
| 11400060 | 140 litre cylinder (200 bar) | |
| 10800300 | 80 litre cylinder (300 bar) | |
| 11400300 | 140 litre cylinder (300 bar) | |

Certificate No: 446Ba

Tyco Discharge Hoses for Inert (200 bar) and Inert (300 bar)

| Product Name | Description | LPCB Ref. No. |
|--------------|------------------|---------------|
| 30522010 | ¾" flexible hose | 446Ba/18 |

Certificate No: 446Ba

Tyco Check Valves for Inert (200 bar) and Inert (300 bar)

| Product Name | Description | LPCB Ref. No. |
|--------------|----------------|---------------|
| 20006050 | ¾" check valve | 446Ba/20 |

Certificate No: 446Ba

Tyco Nozzles for Inert (200 bar) and Inert (300 bar)

| Product Name | Description | LPCB Ref. No. |
|--------------|------------------|---------------|
| 30400000 | ¾" 360° nozzle | 446Ba/21 |
| 30400001 | ½" 360° nozzle | |
| 30400002 | ¾" 360° nozzle | |
| 30400003 | 1" 360° nozzle | |
| 30400004 | 1 ¼" 360° nozzle | |
| 30400005 | 1 ½" 360° nozzle | |
| 30400006 | 2" 360° nozzle | |
| 30400007 | ¾" 180° nozzle | |
| 30400008 | ½" 180° nozzle | |
| 30400009 | ¾" 180° nozzle | |
| 30400010 | 1" 180° nozzle | |
| 30400011 | 1 ¼" 180° nozzle | |
| 30400012 | 1 ½" 180° nozzle | |
| 30400013 | 2" 180° nozzle | |

PART 4: SECTION 2.1

GASEOUS SYSTEM COMPONENTS

Certificate No: 446Ba

Tyco Pneumatic Line Actuation for Inert 200 bar, Inert 300 bar

| Product Name | Description | LPCB Ref. No. |
|---------------------|-------------------------------|----------------------|
| 3023024B | Solenoid actuator 13W/24V | 446Ba/09 |
| 30130197 | Solenoid actuator 1/8" output | |
| 30180APB | Manual actuator | |
| 30180NAPB | Dual manual actuator | |
| 2901280B | 128-90 container valve | 446Ba/10 |
| 30111APB | 1 way cone high pressure | |
| 30112APB | 2 way cone high pressure | |
| 30113APB | 3 way cone high pressure | |
| 20007020 | 1/4" relief valve | |
| 3080008C | Pressure relief screw (short) | |
| 3080008L | Pressure relief screw (long) | |
| 30522001 | PTFE hose 1/4" x 700mm | |
| 30506014 | PTFE hose 1/4" x 580mm | |
| 10020000 | 2 litre cylinder | |

WIKA Alexander Wiegand SE & Co. KG

Alexander Wiegand-Strasse 30, Klingenberg 63911, Germany

Tel: +49 9372 132-5367

E-mail: christian.luley@wika.com • Website: www.wika.de

Certificate No: 980a/01 to EN12094-10

Wika Pressure gauges with switch

| Product Name | Description | LPCB Ref. No. |
|---------------------|---|----------------------|
| PGS 21.050 | 0-40 bar range 0-60 bar range 0-100 bar range 0-160 bar range 0-250 bar range 0-315 bar range 0-400 bar range | 980a/01 |

Approved with cable connection; PG9 Cable gland; DIN Snap connector or M8 Plug and cable electrical connectors.

- LPCB approval of system components (Part 4: Section 2.1);
- Assessment to the relevant parts of ISO 14520 - *Gaseous fire-extinguishing systems* or EN 15004 - *Fixed Firefighting Systems - Gas Extinguishing Systems*;
- Testing to LPS 1230: *Requirements for Fire Testing of Fixed Gaseous Fire Extinguishing Systems*; and
- Review of the system design manual, software programme and installation & maintenance manual specified in the system approval Listing

Notes:

1. Gases used for extinguishing fires are generally hazardous to health. In selecting a system, specifiers are advised to carry out proper risk assessments based on the latest health and safety datasheets.
2. LPCB strongly recommends that the design and installation of these systems be carried out by a Certificated LPS 1204 company (see Part 4, Section 1).

Carrier Airconditioning & Refrigeration Ltd

Narsinghpur, Kherki Daula Post, Gurgaon 122 004, Haryana, India

Tel: +91-124-4825500 • Fax: +91 124 2372230

E-mail: customersupport.india@carrier.utc.com • Website: www.bis.utc.com

Certificate No: 594Cb to LPS 1230

ARGONITE 150, 200, 300 bar Fixed Gaseous Fire Extinguishing System

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|--------------|--|----------------------|---|---------------|
| ARGONITE | Class A Standard (Solid fires e.g. Paper, wood, plastics) | 40.1% | Design concentration includes 30% safety factor | 594Cb/01 |
| | Class A Cables (Solid fire risks including Cables) | 47.6% | Confirmation that minimum safety factor is adequate | |
| | Class B (Liquid Fires e.g. heptane) | 47.1% | Design concentration includes 30% safety factor | |

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).

Design concentration Class A Cables System test concentration. Where this value is lower than the Class A Standard value, the Class A Standard value should be used for design purposes.

Design concentrations are as tested to LPS 1230 in BRE Test Report Number 206880.

Extinguishing concentrations are as tested in BRE Test Report Numbers 206879 and 216485 (ISO 14520-1 tests).

This system uses:

Design, Installation, Maintenance and User Manual:

General Manual - Argonite System, MA-01-9006-0100, Revision 10 dated February 2008

Software Programme: VdS-Version 7.2 (2007)

- a) This system is suitable for storage in environmental conditions from -20°C to +55°C
- b) System pressure is specified as 150 bar, 200 bar and 300 bar @ 15°C

Ceasefire Industries Pvt. Ltd

2nd Floor, Plot No. 4, Sector-135, Noida, Uttar Pradesh 201301, India

Tel: +91 120 4255800 • Fax: +91 120 4255801

E-mail: amit@ceasefire.in • Website: www.ceasefire.in

Certificate No: 1329e to LPS 1230

PART 4: SECTION 2.2

GASEOUS SYSTEMS

Ceasefire HFC227ea 25 bar and 42 bar Fixed Gaseous Fire Extinguishing System

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|--|---|----------------------|---|---------------|
| Ceasefire HFC227ea 25 bar and 42 bar Fixed Gaseous Fire Extinguishing System | Class A Standard (Solid fires e.g. Paper, wood, plastics) | 7.8 % | Design concentration includes 30% safety factor | 1329e/01 |
| | Class A Cables (Solid fire risks including Cables) | 8.2 % | Confirmation that minimum safety factor is adequate | |
| | Class B (Liquid Fires e.g. heptane) | 9.2 % | Design concentration includes 30% safety factor | |

Notes:

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).

Design concentration Class A Cables System test concentration. Where this value is lower than the Class A Standard value, the Class A Standard value should be used for design purposes.

Design concentrations are as tested to LPS 1230 in BRE Test Report Number 300712.

Extinguishing concentrations are as verified in BRE Test Report Number 300712

This system is suitable for storage in environmental conditions from -20°C to +50°C

System pressure is specified as 25 bar or 42 bar @ 21°C

This system uses:

Components as listed in Part 4, Section 2.1 and described in Handbook of Design, Installation, Operation and System Maintenance of Ceasefire HFC227ea: - CF/HFC/MAN/001, dated 12.04.2017, Version 01, Revision 00 which utilises

Software Programme:

Hughes Associates Inc., S/N000001 CFG: 705161

For 25 bar system; AgentCalcs for HFC227ea-25 bar GEN 3.02; Copyright Hughes Associates, Inc.; S/N000001 -408AEC6C CFG: 705161400 Rev:3.0.261

For 42 bar system; AgentCalcs for HFC227ea-42 bar GEN 3.12 Copyright Hughes Associates, Inc.; S/N000001 -36E48F9A CFG: 705161400 Rev:3.0.263

Eurotech Fire Protection Ltd, in collaboration with Firetec Systems Ltd

Unit 6, The Business Centre, Molly Millars Lane, Wokingham, Berkshire RG41 2QZ, United Kingdom

Tel: +44 1252 860606 • Fax: +44 1252 860606

E-mail: keith.goodall@EurotechFP.com • Website: www.firetec-systems.com

Certificate No: 1222a to LPS 1230

Eurotech227 & Eurosafe227 - 25 bar & 42 bar HFC 227ea Gaseous Fire Suppression Systems

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|---------------------------|---|----------------------|---|---------------|
| Eurotech227 & Eurosafe227 | Class A Standard (Solid fires e.g. paper, wood, plastics) | 7.8% | Design concentration includes 30% safety factor | 1222a/01 |
| | Class A Cables (Solid fires risks including cables) | 8.2% | Confirmation that minimum safety factor is adequate | |
| | Class B (Liquid Fires e.g.heptane) | 9.2% | Design concentration includes 30% safety factor | |

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).

Design concentrations are as tested to LPS 1230 In BRE Test Report Numbers 231870 (25 bar) & 254632 (42 bar) (Class A and B risks) and Test Letter 282069 (Class A Cables risks)

Extinguishing concentrations are as tested in BRE Test Report Number 231870 (ISO 14520-1 tests).

This system uses:

Design Manual: 'Eurotech Fire HFC227 Manual' - Issue 13-03

Software Programme : Vds Schadenverhutung calculation package version 7.3

This system is suitable for storage and environmental conditions from -20° to 50°C.

System pressure is specified as 25 bar and 42 bar at 20°.

Certificate No: 1222a to LPS 1230

Eurotech1230 & Eurosafe1230 - 25 bar & 42 bar FK 5-1-12 (Novec™ 1230) Gaseous Fire Suppression Systems

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|-----------------------------|---|----------------------|---|---------------|
| Eurotech1230 & Eurosafe1230 | Class A Standard (Solid fires e.g. paper, wood, plastics) | 5.3% | Design concentration includes 30% safety factor | 1222a/02 |
| | Class A Cables (Solid fires risks including cables) | 5.5% | Confirmation that minimum safety factor is adequate | |
| | Class B (Liquid Fires e.g.heptane) | 6.5% | Design concentration includes 30% safety factor | |

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).

Design concentrations are as tested to LPS 1230 in BRE Test Report Numbers 231870 (25 bar) & 254632 (42 bar) (Class A and B risks) and Test Letter 282069 (Class A Cables risks)

Extinguishing concentrations are as tested in BRE Test Report Number 231870 (ISO 14520-1 tests).

This system uses:

Design Manual: 'Eurotech Fire Novec1230 Manual' - Issue 13-04

Software Program: VdS Schadenverhütung calculation package version 7.2

This system is suitable for storage and environmental conditions from -20° to 50°C.

System pressure is specified as 25 bar and 42 bar at 20°C.

Certificate No: 1222a to LPS 1230

Inertech IG-01 200 bar & 300 bar Gaseous Fire Suppression Systems

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|----------------|---|----------------------|---|---------------|
| Inertech IG-01 | Class A Standard (Solid fires e.g. paper, wood, plastics) | 45.5% | Design concentration includes 30% safety factor | 1222a/03 |
| | Class A Cables (Solid fires risks including cables) | 49.6% | Confirmation that 'minimum safety factor' is adequate | |
| | Class B (Liquid Fires e.g.heptane) | 52.7% | Design concentration includes 30% safety factor | |

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).

Design concentrations are as tested to LPS 1230 in BRE Test Report Numbers 270432

Extinguishing concentrations are as tested in BRE Test Report Number 270432 (EN 15004-1 tests).

This system uses:

Design Manual: 'Eurotech Inertech System Manual' Issue June 2013

Software Program: VdS Flow Calc Version 2.2 .

This system is suitable for storage and environmental conditions from -20° to 50°C.

System pressure is specified as 200 bar and 300 bar at 15°C.

Certificate No: 1222a to LPS 1230

Inertech IG-55 200 bar & 300 bar Gaseous Fire Suppression Systems

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|----------------|---|----------------------|---|---------------|
| Inertech IG-55 | Class A Standard (Solid fires e.g. paper, wood, plastics) | 40.0% | Design concentration includes 30% safety factor | 1222a/04 |
| | Class A Cables (Solid fires risks including cables) | 43.8% | Confirmation that 'minimum safety factor' is adequate | |
| | Class B (Liquid Fires e.g.heptane) | 47.1% | Design concentration includes 30% safety factor | |

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).

Design concentrations are as tested to LPS 1230 in BRE Test Report Numbers 270432

Extinguishing concentrations are as tested in BRE Test Report Number 270432 (EN 15004-1 tests).

This system uses:

Design Manual: 'Eurotech Inertech System Manual' Issue June 2013

Software Program: VdS Flow Calc Version 2.2 .

This system is suitable for storage and environmental conditions from -20° to 50°C.

System pressure is specified as 200 bar and 300 bar at 15°C.

PART 4: SECTION 2.2

GASEOUS SYSTEMS

Certificate No: 1222a to LPS 1230

Inertech IG-100 200 bar & 300 bar Gaseous Fire Suppression Systems

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|---------------------|---|-----------------------------|---|----------------------|
| Inertech IG-100 | Class A Standard (Solid fires e.g. paper, wood, plastics) | 38.9% | Design concentration includes 30% safety factor | 1222a/05 |
| | Class A Cables (Solid fires risks including cables) | 42.8% | Confirmation that 'minimum safety factor' is adequate | |
| | Class B (Liquid Fires e.g.heptane) | 46.3% | Design concentration includes 30% safety factor | |

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).
Design concentrations are as tested to LPS 1230 in BRE Test Report Numbers 270432
Extinguishing concentrations are as tested in BRE Test Report Number 270432 (EN 15004-1 tests).

This system uses:

Design Manual: 'Eurotech Inertech System Manual' Issue June 2013.
Software Program: VdS Flow Calc Version 2.2 .
This system is suitable for storage and environmental conditions from -20° to 50°C.
System pressure is specified as 200 bar and 300 bar at 15°C.

Certificate No: 1222a to LPS 1230

Inertech IG-541 200 bar & 300 bar Gaseous Fire Suppression Systems

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|---------------------|---|-----------------------------|---|----------------------|
| Inertech IG-541 | Class A Standard (Solid fires e.g. paper, wood, plastics) | 38.5% | Design concentration includes 30% safety factor | 1222a/06 |
| | Class A Cables (Solid fires risks including cables) | 45.7% | Confirmation that 'minimum safety factor' is adequate | |
| | Class B (Liquid Fires e.g.heptane) | 46.5% | Design concentration includes 30% safety factor | |

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).
Design concentrations are as tested to LPS 1230 in BRE Test Report Number 270432
Extinguishing concentrations are as tested in BRE Test Report Number 270432 (EN 15004-1 tests).

This system uses:

Design Manual: 'Eurotech Inertech System Manual' Issue June 2013
Software Program: VdS Flow Calc Version 2.2 .
This system is suitable for storage and environmental conditions from -20° to 50°C.
System pressure is specified as 200 bar and 300 bar at 15°C.

Fike Safety Technology Ltd

Unit 31, Springvale Industrial Estate, Cwmbran, Gwent NP44 5BD, United Kingdom

Tel: +44 (0)1633 865558 • Fax: +44 (0)1633 866656

E-mail: fstinfo@fike.com • Website: www.fikesafetytechnology.co.uk

Certificate No: 331w to LPS 1230

Fike ProInert Fixed Gaseous Fire Extinguishing System

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|---|---|-----------------------------|---|----------------------|
| Fike ProInert Fixed Gaseous Fire Extinguishing System | Class A Standard (Solid fires e.g. paper, wood, plastics) | 39.7% | Design concentration includes 30% safety factor | 331w/01 |
| | Class A Cables (Solid fire risks including cables) | 44.3% | Confirmation that minimum safety factor is adequate | |
| | Class B (Liquid Fires e.g. heptane) | 46.0% | Design concentration includes 30% safety factor | |

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).
 Design concentration Class A Cables System test concentration. Where this value is lower than the Class A Standard value, the Class A Standard value should be used for design purposes.
 Design concentrations are as tested to LPS 1230 in BRE Test Report Number 214668.
 Extinguishing concentrations are as tested in BRE Test Report Number 214668 (ISO 14520-1 tests).

This system uses:

Design, Installation, Maintenance and User Manual: Fike manual, P/N 06-294, Issue August 2009.
 Software Programme: Fike ProInert flow calculation Software, Version 6.2

- a) This system is suitable for storage in environmental conditions from -20° to +50°.
 b) Container pressure is specified as 200 bar or 300 bar @ 15°C

Fire Eater A/S

Vølundsvej 17, 3400 Hillerød, Denmark
 Tel: +45 7022 2769 • Fax: +45 7023 2769
 E-mail: mk@fire-eater.dk • Website: www.fire-eater.com

Certificate No: 1287b to LPS 1230

Fire Eater IG541 200 bar & 300 bar

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|----------------------------------|---|----------------------|---|---------------|
| Fire Eater Control Inert INERGEN | Class A Standard (Solid fires e.g. paper, wood, plastics) | 37.2% | Design concentration includes 30% safety factor | 1287b/01 |
| | Class A Cables (Solid fires risks including cables) | 42.6% | Confirmation that minimum safety factor is adequate | |
| | Class B (Liquid Fires e.g.heptane) | 43.7% | Design concentration includes 30% safety factor | |

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).
 Design concentrations are as tested to LPS 1230 in BRE Test Report Number 291411 (200 bar and 300 bar)
 Extinguishing concentrations are as tested in BRE Test Report Number 291410 (EN 15004-1 tests).

This system uses:

Design Manual: 'Fire Eater Control Inert Extinguishing System - Design, Installation, Maintenance and User Manual' – Revision 2015-02-23
 Software Program: Fire Eater A/S Inergen Program, IMT version 2.2.x.
 This system is suitable for storage and environmental conditions from -20°C to +65°C.
 System pressure is specified as 200 bar and 300 bar at 15°C.

Fireater

Burlingham House, Hewett Road, Gapton Hall Industrial Estate, Great Yarmouth, Norfolk NR31 0NN, United Kingdom
 Tel: +44 (0)1493 417600 • Fax: +44 (0)1493 417700
 E-mail: macron-info@tycoint.com • Website: www.macron-safety-safety.com

Certificate No: 587Cb to LPS 1230

Sapphire™

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|--------------------|---|----------------------|---|---------------|
| Fireater Sapphire™ | Class A Standard (Solid fires e.g. paper, wood, plastics) | 6.0% | Design concentration includes 30% safety factor | 587Cb/01 |
| | Class A Cables (Solid fire risks including cables) | 6.1% | Confirmation that minimum safety factor is adequate | |
| | Class B (Liquid fires e.g. heptane) | 6.4% | Design concentration includes 30% safety factor | |

PART 4: SECTION 2.2

GASEOUS SYSTEMS

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).

Design concentration Class A Cables System test concentration. Where this value is lower than the Class A Standard value, the Class A Standard value should be used for design purposes.

Design concentrations are as tested to LPS 1230 in BRE Test Report Number 208832 v2.

Extinguishing concentrations are as tested in BRE Test Report Number 208831 (ISO 14520-1 tests)

This system uses:

Design, Installation, Maintenance and User Manual: Fireater Novac™ 1230 Total Flooding Systems (Engineered & Pre-engineered) Design Manual Reference 14a-06F Issue 5
Software Programme: TSPNovac 1230 FlowCalc Version FIRE3.60b

- a) This system is suitable for storage in environmental conditions from -20° to +50°.
- b) System pressure is specified as 25 bar @ 20°C

Firetrace International LLC

Suite 2, 8435 N. 90th Street, Scottsdale, Arizona 85258, USA

Tel: +1 480 607 1218 • Fax: +1 480 315 1316

E-mail: info@firetrace.com • Website: <http://www.firetrace.com>

Certificate No: 1222Aa to LPS 1230 Issue 1.2

Firetrace 1230 25 bar FK 5-1-12 (Novac™ 1230) Gaseous Fire Suppression Systems

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|----------------|---|----------------------|---|---------------|
| Firetrace 1230 | Class A Standard (Solid fires e.g. paper, wood, plastics) | 5.3% | Design concentration includes 30% safety factor | 1222Aa/02 |
| | Class A Cables (Solid fires risks including cables) | 5.5% | Confirmation that minimum safety factor is adequate | |
| | Class B (Liquid Fires e.g. | 6.5% | Design concentration includes 30% safety factor | |

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).

Design concentrations are as tested to LPS 1230 in BRE Test Report Number 231870 (25 bar) (Class A and B risks) and Test Letter 282069 (Class A Cables risks).

Extinguishing concentrations are as tested in BRE Test Report Number 231870 (ISO 14520-1 tests).

This system uses:

System Design Manual: 'Firetrace 1230 DIOM Manual' Part no. FTF000010 V01 Oct. 2014.

Software Program: VdS Schadenverhütung calculation package version 7.2 .

This system is suitable for storage and environmental conditions from -20° to 50°C.

System pressure is specified as 25 bar at 20°C.

International Security & Safety Systems Co.

49 Abbass El Akkad St, Nasr City, Cairo, Egypt

Tel: +202 2401 7430 • Fax: +202 2262 7317

E-mail: info@isssystems.com • Website: www.isssystems.com

Certificate No: 1222Ca to LPS 1230

ISS CG2 25 bar & 42 bar HFC 227ea Gaseous Fire Suppression Systems

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|--------------|---|----------------------|---|---------------|
| ISS CG2 | Class A Standard (Solid fires e.g. paper, wood, plastics) | 7.8% | Design concentration includes 30% safety factor | 1222Ca/01 |
| | Class A Cables (Solid fires risks including cables) | 8.2% | Confirmation that 'minimum safety factor' is adequate | |
| | Class B (Liquid Fires e.g.heptane) | 9.2% | Design concentration includes 30% safety factor | |

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).
 Design concentrations are as tested to LPS 1230 In BRE Test Report Numbers 231870 (25 bar) & 254632 (42 bar) (Class A and B risks) and Test Letter 282069 (Class A Cables risks)
 Extinguishing concentrations are as tested in BRE Test Report Number 231870 (ISO 14520-1 tests).

This system uses:

Design Manual: 'ISS CG² HFC227ea Manual'
 Software Programme : Vds Schadenverhutung calculation package version 7.3
 This system is suitable for storage and environmental conditions from -20° to 50°C.
 System pressure is specified as 25 bar and 42 bar at 21°C.

Kidde Fenwal Inc.

400 Main Street, Ashland, Massachusetts 01721, USA
 Tel: +1 508 881 2000 • Fax: +1 508 881 6729
 Website: www.kiddefiresystems.com and www.fenwalfire.com

Certificate No: 273Bc to LPS 1230

Argonite C60 300 bar Fixed Gaseous Fire Extinguishing System

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|--------------|---|----------------------|--|---------------|
| Argonite C60 | Class A Standard (Solid fires e.g. paper, wood, plastics) | 40.3% | Design concentration includes 30% safety factor | 273Bc/01 |
| | Class A Cables (Solid fire risks including cables) | 44.0% | Confirmation that minimum safety factor is adequate. | |
| | Class B (Liquid Fires e.g. heptane) | 47.5% | Design concentration includes 30% safety factor | |

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).
 Design concentrations Class A Cables System test concentration - where this is lower than the Class A Standard value, the Class A Standard value should be used for design purposes.
 Design concentrations are as tested to LPS 1230 in BRE Test Report Number 253355
 Extinguishment concentrations are as tested in BRE Test Report Number 206879 & 216485 (ISO 14520-1 tests).

This system uses:

Design, Installation, Maintenance and User Manual: General Manual – Kidde Fenwal Argonite C60 System, MA -01-9008-0102, Revision 1.0 dated November 2011.
 Software Programme : Kidde Argonite Program, VdS-Version 1.7 (2009).
 a) This system is suitable for storage in environmental conditions from -20° to +50°.
 b) Container pressure is specified as 300 bar @ 15°C.

Kidde Fire Protection

1st Floor Stokenchurch House, Oxford Road, Stokenchurch, High Wycombe, Buckinghamshire HP14 3SX, United Kingdom
 Tel: +44 (0)1494 480410
 E-mail: General.enquiries@kiddeuk.co.uk • Website: www.kfp.co.uk

Certificate No: 594b to LPS 1230

Argonite 150, 200, 300 bar Fixed Gaseous Fire Extinguishing System

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|--------------|---|----------------------|--|---------------|
| Argonite | Class A Standard (Solid fires e.g. paper, wood, plastics) | 40.1% | Design concentration includes 30% safety factor | 594b/01 |
| | Class A Cables (Solid fire risks including cables) | 47.6% | Confirmation that minimum safety factor is adequate. | |

PART 4: SECTION 2.2

GASEOUS SYSTEMS

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|---------------------|-------------------------------------|-----------------------------|---|----------------------|
| | Class B (Liquid Fires e.g. heptane) | 47.1% | Design concentration includes 30% safety factor | |

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).

Design concentrations Class A Cables System test concentration - where this is lower than the Class A Standard value, the Class A Standard value should be used for design purposes.

Design concentrations are as tested to LPS 1230 in BRE Test Report Number 206880.

Extinguishment concentrations are as tested in BRE Test Report Number 206879 & 216485 (ISO 14520-1 tests)

This system uses:

Design, Installation, Maintenance and User Manual:
General Manual - Argonite System, MA-01-9006-0100, Revision 11 dated January 2015.

Software Programme : VdS-Version 7.3 (2009)

- a) This system is suitable for storage in environmental conditions from -20° to +55°.
- b) System pressure is specified as 150 bar, 200 bar and 300 bar @ 15°C.

Certificate No: 594d to LPS 1230

Argonite C Series 300 bar Fixed Gaseous Fire Extinguishing System

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|---------------------|---|-----------------------------|--|----------------------|
| Argonite C Series | Class A Standard (Solid fires e.g. paper, wood, plastics) | 40.3% | Design concentration includes 30% safety factor | 594d/01 |
| | Class A Cables (Solid fire risks including cables) | 44.0% | Confirmation that minimum safety factor is adequate. | |
| | Class B (Liquid Fires e.g. heptane) | 47.5% | Design concentration includes 30% safety factor | |

Notes:

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).

Design concentrations Class A Cables System test concentration - where this is lower than the Class A Standard value, the Class A Standard value should be used for design purposes.

Design concentrations are as tested to LPS 1230 in BRE Test Report Number 253355

Extinguishment concentrations are as tested in BRE Test Report Number 206879 & 216485 (ISO 14520-1 tests).

This system uses:

Design, Installation, Maintenance and User Manual: General Manual - Argonite C60 System, MA -01-9008-0100, Revision 1.0 dated November 2011.

Software Programme: Kidde Argonite Program, VdS-Version 1.7 (2009).

- a) This system is suitable for storage in environmental conditions from -20° to +50°.
- b) Container pressure is specified as 300 bar @ 15°C.

LPG Técnicas En Extinción De Incendios, S.L.

Mestre Joan Corrales 107-109, 08950 Esplugues de Llobregat, Barcelona, Spain

Tel: +34 93 480 2925 • Fax: +34 93 473 7492

E-mail: marketing@lpg.es • Website: www.lpg.es

Certificate No: 446b to LPS 1230

LPG FE-13 Fixed gaseous fire extinguishing system

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|---------------------|---|-----------------------------|---|----------------------|
| LPG FE-13 | Class A Standard (Solid Fires e.g. paper, wood, plastics) | 15.9% | Design concentration includes 30% safety factor | 446b/01 |
| | Class A Cables (Solid fire risks including cables) | 16.5% | Confirmation that minimum safety factor is adequate | |

PART 4: SECTION 2.2

GASEOUS SYSTEMS

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|--------------|-------------------------------------|----------------------|---|---------------|
| | Class B (Liquid Fires e.g. heptane) | 16.1% | Design concentration includes 30% safety factor | |

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).

Design concentration Class A Cables System test concentration. Where this value is lower than the Class A Standard value, the Class A Standard value should be used for design purposes.

Design concentrations are as tested to LPS 1230 in BRE Test Report Number 206580.

Extinguishment concentrations are as tested in BRE Test Report Number 206579 (ISO 14520-1 tests)

This system uses:

Design Manual: MD/FE/IN-01 Rev 5

Software Programme : Firenet version 2.5, LPC, Nov. 2001.

Installation, Maintenance and User Manual for FE-13 Fire Extinguishing Systems, MU/FE/IN_02 Rev: 00

a) This system is suitable for storage in environmental conditions from -20° to 55°.

b) System pressure is specified as 41 bar @ 20°C and container maximum filling density is 0.85 kg/l.

c) Systems are not superpressurized.

Certificate No: 446b

LPG 'Inert 55' 200 bar and 300 bar Inert Gaseous Fire Suppression System

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|--------------|---|----------------------|---|---------------|
| Inert 55 | Class A Standard (Solid fires e.g. paper, wood, plastics) | 41.0% | Design concentration includes 30% safety factor | 446b/02 |
| | Class A Cables (Solid fires risks including cables) | 45.6% | Confirmation that minimum safety factor is adequate | |
| | Class B (Liquid Fires e.g.heptane) | 45.2% | Design concentration includes 30% safety factor | |

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).

Design concentration Class A Cables System test concentration. Where this value is lower than the Class A Standard value, the Class A Standard value should be used for design purposes.

Design concentrations are as tested to LPS 1230 in BRE Test Report Number 213932

Extinguishing concentrations are as tested in BRE Test Report Number 216936 (ISO 14520-1 tests).

This system uses:

Design Manual: MD/55/01/IN

Software Program: VdS Schadenverhütung calculation package version 4.6a.

This system is suitable for storage and environmental conditions from -20° to 50°.

System pressure is specified as 200 bar and 300 bar at 15°C.

Certificate No: 446d to LPS 1230

LPG Sapphire

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|--------------|---|----------------------|---|---------------|
| LPG Sapphire | Class A Standard (Solid fires e.g. paper, wood, plastics) | 6.0% | Design concentration includes 30% safety factor | 446d/01 |
| | Class A Cables (Solid fire risks including cables) | 6.1% | Confirmation that minimum safety factor is adequate | |
| | Class B (Liquid Fires e.g. heptane) | 6.4% | Design concentration includes 30% safety factor | |

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).

Design concentration Class A Cables System test concentration. Where this value is lower than the Class A Standard value, the Class A Standard value should be used for design purposes.

Design concentrations are as tested to LPS 1230 in BRE Test Report Number 208832 v2.

Extinguishing concentrations are as tested in BRE Test Report Number 208831 (ISO 14520-1 tests)

This system uses:

Design, Installation, Maintenance and User Manual:
Design Manual Reference 14a-06L Issue 5

LPG Novac™ 1230 Total Flooding Systems (Engineered & Pre-engineered)

PART 4: SECTION 2.2

GASEOUS SYSTEMS

Software Programme:

TSPNovec 1230 FlowCalc Version TSP3.60b

- a) This system is suitable for storage in environmental conditions from -20° to +50°.
- b) System pressure is specified as 25 bar @ 20°C

Macron Safety Systems (UK) Ltd

Burlingham House, Hewett Road, Gapton Hall Industrial Estate, Great Yarmouth, Norfolk NR31 0NN, United Kingdom

Tel: +44 (0)1493 417600 • Fax: +44 (0)1493 417700

E-mail: info@tycoint.com • Website: www.macron-safety.com

Certificate No: 587Bb to LPS 1230

Hygood Sapphire™

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|------------------|--|----------------------|---|---------------|
| Hygood Sapphire™ | Class A Standard (Solid fires, e.g. paper, wood, plastics) | 6.0% | Design concentration includes 30% safety factor | 587Bb/01 |
| | Class A Cables (Solid fire risks including cables) | 6.1% | Confirmation that minimum safety factor is adequate | |
| | Class B (Liquid fires e.g. heptane) | 6.4% | Design concentration includes 30% safety factor | |

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).

Design concentration Class A Cables System test concentration. Where this value is lower than the Class A Standard value, the Class A Standard value should be used for design purposes.

Design concentrations are as tested to LPS 1230 in BRE Test Report Number 208832 v2.

Extinguishing concentrations are as tested in BRE Test Report Number 208831 (ISO 14520-1 tests)

This system uses:

Design, Installation, Maintenance and User Manual: Hygood Novec™ 1230 Total Flooding Systems (Engineered & Pre-engineered) Design Manual Reference 14a-06H Issue 5

Software Programme: Novac 1230 FlowCalc Version HYG3.60b

- a) This system is suitable for storage in environmental conditions from -20° to +50°.
- b) System pressure is specified as 24.8 bar @ 20°C

Nitin Fire Protection Industries Ltd (NITIE)

501 Delta, Technology Street, Hirandani Gardens, Powai, Mumbai 400 076, India

Tel: +91 22 40457000 • Fax: +91 22 66920910

E-mail: systems@nitinfire.com • Website: www.nitinfire.com

Certificate No: 855d to LPS 1230

'Nitin227' 25 bar & 42 bar HFC 227ea Gaseous Fire Suppression System

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|--------------|---|----------------------|---|---------------|
| Nitin227 | Class A Standard (Solid fires e.g. paper, wood, plastics) | 7.8% | Design concentration includes 30% safety factor | 855d/01 |
| | Class A Cables (Solid fires risks including cables) | 8.2% | Confirmation that minimum safety factor is adequate | |
| | Class B (Liquid Fires e.g. heptane) | 9.2% | Design concentration includes 30% safety factor | |

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).

Design concentrations are as tested to LPS 1230 in BRE Test Report Number 231870 (25 bar) & 254632 (42 bar) (Class A and B risks) and Test Letter 282069 (Class A Cables risks)

Extinguishing concentrations are as tested in BRE Test Report Number 231870 (ISO 14520-1 tests).

This system uses:

Design Manual: 'Eurotech Fire HFC227 Manual' - Issue 13-03.
 Software Program: VdS Schadenverhütung calculation package version 7.3 .
 This system is suitable for storage and environmental conditions from -20° to 50°C.
 System pressure is specified as 25 bar and 42 bar at 20°C.

Certificate No: 855d to LPS 1230

'Nitin1230' 25 bar & 42 bar FK 5-1-12 (Novec 1230) Gaseous Fire Suppression System

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|--------------|---|----------------------|---|---------------|
| Nitin1230 | Class A Standard (Solid fires e.g. paper, wood, plastics) | 5.3% | Design concentration includes 30% safety factor | 855d/02 |
| | Class A Cables (Solid fires risks including cables) | 5.5% | Confirmation that minimum safety factor is adequate | |
| | Class B (Liquid Fires e.g.heptane) | 6.5% | Design concentration includes 30% safety factor | |

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).
 Design concentrations are as tested to LPS 1230 in BRE Test Report Number 231870 (25 bar) & 254632 (42 bar) and Test Letter 282069 (Class A Cables risks)
 Extinguishing concentrations are as tested in BRE Test Report Number 231870 (ISO 14520-1 tests).

This system uses:

Design Manual: 'Eurotech Fire Novec1230 Manual' - Issue 13-04.
 Software Program: VdS Schadenverhütung calculation package version 7.2 .
 This system is suitable for storage and environmental conditions from -20° to 50°C.
 System pressure is specified as 25 bar and 42 bar at 20°C.

Certificate No: 855d to LPS 1230

Inertech IG-01 200 bar & 300 bar Gaseous Fire Suppression Systems

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|----------------|---|----------------------|---|---------------|
| Inertech IG-01 | Class A Standard (Solid fires e.g. paper, wood, plastics) | 45.5% | Design concentration includes 30% safety factor | 855d/03 |
| | Class A Cables (Solid fires risks including cables) | 49.6% | Confirmation that minimum safety factor is adequate | |
| | Class B (Liquid Fires e.g. | 52.7% | Design concentration includes 30% safety factor | |

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).
 Design concentrations are as tested to LPS 1230 in BRE Test Report Number 270432.
 Extinguishing concentrations are as tested in BRE Test Report Number 270432 (EN 15004-1 tests).

These systems use:

Design Manual: 'Eurotech Inertech System Manual' – Issue June 2013.
 Software Program: VdS Flow Calc Version 2.2 .
 This system is suitable for storage and environmental conditions from -20° to 50°C.
 System pressure is specified as 200 bar and 300 bar at 15°C.

Certificate No: 855d to LPS 1230

Inertech IG-55 200 bar & 300 bar Gaseous Fire Suppression Systems

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|----------------|---|----------------------|---|---------------|
| Inertech IG-55 | Class A Standard (Solid fires e.g. paper, wood, plastics) | 40.0% | Design concentration includes 30% safety factor | 855d/04 |
| | Class A Cables (Solid fires risks including cables) | 43.8% | Confirmation that minimum safety factor is adequate | |
| | Class B (Liquid Fires e.g. | 47.1% | Design concentration includes 30% safety factor | |

PART 4: SECTION 2.2

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Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).

Design concentrations are as tested to LPS 1230 in BRE Test Report Number 270432.

Extinguishing concentrations are as tested in BRE Test Report Number 270432 (EN 15004-1 tests).

These systems use:

Design Manual: 'Eurotech Inertech System Manual' – Issue June 2013.

Software Program: VdS Flow Calc Version 2.2 .

This system is suitable for storage and environmental conditions from -20° to 50°C.

System pressure is specified as 200 bar and 300 bar at 15°C.

Certificate No: 855d to LPS 1230

Inertech IG-100 200 bar & 300 bar Gaseous Fire Suppression Systems

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|---------------------|---|-----------------------------|---|----------------------|
| Inertech IG-100 | Class A Standard (Solid fires e.g. paper, wood, plastics) | 38.9% | Design concentration includes 30% safety factor | 855d/05 |
| | Class A Cables (Solid fires risks including cables) | 42.8% | Confirmation that minimum safety factor is adequate | |
| | Class B (Liquid Fires e.g. | 46.3% | Design concentration includes 30% safety factor | |

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).

Design concentrations are as tested to LPS 1230 in BRE Test Report Number 270432.

Extinguishing concentrations are as tested in BRE Test Report Number 270432 (EN 15004-1 tests).

These systems use:

Design Manual: 'Eurotech Inertech System Manual' – Issue June 2013.

Software Program: VdS Flow Calc Version 2.2 .

This system is suitable for storage and environmental conditions from -20° to 50°C.

System pressure is specified as 200 bar and 300 bar at 15°C.

Certificate No: 855d to LPS 1230

Inertech IG-541 200 bar & 300 bar Gaseous Fire Suppression Systems

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|---------------------|---|-----------------------------|---|----------------------|
| Inertech IG-541 | Class A Standard (Solid fires e.g. paper, wood, plastics) | 38.5% | Design concentration includes 30% safety factor | 855d/06 |
| | Class A Cables (Solid fires risks including cables) | 45.7% | Confirmation that minimum safety factor is adequate | |
| | Class B (Liquid Fires e.g. | 46.5% | Design concentration includes 30% safety factor | |

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).

Design concentrations are as tested to LPS 1230 in BRE Test Report Number 270432.

Extinguishing concentrations are as tested in BRE Test Report Number 270432 (EN 15004-1 tests).

These systems use:

Design Manual: 'Eurotech Inertech System Manual' – Issue June 2013.

Software Program: VdS Flow Calc Version 2.2 .

This system is suitable for storage and environmental conditions from -20° to 50°C.

System pressure is specified as 200 bar and 300 bar at 15°C.

Nitin Ventures FZE

P.O. Box 262294, Jebel Ali Free Zone, Dubai, United Arab Emirates

Tel: +97 148865858/859 • Fax: +97 148865800

E-mail: sales@nitinventures.com • Website: www.nitinfire.com

Certificate No: 855Bd to LPS 1230

Inertech IG-01 200 bar & 300 bar Gaseous Fire Suppression Systems

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|----------------|---|----------------------|---|---------------|
| Inertech IG-01 | Class A Standard (Solid fires e.g. paper, wood, plastics) | 45.5% | Design concentration includes 30% safety factor | 855Bd/03 |
| | Class A Cables (Solid fires risks including cables) | 49.6% | Confirmation that 'minimum safety factor' is adequate | |
| | Class B (Liquid Fires e.g.heptane) | 52.7% | Design concentration includes 30% safety factor | |

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).

Design concentrations are as tested to LPS 1230 in BRE Test Report Number 270432.

Extinguishing concentrations are as tested in BRE Test Report Number 270432 (EN 15004-1 tests).

This system uses:

Design Manual: 'Eurotech Inertech System Manual' - Issue June 2013.

Software Program: VdS Flow Calc Version 2.2 .

This system is suitable for storage and environmental conditions from -20° to 50°C.

System pressure is specified as 200 bar and 300 bar at 15°C.

Certificate No: 855Bd to LPS1230

Inertech IG-55 200 bar & 300 bar Gaseous Fire Suppression Systems

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|----------------|---|----------------------|---|---------------|
| Inertech IG-55 | Class A Standard (Solid fires e.g. paper, wood, plastics) | 40.0% | Design concentration includes 30% safety factor | 855Bd/04 |
| | Class A Cables (Solid fires risks including cables) | 43.8% | Confirmation that 'minimum safety factor' is adequate | |
| | Class B (Liquid Fires e.g.heptane) | 47.1% | Design concentration includes 30% safety factor | |

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).

Design concentrations are as tested to LPS 1230 in BRE Test Report Number 270432.

Extinguishing concentrations are as tested in BRE Test Report Number 270432 (EN 15004-1 tests).

This system uses:

Design Manual: 'Eurotech Inertech System Manual' - Issue June 2013.

Software Program: VdS Flow Calc Version 2.2 .

This system is suitable for storage and environmental conditions from -20° to 50°C.

System pressure is specified as 200 bar and 300 bar at 15°C.

Certificate No: 855Bd to LPS1230

Inertech IG-100 200 bar & 300 bar Gaseous Fire Suppression Systems

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|-----------------|---|----------------------|---|---------------|
| Inertech IG-100 | Class A Standard (Solid fires e.g. paper, wood, plastics) | 38.9% | Design concentration includes 30% safety factor | 855Bd/05 |
| | Class A Cables (Solid fires risks including cables) | 42.8% | Confirmation that 'minimum safety factor' is adequate | |

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| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|---------------------|------------------------------------|-----------------------------|---|----------------------|
| | Class B (Liquid Fires e.g.heptane) | 46.3% | Design concentration includes 30% safety factor | |

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).
Design concentrations are as tested to LPS 1230 in BRE Test Report Number 270432.
Extinguishing concentrations are as tested in BRE Test Report Number 270432 (EN 15004-1 tests).

This system uses:

Design Manual: 'Eurotech Inertech System Manual' Issue - June 2013.
Software Program: VdS Flow Calc Version 2.2 .
This system is suitable for storage and environmental conditions from -20° to 50°C.
System pressure is specified as 200 bar and 300 bar at 15°C.

Certificate No: 855Bd to LPS1230

Inertech IG-541 200 bar & 300 bar Gaseous Fire Suppression Systems

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|---------------------|---|-----------------------------|---|----------------------|
| Inertech IG-541 | Class A Standard (Solid fires e.g. paper, wood, plastics) | 38.5% | Design concentration includes 30% safety factor | 855Bd/06 |
| | Class A Cables (Solid fires risks including cables) | 45.7% | Confirmation that 'minimum safety factor' is adequate | |
| | Class B (Liquid Fires e.g.heptane) | 46.5% | Design concentration includes 30% safety factor | |

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).
Design concentrations are as tested to LPS 1230 in BRE Test Report Number 270432.
Extinguishing concentrations are as tested in BRE Test Report Number 270432 (EN 15004-1 tests).

This system uses:

Design Manual: 'Eurotech Inertech System Manual' - Issue June 2013.
Software Program: VdS Flow Calc Version 2.2 .
This system is suitable for storage and environmental conditions from -20° to 50°C.
System pressure is specified as 200 bar and 300 bar at 15°C.

Regulus Fire Systems

Suite 2, 8435 N. 90th Street, Scottsdale, Arizona 85258, USA

Tel: +1 480 607 1218 • Fax: +1 480 315 1316

E-mail: info@regulusfire.com • Website: www.regulusfire.com

Certificate No: 1222Ba to LPS 1230

Regulus 1230 25 bar FK 5-1-12 (Novec™ 1230) Gaseous Fire Suppression Systems

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|---------------------|---|-----------------------------|---|----------------------|
| Regulus 1230 | Class A Standard (Solid fires e.g. paper, wood, plastics) | 5.3% | Design concentration includes 30% safety factor | 1222Ba/02 |
| | Class A Cables (Solid fires risks including cables) | 5.5% | Confirmation that minimum safety factor is adequate | |
| | Class B (Liquid Fires e.g. | 6.5% | Design concentration includes 30% safety factor | |

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).
Design concentrations are as tested to LPS 1230 in BRE Test Report Number 231870 (25 bar) (Class A and B risks) and Test Letter 282069 (Class A Cables risks).
Extinguishing concentrations are as tested in BRE Test Report Number 231870 (ISO 14520-1 tests).

This system uses:
System Design Manual: 'Regulus 1230 DIOM Manual' Part no. 01-001347 rev000.

Software Program: VdS Schadenverhütung calculation package version 7.2 .
 This system is suitable for storage and environmental conditions from -20° to 50°C.
 System pressure is specified as 25 bar at 20°C.

Thorn Security Limited

Burlingham House, Hewett Road, Gapton Hall Industrial Estate, Great Yarmouth, Norfolk NR31 0NN, United Kingdom

Tel: +44 (0)1493 417600 • Fax: +44 (0)1493 417700

E-mail: macron-info@tycoint.com • Website: www.tycosafetyproducts-europe.com

Certificate No: 587Ab to LPS 1230

Thorn Sapphire

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|-----------------|---|----------------------|---|---------------|
| Thorn Sapphire™ | Class A Standard (solid fires e.g. paper, wood, plastics) | 6.0% | Design concentration includes 30% safety factor | 587Ab/01 |
| | Class A Cables (solid fire risks including cables) | 6.1% | Confirmation that minimum safety factor is adequate | |
| | Class B (liquid fires e.g. heptane) | 6.4% | Design concentration includes 30% safety factor | |

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).

Design concentration Class A Cables System test concentration. Where this value is lower than the Class A Standard value, the Class A Standard value should be used for design purposes.

Design concentrations are as tested to LPS 1230 in BRE Test Report Number 208832 v2.

Extinguishing concentrations are as tested in BRE Test Report Number 208831 (ISO 14520-1 tests)

This system uses:

Design, Installation, Maintenance and User Manual:
 engineered) Design Manual Reference 14a-06 Issue 5

Thorn Novec™ 1230 Total Flooding Systems (Engineered & Pre-

Software Programme:

ThornNovec 1230 FlowCalc Version TSP3.60b

- a) This system is suitable for storage in environmental conditions from -20° to +50°.
 b) System pressure is specified as 25 bar @ 20°C

Tyco Fire and Integrated Solutions (the trading company for Tyco Fire and Integrated Solutions (UK) Limited)

Tyco Park, Grimshaw Lane, Newton Heath, Manchester M40 2WL, United Kingdom

Tel: +44 (0)161 205 2321 • Fax: +44 (0)161 455 4459

Website: www.tycofis.com

Certificate No: 014b to LPS 1230

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|-----------------------|---|----------------------|---|---------------|
| Wormald Ansul INERGEN | Class A Standard) Solid fires e.g. paper, wood, plastics) | 43% | Design concentration includes 30% safety factor | 014b/01 |
| | Class A Cables (Solid fire risks including cables) | 47.8% | Confirmation that minimum safety factor is adequate | |
| | Class B (Liquid fires e.g. heptane) | 46.7% | Design concentration includes 30% safety factor | |

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).

Design concentration Class A Cables System test concentration. Where this value is lower than the Class A Standard value, the Class A Standard value should be used for design purposes.

Design concentrations are as tested to LPS 1230 in BRE Test Report Number 206885.

Extinguishing concentrations are as tested in BRE Test Report Number 206884 (ISO 14520-1 tests)

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This system uses:

Design, Installation, Maintenance and User Manual:
INERGEN 300 bar manual, P/N 13646raw, Issue March 2011
Software Programme:

C.A.P Version 14.04

- a) This system is suitable for storage in environmental conditions from -20° to +50°C.
- b) System pressure is specified as 300 bar @ 15°C
- c) If this fixed gaseous fire extinguishing system is used with existing pipework (so called drop-in systems) it is the responsibility of the installing company to ensure that:
 - all pipework can withstand system pressures and will be safe during operation;
 - all pipework meets the requirements of the gas system manufacturers design manual; and
 - all applicable legislation is complied with.

Tyco Safety Products (Great Yarmouth)

Burlingham House, Hewett Road, Gapton Hall Industrial Estate, Great Yarmouth, Norfolk NR31 0NN, United Kingdom

Tel: +44 (0) 1493 417600 • Fax: +44(0) 1493 417700

E-mail: macron-info@tycoint.com • Website: www.macron-safety.com

Certificate No: 587b to LPS 1230

Tyco Safety Products Sapphire™

| Product Name | Risk | Design Concentration | Comments | LPCB Ref. No. |
|--------------------------------|---|----------------------|---|---------------|
| Tyco Safety Products Sapphire™ | Class A Standard (Solid fires e.g. paper, wood, plastics) | 6.0% | Design concentration includes 30% safety factor | 587b/01 |
| | Class A Cables (Solid fire risks including cables) | 6.1% | Confirmation that minimum safety factor is adequate | |
| | Class B (Liquid Fires e.g. heptane) | 6.4% | Design concentration includes 30% safety factor | |

Design concentration Class A Standard and Class B = Extinguishing concentration x safety factor (minimum 1.3).

Design concentration Class A Cables System test concentration. Where this value is lower than the Class A Standard value, the Class A Standard value should be used for design purposes.

Design concentrations are as tested to LPS 1230 in BRE Test Report Number 208832 v2.

Extinguishing concentrations are as tested in BRE Test Report Number 208831 (ISO 14520-1 tests)

This system uses:

Design, Installation, Maintenance and User Manual:
engineered) Design Manual Reference 14a-06T Issue 5

TSP Novtec™ 1230 Total Flooding Systems (Engineered & Pre-

Software Programme:

TSPNovtec 1230 FlowCalc Version TSP3.60b

- a) This system is suitable for storage in environmental conditions from -20° to +50°.
- b) System pressure is specified as 25 bar @ 20°C

The LPCB Approval Scheme for fixed fire extinguishing systems for catering equipment has been developed to provide protection against the specific risks posed by oil fires in cooking appliances used in catering or food production establishments.

Product Testing

The listed systems below have been assessed against LPS 1223 *Requirements and Testing Procedures for Approval of Fixed Fire Extinguishing Systems for Catering Equipment*. This standard not only addresses the fire extinguishing performance of the system but also includes the performance of the detection and associated control systems. The requirements of LPS 1223 include:

- Design manual assessment
- Component testing, including pressure testing
- System discharge tests
- System fire detection and extinguishment tests
- Long term ageing tests

Traditional extinguishing agents do not readily extinguish catering equipment oil fires because they do not provide a sufficient cooling effect to reduce the cooking oil to below its auto-ignition temperature. The fire extinguishing tests in LPS 1223 recognise this requirement together with the need to ensure that neither the composition of the agent nor the manner in which it is discharged onto the fire causes flaming oil to be ejected.

All listed systems are subject ongoing audit programmes.

Authorised installer requirement

Such fixed extinguishing systems rely upon competent designers and installers and as such LPS 1223 contains requirements placed upon the listed manufacturers to ensure they maintain adequate control over their authorised installers.

Fish and chip ranges

Fish and chip ranges are a specialised type of catering equipment that require special consideration with regards to protection, based on the position and orientation of the extract system.

Unless otherwise stated in the individual product entries, the listed systems are not approved for protection of fish and chip ranges.

Note: LPS 1263:Part 1 *Fire Performance Requirements for Kitchen Extract Systems*. has also been developed to provide additional protection against potential fire spread in the extract ductwork associated with grease filtration systems.

AIR Fire S.p.A.

Via Tenuta della Mistica - 33/37, Rome 00155, Italy

Tel: +34 680395217

E-mail: info@airfire.eu • Website: www.airfire.eu

Certificate No: 1408a to LPS 1223: Issue 2.3

PART 4: SECTION 3

FIXED FIRE EXTINGUISHING SYSTEMS FOR CATERING EQUIPMENT

ARMANfire Chef Fixed Fire Extinguishing System for Catering Equipment

| Product Name | Designation | Description | LPCB Ref. No. |
|--|--------------------|---|----------------------|
| ARMANfire Chef "Piccolo" Kitchen Suppression System | ARFCHEF06C | Manual and automatic operation, 11.8 litre cylinder (6 litres wet chemical agent), maximum of 3 discharge nozzles | 1408a/01 |
| | ARFCHEF08C | Manual and automatic operation, 11.8 litre cylinder (8 litres wet chemical agent), maximum of 4 discharge nozzles | 1408a/02 |
| ARMANfire Chef "Medio" Kitchen Suppression System | ARFCHEF10C | Manual and automatic operation, 15.9 litre cylinder (10 litres wet chemical agent), maximum of 5 discharge nozzles | 1408a/03 |
| | ARFCHEF12C | Manual and automatic operation, 15.9 litre cylinder (12 litres wet chemical agent), maximum of 6 discharge nozzles | 1408a/04 |
| | ARFCHEF14C | Manual and automatic operation, 25.3 litre cylinder (14 litres wet chemical agent), maximum of 7 discharge nozzles | 1408a/05 |
| ARMANfire Chef "Grande" Kitchen Suppression System | ARFCHEF16C | Manual and automatic operation, 25.3 litre cylinder (16 litres wet chemical agent), maximum of 8 discharge nozzles | 1408a/06 |
| | ARFCHEF18C | Manual and automatic operation, 25.3 litre cylinder (18 litres wet chemical agent), maximum of 9 discharge nozzles | 1408a/07 |
| | ARFCHEF20C | Manual and automatic operation, 25.3 litre cylinder (20 litres wet chemical agent), maximum of 10 discharge nozzles | 1408a/08 |

Note:

AIR Fire S.p.A., ARMANfire Chef fixed fire extinguishing system for catering equipment, shall be installed, commissioned and maintained in accordance with the system manual 'ARMANfire Chef Kitchen Fire Suppression Installation and Maintenance User Manual', version 1.7 dated 11 Dec 2017.

Amerex Corporation

7595 Gadsden Highway, Trussville, Alabama 35173, USA

Tel: +1 205 655 3271 • Fax: +1 205 655 3279

E-mail: sales@amerex-fire.com • Website: www.amerex-fire.com/fireinfo

Certificate No: 407a to LPS 1223

Amerex KP and ZD Fire Suppression System for catering equipment

| Product Name | Designation | Description | LPCB Ref. No. |
|---------------------|--------------------|--|----------------------|
| KP | 275 | Manual and automatic operation, 10.41 litres Amerex Kitchen Wet Chemical Agent | 407a/01 |
| | 375 | Manual and automatic operation, 14.2 litres Amerex Kitchen Wet Chemical Agent | |
| | 475 | Manual and automatic operation, 18.17 litres Amerex Kitchen Wet Chemical Agent | |
| | 600 | Manual and automatic operation, 23.23 litres Amerex Kitchen Wet Chemical Agent | |
| ZD | 275 | Manual and automatic operation, 10.41 litres Kitchen Wet Chemical Agent | 407a/02 |
| | 375 | Manual and automatic operation, 14.2 litres Amerex Kitchen Wet Chemical Agent | |
| | 475 | Manual and automatic operation, 18.17 litres Amerex Kitchen Wet Chemical Agent | |

KP and ZD system shall be designed, installed and maintained in accordance with Amerex Design, Installation, Maintenance and Recharge Manual No 20150 Rev. MM#20150-12/2008 dated December 2008.

Ansul Incorporated

One Stanton Street, Marinette, Wisconsin 54143-2542, USA

Tel: +1 715 735 7411 • Fax: +1 715 732 3477

Website: www.ansul.com

Certificate No: 591a to LPS 1223

Ansul R-102 Restaurant Fire Suppression System

| Product Name | Designation | Description | LPCB Ref. No. |
|---------------------|---|---|----------------------|
| R-102 | Single Tank System (1.5 or 3 US gallon) | Manual and automatic operation 5.7 or 11.4 litres Ansulex LpH™ liquid agent | 591a/01 |

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FIXED FIRE EXTINGUISHING SYSTEMS FOR CATERING EQUIPMENT

| Product Name | Designation | Description | LPCB Ref. No. |
|--------------|---|--|---------------|
| | Double Tank System (4.5 or 6 US gallon) | Manual and automatic operation 17.1 or 22.7 litres Ansulex LpH™ liquid agent | |
| | Multiple Tank System | Manual and automatic operation, 28.4 - 170 litres Ansulex LpH™ liquid agent | |
| Piranha | Single Tank System (1.5, 2.25 or 3 US gallon) | Manual and automatic operation, 5.7, 8.5 or 11.4 litres PRX™ liquid agent | 591a/02 |
| | Multiple Tank System | Manual and automatic operation, 11.4 to 34.2 litres PRX™ liquid agent | |

R-102 systems shall be designed, intalled and maintained in accordance with Ansul Design, Installation, Recharge and Maintenance Manual part No. 418087-011

Piranha systems shall be designed, installed and maintained in accordance with Ansul Design, Installation, Recharge and Maintenance Manual part No. 423385-08

Ceasefire Industries Pvt. Ltd

2nd Floor, Plot No. 4, Sector-135, Noida, Uttar Pradesh 201301, India

Tel: +91 120 4255800 • Fax: +91 120 4255801

E-mail: amit@ceasefire.in • Website: www.ceasefire.in

Certificate No: 1329-1a to LPS 1223: issue 2.3

Restaurant Fire Suppression System

| Product Name | Designation | Description | LPCB Ref. No. |
|--|----------------|--|---------------|
| Ceasefire water mist kitchen suppression system 2 x 6.5 litre capacity (1) | 2 x 6.5 litre | Manual and automatic operation, water mist extinguishant | 1329-1a/1 |
| Ceasefire water mist kitchen suppression system 4 x 6.5 litre capacity (1) | 4 x 6.5 litre | Manual and automatic operation, water mist extinguishant | 1329-1a/2 |
| Ceasefire water mist kitchen suppression system 26 litre capacity (1) | 1 x 26 litre | Manual and automatic operation, water mist extinguishant | 1329-1a/3 |
| Ceasefire wet chemical kitchen suppression system, 11.5 litre capacity (2) | 1 x 11.5 litre | Manual and Automatic operation, Wet chemical extinguishant | 1329-1a/4 |
| Ceasefire wet chemical kitchen suppression system, 15.6 litre capacity (2) | 1 x 15.6 litre | Manual and Automatic operation, Wet chemical extinguishant | 1329-1a/5 |
| Ceasefire wet chemical kitchen suppression system, 25 litre capacity (2) | 1 x 25 litre | Manual and Automatic operation, Wet chemical extinguishant | 1329-1a/6 |

Notes:

(1) Ceasefire water mist kitchen suppression system shall be installed, maintained and operated in accordance with technical and operational documentation SGMP-K/DTI/2 rev.4 5.

(2) Ceasefire wet chemical kitchen suppression system shall be installed, maintained and operated in accordance with Handbook of Design, Installation, Operation and System Maintenance, dated 19.11.2014, version 00, Rev 01.

Certificate No: 1239Bb to LPS 1223: issue 2.2

Restaurant Fire Suppression System

| Product Name | Designation | Description | LPCB Ref. No. |
|--|-------------------------|--|---------------|
| Ceasefire Wet Chemical Kitchen Safe Ultra Series Suppression System 11.5 litre | 1 x 11.5 litre Cylinder | Manual and automatic operation, wet chemical containing up to 8 litres of extinguishant | 1239Bb/01 |
| Ceasefire Wet Chemical Kitchen Safe Ultra Series Suppression System 15.6 litre | 1 x 15.6 litre Cylinder | Manual and automatic operation, wet chemical containing up to 12 litres of extinguishant | 1239Bb/02 |
| Ceasefire Wet Chemical Kitchen Safe Ultra Series Suppression System 25 litre | 1 x 25 litre Cylinder | Manual and automatic operation, wet chemical containing up to 20 litres of extinguishant | 1239Bb/03 |

Note:

Ceasefire Wet Chemical Kitchen Safe Ultra Series Suppression System shall be installed, operated and maintained in accordance with the Ceasefire Handbook of Design, Installation, Operation and System Maintenance manual version, 00 Rev 0.1, Dated 19.11.2014.

PART 4: SECTION 3

FIXED FIRE EXTINGUISHING SYSTEMS FOR CATERING EQUIPMENT

Ceodeux Extinguisher Valves Technology S.A. (Rotarex FIRETEC)

24 rue de Diekirch, L-7440 Lintgen, Luxembourg

Tel: +352 32 78 32-1 • Fax: +352 32 78 32-326

E-mail: info@firetec.rotarex.com • Website: www.rotarex.com

Certificate No: 724b to LPS 1223

Rotarex FireDETEC

| Product Name | Designation | Description | LPCB Ref. No. |
|--|-------------|---|---------------|
| Rotarex FireDETEC, wet chemical, restaurant fire suppression system. | B07503000 | 9 litre, Manual and Automatic operation, wet chemical extinguishant | 724b/01 |
| | B07503001 | 9 litre, Manual and Automatic operation, wet chemical extinguishant | 724b/02 |

Note:

Rotarex FireDETEC, wet chemical restaurant fire suppression systems shall be installed, maintained and operated in accordance with Rotarex FireDETEC, Installation and Maintenance Manual FireDETEC System kits for kitchen version 07/2013.

Emirates Fire Fighting Equipment Factory L.L.C. (FIREX)

P.O.Box 22436, Industrial Area 13, Sharjah, United Arab Emirates

Tel: +971 6 5340300 • Fax: +971 6 5340090

E-mail: firex@emirates.net.ae • Website: www.firexuae.com

Certificate No: 863f to LPS 1223: Issue 2.3

FIREX FX-KHS (Kitchen Hood System) Fixed Fire Extinguishing System for Catering Equipment

| Product Name | Designation | Description | LPCB Ref. No. |
|----------------------------------|-------------|--|---------------|
| FIREX FX-KHS Kitchen Hood System | KHSC10 | Manual and automatic operation, wet chemical, 1 x 10 litre cylinder. | 863f/01 |
| | KHSC20 | Manual and automatic operation, wet chemical, 1 x 20 litre cylinder. | 863f/02 |

Note:

Emirates Fire Fighting Equipment Factory L.L.C. (FIREX), FX-KHS (Kitchen Hood System) fixed fire extinguishing system for catering equipment, shall be installed, commissioned and maintained in accordance with the FIREX FX-KHS system manual 'Manual for Fixed Fire Extinguishing System for Catering Equipment' Rev. 1 dated 14/12/2016.

Jactone Products Limited

Springvale Business Park, Springvale Avenue, Bilston, West Midlands WV14 0QL, United Kingdom

Tel: +44 (0)1902 357777 • Fax: +44 (0)1902 357711

E-mail: sales@jactone.com • Website: www.jactone.com

Certificate No: 783c to LPS 1223: issue 2.3

| Product Name | Designation | Description | LPCB Ref. No. |
|---|-------------|---|---------------|
| PAFSS KitchenGuard restaurant fire suppression system (1) | FSGA010 | Manual and Automatic operation, wet chemical, 1 x 9 litre cylinder. | 783c/01 |
| | FSGA011 | Manual and Automatic operation, wet chemical, 2 x 6 litre cylinder. | 783c/02 |
| | FSGA012 | Manual and Automatic operation, wet chemical, 2 x 9 litre cylinder. | 783c/03 |
| PAFSS KitchenGuard restaurant fire suppression system (2) | FSGA8L | Manual and Automatic operation, wet chemical, 1 x 8 litre cylinder. | 783c/04 |

PART 4: SECTION 3

FIXED FIRE EXTINGUISHING SYSTEMS FOR CATERING EQUIPMENT

| Product Name | Designation | Description | LPCB Ref. No. |
|--------------|-------------|--|---------------|
| | FSGA12L | Manual and Automatic operation, wet chemical, 1 x 12 litre cylinder. | 783c/05 |

Notes:

(1) Jactone Products Limited, PAFSS KitchenGuard fixed fire suppression system for catering equipment, shall be installed, commissioned and maintained in accordance with System Manual, Automatic Fixed Fire Extinguishing Systems for catering equipment, ISSUE 4

(2) Jactone Products Limited, PAFSS KitchenGuard fixed fire suppression system for catering equipment, shall be installed, commissioned and maintained in accordance with System Manual, Automatic Fixed Fire Extinguishing Systems for catering equipment, ISSUE 5.2 - 01/10/2015

NAFFCO FZ Co

PO Box 17014, Jebel Ali, Dubai, United Arab Emirates

Tel: +971 4815111 • Fax: +971 48151222

E-mail: natfire@emirates.net.ae • Website: www.naffco.com

Certificate No: 463o to LPS 1223

NAFFCO Fusible link and Pneumatic Heat Sensor Tube Restaurant Fire Suppression Systems

| Product Name | Description | LPCB Ref. No. |
|---|--|---------------|
| Pre-Engineered Kitchen Fire Suppression System using Fusible Link | Manual and automatic operation, 9.5, 15 or 22.5 litre cylinders, N1003131 and QF-R extinguishants, fusible link operation. | 463o/01 |
| Pre-Engineered Kitchen Fire Suppression System using Pneumatic Heat Sensor Tube | Manual and automatic operation, 9.5, 15 or 22.5 litre cylinders, N1003131 and QF-R extinguishants, Pneumatic Heat Sensor Tube operation. | 463o/02 |

Note:

Pre-Engineered Kitchen Fire Suppression System using Fusible Link and Pneumatic Heat Sensor Tube shall be designed, installed and maintained in accordance with Design, Installation, Operation, Maintenance and Refilling Manual for Pre-Engineered Kitchen Fire Suppression System using Fusible Link, Rev 00 Dated 14/12/2016 and Design, Installation, Operation, Maintenance and Refilling Manual for Pre-Engineered Kitchen Fire Suppression System using Heat Sensor Tube, Rev 00 Dated 14/12/2016 respectively.

Nobel Fire Systems

7 Quest Park, Moss Hall Road, Heywood, Lancashire BL9 7JZ, United Kingdom

Tel: +44 (0)1706 625 777 • Fax: +44 (0)1706 625 325

E-mail: info@nobel-fire-systems.com • Website: www.nobel-fire-systems.com

Certificate No: 642a to LPS 1223: issue 2.2

| Product Name | Designation | Description | LPCB Ref. No. |
|--|-------------|--|---------------|
| Nobel K series, wet chemical restaurant fire suppression system. | K5 | 5 litre, Manual and Automatic operation, wet chemical extinguishant | 642a/01 |
| | K15 | 15 litre, Manual and Automatic operation, wet chemical extinguishant | 642a/02 |
| | K30 | 30 litre, Manual and Automatic operation, wet chemical extinguishant | 642a/03 |

Note:

Nobel K series, wet chemical restaurant fire suppression systems shall be installed, maintained and operated in accordance with Nobel Fire Systems, K-Series, Design, Installation and Maintenance Manual V3 Rev. 6.1 June 2014.

PART 4: SECTION 3

FIXED FIRE EXTINGUISHING SYSTEMS FOR CATERING EQUIPMENT

Spoon2 International Limited

Haselor Lane, Hinton on the Green, Worcestershire WR11 2QZ, United Kingdom

Tel: +44 (0) 1386 861344 • Fax: +44 (0) 1386 861452

E-mail: info@spoon2.com • Website: www.spoon2.com

Certificate No: 970a to LPS 1223

Brand name "Spoon2"

| Product Name | Designation | Description | LPCB Ref. No. |
|--------------|-------------|---|---------------|
| SP2 | SP2 - 1 | Manual and automatic operation, 14, 28 or 42 litres Spoon2 K2 liquid agent | 970a/01 |
| | SP2 - 2 | Manual and automatic operation, 56, 70 or 84 litres Spoon2 K2 liquid agent | |
| | SP2 - 3 | Manual and automatic operation, 98, 112 or 126 litres Spoon2 K2 liquid agent | |
| | SP2 - 4 | Manual and automatic operation, 141, 155 or 169 litres Spoon2 K2 liquid agent | |
| | SP2 - 5 | Manual and automatic operation, 183, 197 or 211 litres Spoon2 K2 liquid agent | |

SP2 systems shall be designed, installed and maintained in accordance with Spoon2 International limited
Installation manual1004 July 09, Testing and commissioning manual 206 July 09, Recharging manual 304 July 09, Operating and maintenance manual 302 QMF 22 Issue 1 June 09, Service manual 407 July 09.

Certificate No: 970a to LPS 1223

Brand name "Fireguard"

| Product Name | Designation | Description | LPCB Ref. No. |
|--------------|-------------|---|---------------|
| K2 | K2 - 1 | Manual and automatic operation, 14, 28 or 42 litres Spoon2 K2 liquid agent | 970a/01 |
| | K2 - 2 | Manual and automatic operation, 56, 70 or 84 litres Spoon2 K2 liquid agent | |
| | K2 - 3 | Manual and automatic operation, 98, 112 or 126 litres Spoon2 K2 liquid agent | |
| | K2 - 4 | Manual and automatic operation, 141, 155 or 169 litres Spoon2 K2 liquid agent | |
| | K2 - 5 | Manual and automatic operation, 183, 197 or 211 litres Spoon2 K2 liquid agent | |

SP2 & K2 systems shall be designed, installed and maintained in accordance with Spoon2 International limited
Installation manual1004 July 09, Testing and commissioning manual 206 July 09, Recharging manual 304 July 09, Operating and maintenance manual 302 QMF 22 Issue 1 June 09, Service manual 407 July 09.

Steel Recon Industries Sdn Bhd

No 8 Jalan Subang 7, Taman Perindustrian Subang, 47610 Subang Jaya, Selangor Darul Ehsan, Malaysia

Tel: +603 8023 2323 • Fax: +603 8023 2828

E-mail: ck.wee@sri.com.my • Website: www.sri.com.my

Certificate No: 1239Ab to LPS 1223: issue 2.3

Kitchen Shield F808, wet chemical, restaurant fire suppression system

| Product Name | Designation | Description | LPCB Ref. No. |
|--|-------------|---|---------------|
| Kitchen Shield F808, wet chemical, restaurant fire suppression system. | F8081000 | 9 litre, Manual and Automatic operation, wet chemical extinguishant | 1239Ab/01 |
| | F8082000 | 2 X 6 litre, Manual and Automatic operation, wet chemical extinguishant | 1239Ab/02 |
| | F8083000 | 2 X 9 litre, Manual and Automatic operation, wet chemical extinguishant | 1239Ab/03 |

Note:

Steel Recon Industries Sdn Bhd, wet chemical restaurant fire suppression systems shall be installed, maintained and operated in accordance with Steel Recon Industries Sdn Bhd, Installation and Maintenance Handbook version 1.5 dated 6 March 2014 Rev.

Certificate No: 1435a to LPS 1223: issue 2.3

PART 4: SECTION 3

FIXED FIRE EXTINGUISHING SYSTEMS FOR CATERING EQUIPMENT

KitchenShield, fire detection and suppression system for commercial kitchens and deep fat fryers

| Product Name | Designation | Description | LPCB Ref. No. |
|---|-------------------|--|---------------|
| KitchenShield, fire detection and suppression system for commercial kitchens and deep fat fryers. | SPS-KS014-CYL-15L | 8 litre, Manual and automatic operation, wet chemical extinguishant | 1435a/01 |
| | SPS-KS014-CYL-12L | 10 litre, Manual and automatic operation, wet chemical extinguishant | 1435a/02 |
| | SPS-KS014-CYL-20L | 12 or 15 litre, Manual and automatic operation, wet chemical extinguishant | 1435a/03 |
| | SPS-KS014-CYL-30L | 17, 19 or 22 litre, Manual and automatic operation, wet chemical extinguishant | 1435a/04 |
| | SPS-KS014-CYL-35L | 24 or 26 litre, Manual and automatic operation, wet chemical extinguishant | 1435a/05 |

Note:

Steel Recon Industries Sdn Bhd, wet chemical restaurant fire suppression systems shall be installed, maintained and operated in accordance with Steel Recon Industries Sdn Bhd, Fire Detection and Suppression System Manual for Commercial Kitchens and Deep Fat Fryer, version 6/date: 25 January 2018.

Telesto Sp. z o.o.

Ul. Fabryczna 5, 26-130 Suchedniow, Poland
Tel: +48 22 489 6571 • Fax: +48 22 648 8764
E-mail: telesto@telesto.pl • Website: www.telesto.pl

Certificate No: 1129a to LPS 1223: issue 2.3

"Safety Chef" Restaurant Fire Suppression System

| Product Name | Designation | Description | LPCB Ref. No. |
|--------------|-------------|---|---------------|
| SafetyChef | 320 cm | Manual and Automatic operation, water mist restaurant suppression system up to 320 cm protected length supplied from single or manifold containers, 12.27, 30 and 50 litre volumes. | 1129a/01 |
| | 800 cm | Manual and Automatic operation, water mist restaurant suppression system up to 800 cm protected length supplied from single or manifold containers, 12.27, 30 and 50 litre volumes. | 1129a/02 |

Notes:

- "SafetyChef" restaurant water mist suppression systems shall be installed, maintained and operated in accordance with Telesto Sp. z o.o SafetyChef fire extinguishing mist system installation, operation and maintenance manual No. SGMP-K/IMS/5 Rev. 5 dated 22.05.2015, and Telesto SafetyChef system technical specification No. SGMP-K/DTI/6 Rev 6 dated 22.05.2015.
- For use only with Fusible link, glass bulb and pneumatic detection systems as detailed in Telesto SafetyChef system technical specification No. SGMP-K/DTI/6 Rev 6 dated 22.05.2015.

Tyco Fire & Security U.A.E. LLC

Al Quoz 3, Umm Suqeim Road, P.O. Box 38136, Dubai, United Arab Emirates
Tel: • Fax:
E-mail: tycofireuae@tycofireuae.com • Website: www.tycofireuae.com

Certificate No: 1129Ba to LPS 1223: issue 2.3

"Safety Chef" Restaurant Fire Suppression System

| Product Name | Designation | Description | LPCB Ref. No. |
|--------------|-------------|---|---------------|
| Safety Chef | 320 cm | Manual and Automatic operation, water mist suppression system up to 320 cm protected length supplied from single or manifold cylinders, 12.27, 30 and 50 litre volumes. | 1129Ba/01 |
| | 800 cm | Manual and Automatic operation, water mist suppression system up to 800 cm protected length supplied from single or manifold cylinders, 12.27, 30 and 50 litre volumes. | |

Note:

PART 4: SECTION 3

FIXED FIRE EXTINGUISHING SYSTEMS FOR CATERING EQUIPMENT

"Safety Chef" water mist suppression systems shall be installed, maintained and operated in accordance with "Safety Chef" Watermist Kitchenhood Protection System, fire extinguishing mist system mounting and servicing instruction, TFS-SC-MAN-01 Rev. 01 dated 25/06/2015.

Watermist Ltd

2 Brickfields Way, Thetford, Norfolk IP24 1HX, United Kingdom

Tel: +44 (0)800 731 9288 • Fax:

E-mail: info@hydramist.co.uk • Website: www.hydramist.co.uk

Certificate No: 1077a to LPS 1223

Hydramist Fire Suppression System for Catering Equipment

| Product Name | Designation | Description | LPCB Ref. No. |
|---------------------|-----------------------------------|--|----------------------|
| Hydramist 15AMPU | Single phase electric pump system | Manual and Automatic operation, potable water used to produce water mist extinguishant | 1077a/01 |
| Hydramist 18AMPU | Three phase electric pump system | Manual and Automatic operation, potable water used to produce water mist extinguishant | 1077a/02 |

(A)MPU system shall be designed, installed and maintained in accordance with the Hydramist System Manual (A)MPU-D02 issue 6 (16/02/15) and Hydramist Service Manual (A)MPU-D05. Section 12 of the system manual details the design parameters for the system applications.

The approval of the fire suppression systems listed in this section is based on LPS 1666: Issue 1.0 *Requirements and test procedures for the LPCB approval of direct low pressure (DLP) application fixed fire suppression systems, using heat sensitive pneumatic detection tubing, for the protection of small defined volume unoccupied enclosures.*

This standard specifies the requirements and test procedures for LPCB approval of direct low pressure (DLP) application fixed fire suppression systems, using heat sensitive pneumatic detection tubing, designed for the protection of small unoccupied defined volume enclosures such as electrical switchgear cabinets, server racking and similar installations from small local flaming fire sources.

The objective of the approval is to assess the ability of the system to prevent fire spread between units by evaluating the effectiveness and reliability of a system to detect and extinguish the fire at its source. The system shall also be capable of isolating the power to the protected enclosures and generating a signal for an alarm. The evaluation of a system is essentially a verification of the parameters specified in the system manual.

The selection and specification of fire protection equipment should be based on the completion of a suitable risk assessment and local regulatory requirements.

These systems are intended solely to provide enhanced local fire protection. They are not intended for use as whole room or building fire protection systems.

The requirements and test procedures specified herein are those which generally enable a satisfactory evaluation of a system to be made. However, the LPCB reserves the right to apply special considerations dependant on the scope of application of a particular system if it is not adequately dealt with by this standard.

The scheme provides approval for systems with:

- A single container heat detection tube installation run protecting a maximum single volume of 2m³.
- Up to 4 heat detection tube runs connected to a single container where no single protected volume exceeds a 2m³ volume.
- A maximum heat detection tube length of 10m from the container outlet to the end of any single detection tube run.

The range of materials and products employed within these enclosed volumes is large and whilst this scheme addresses a number of potential fire scenarios it cannot be considered to address all applications in particular where the electrical power supply is not isolated/removed upon activation of the suppression system and the risk of re-ignition remains high.

Ceasefire Industries Pvt. Ltd

2nd Floor, Plot No. 4, Sector-135, Noida, Uttar Pradesh 201301, India

Tel: +91 120 4255800 • Fax: +91 120 4255801

E-mail: amit@ceasefire.in • Website: www.ceasefire.in

Certificate No: 1329c to LPS 1666: Issue 1.0

Ceasefire Industries Ltd HFC-236fa Direct Low Pressure (DLP) Application Fixed Fire Suppression Systems

| Product Name | Container Size | Description | Detector Tube | Ventilation (Enclosed or Open Vents) | Air Flow (Forced / Natural) | LPCB Ref. No. |
|--------------|----------------|---------------------------|---------------------------|--------------------------------------|-----------------------------|---------------|
| CF-000792 | 2 kg | 2 kg HFC-236fa DLP system | P/N:TI-000010A 6mm o/d | Enclosed & open options ⁴ | Natural airflow only | 1329c/01 |
| CF-000793 | 4 kg | 4 kg HFC-236fa DLP system | P/N:TI-000010A 6mm o/d | Enclosed & open options ⁴ | Natural airflow only | 1329c/02 |

Notes:

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DIRECT LOW PRESSURE (DLP) APPLICATION SYSTEMS

- 1) Ceasefire Industries Ltd HFC-236fa DLP Systems shall be configured, installed, serviced and maintained in accordance with Ceasefire Industries Ltd System Manual CQRS/DIR/MAN/01 Version.01 Rev.02 - 17.01.2017.
- 2) These systems are intended solely to provide enhanced local fire protection. They are not intended for use as whole room or building fire protection systems.
- 3) The systems use a single method for detection and delivery of the extinguishing agent to the activation point.
 - System operation pressure: 15 bar @ 20°C.
 - System operation temperature range: -20°C to +60°C.
- 4) The above systems may have air vents at low and/or high level (refer note 1).

Certificate No: 1329d to LPS 1666: Issue 1.0

Ceasefire Industries Ltd HFC-227ea Direct Low Pressure (DLP) Application Fixed Fire Suppression Systems

| Product Name | Container Size | Description | Detector Tube | Ventilation (Enclosed or Open Vents) | Air Flow (Forced / Natural) | LPCB Ref. No. |
|---------------------|-----------------------|---------------------------|---------------------------|---|------------------------------------|----------------------|
| CF-000880 | 2 kg | 2 kg HFC-227ea DLP system | P/N:TI-000010A 6mm o/d | Enclosed & open options ⁴ | Natural airflow only | 1329d/01 |
| CF-000881 | 4 kg | 4 kg HFC-227ea DLP system | P/N:TI-000010A 6mm o/d | Enclosed & open options ⁴ | Natural airflow only | 1329d/02 |

Notes:

- 1) Ceasefire Industries Ltd HFC-227ea DLP Systems shall be configured, installed, serviced and maintained in accordance with Ceasefire Industries Ltd System Manual CQRS/DIR/MAN/01 Version.01 Rev.02 - 17.01.2017.
- 2) These systems are intended solely to provide enhanced local fire protection. They are not intended for use as whole room or building fire protection systems.
- 3) The systems use a single method for detection and delivery of the extinguishing agent to the activation point.
 - System operation pressure: 15 bar @ 20°C.
 - System operation temperature range: -20°C to +60°C.
- 4) The above systems may have air vents at low and/or high level (refer note 1).

EKC International FZE

P.O. Box 61041, Jebel Ali, Dubai, United Arab Emirates
Tel: +971 4 886 5992 • Fax: +971 4 886 5006
E-mail: design@ekcfire.com • Website: www.ekcfire.com

Certificate No: 1400Ba to LPS 1666: Issue 1.0

EKC International FZE 3M™ Novec™ 1230 Direct Low Pressure (DLP) Application Fixed Fire Suppression Systems

| Product Name | Container Size | Description | Detector Tube | Ventilation (Enclosed or Open Vents) | Air Flow (Forced / Natural) | LPCB Ref. No. |
|---------------------|-----------------------|-------------------------------|------------------------|---|------------------------------------|----------------------|
| EKC-920205 | 2.5 lb | 2.5 lb Novec™ 1230 DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400Ba/01 |
| | 2.5 lb | 2.5 lb Novec™ 1230 DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400Ba/02 |
| EKC-898001 | 1 kg | 1 kg Novec™ 1230 DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400Ba/03 |
| | 1 kg | 1 kg Novec™ 1230 DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400Ba/04 |
| EKC-920505 | 5 lb | 5 lb Novec™ 1230 DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400Ba/05 |
| | 5 lb | 5 lb Novec™ 1230 DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400Ba/06 |

PART 4: SECTION 4**DIRECT LOW PRESSURE (DLP) APPLICATION SYSTEMS**

| Product Name | Container Size | Description | Detector Tube | Ventilation (Enclosed or Open Vents) | Air Flow (Forced / Natural) | LPCB Ref. No. |
|--------------|----------------|------------------------------|------------------------|--------------------------------------|-----------------------------|---------------|
| EKC-898002 | 2 kg | 2 kg Novec™ 1230 DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400Ba/07 |
| | 2 kg | 2 kg Novec™ 1230 DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400Ba/08 |
| EKC-921005 | 10 lb | 10 lb Novec™ 1230 DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400Ba/09 |
| | 10 lb | 10 lb Novec™ 1230 DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400Ba/10 |
| EKC-898003 | 5 kg | 5 kg Novec™ 1230 DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400Ba/11 |
| | 5 kg | 5 kg Novec™ 1230 DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400Ba/12 |

Notes:

- 1) EKC International FZE 3MTM Novec™ 1230 DLP Systems shall be configured, installed, serviced and maintained in accordance with EKC International FZE System Manual EKC-800035-000 - 11/08/2017.
 - 2) These systems are intended solely to provide enhanced local fire protection. They are not intended for use as whole room or building fire protection systems.
 - 3) The systems use a single method for detection and delivery of the extinguishing agent to the activation point.
- System operation pressure: 195 psig @ 70°F (13.5 bar @ 21.1°C).
- System operation temperature range: -20°C to +60°C.

Certificate No: 1400Bb to LPS 1666: Issue 1.0

EKC International FZE HFC-227ea Direct Low Pressure (DLP) Application Fixed Fire Suppression Systems

| Product Name | Container Size | Description | Detector Tube | Ventilation (Enclosed or Open Vents) | Air Flow (Forced / Natural) | LPCB Ref. No. |
|--------------|----------------|----------------------------|------------------------|--------------------------------------|-----------------------------|---------------|
| EKC-920301 | 3 lb | 3 lb HFC-227ea DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400Bb/01 |
| | 3 lb | 3 lb HFC-227ea DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400Bb/02 |
| EKC-898004 | 1 kg | 1 kg HFC-227ea DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400Bb/03 |
| | 1 kg | 1 kg HFC-227ea DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400Bb/04 |
| EKC-920601 | 6 lb | 6 lb HFC-227ea DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400Bb/05 |
| | 6 lb | 6 lb HFC-227ea DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400Bb/06 |
| EKC-898005 | 2 kg | 2 kg HFC-227ea DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400Bb/07 |
| | 2 kg | 2 kg HFC-227ea DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400Bb/08 |
| EKC-921201 | 12 lb | 12 lb HFC-227ea DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400Bb/09 |
| | 12 lb | 12 lb HFC-227ea DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400Bb/10 |
| EKC-898006 | 5 kg | 5 kg HFC-227ea DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400Bb/11 |
| | 5 kg | 5 kg HFC-227ea DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400Bb/12 |

Notes:

- 1) EKC International FZE HFC-227ea DLP Systems shall be configured, installed, serviced and maintained in accordance with EKC International FZE System Manual EKC-800023-000 - 11/08/2017.
- 2) These systems are intended solely to provide enhanced local fire protection. They are not intended for use as whole room or building fire protection systems.
- 3) The systems use a single method for detection and delivery of the extinguishing agent to the activation point.

PART 4: SECTION 4

DIRECT LOW PRESSURE (DLP) APPLICATION SYSTEMS

- System operation pressure: 150 psig @ 70°F (10.3 bar @ 21.1°C).
- System operation temperature range: -20°C to +60°C.

Firetrace International LLC

Suite 2, 8435 N. 90th Street, Scottsdale, Arizona 85258, USA
Tel: +1 480 607 1218 • Fax: +1 480 315 1316
E-mail: info@firetrace.com • Website: <http://www.firetrace.com>

Certificate No: 1400a to LPS 1666: Issue 1.0

Firetrace International LLC 3M™ Novec™ 1230 Direct Low Pressure (DLP) Application Fixed Fire Suppression Systems

| Product Name | Container Size | Description | Detector Tube | Ventilation (Enclosed or Open Vents) | Air Flow (Forced / Natural) | LPCB Ref. No. |
|--------------|----------------|-------------------------------|------------------------|--------------------------------------|-----------------------------|---------------|
| 920205 | 2.5 lb | 2.5 lb Novec™ 1230 DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400a/01 |
| | 2.5 lb | 2.5 lb Novec™ 1230 DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400a/02 |
| 898001 | 1 kg | 1 kg Novec™ 1230 DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400a/03 |
| | 1 kg | 1 kg Novec™ 1230 DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400a/04 |
| 920505 | 5 lb | 5 lb Novec™ 1230 DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400a/05 |
| | 5 lb | 5 lb Novec™ 1230 DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400a/06 |
| 898002 | 2 kg | 2 kg Novec™ 1230 DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400a/07 |
| | 2 kg | 2 kg Novec™ 1230 DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400a/08 |
| 921005 | 10 lb | 10 lb Novec™ 1230 DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400a/09 |
| | 10 lb | 10 lb Novec™ 1230 DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400a/10 |
| 898003 | 5 kg | 5 kg Novec™ 1230 DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400a/11 |
| | 5 kg | 5 kg Novec™ 1230 DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400a/12 |

Notes:

- 1) Firetrace International LLC 3M™ Novec™ 1230 DLP Systems shall be configured, installed, serviced and maintained in accordance with Firetrace International LLC System Manual 800035-003 – 12/01/2017.
- 2) These systems are intended solely to provide enhanced local fire protection. They are not intended for use as whole room or building fire protection systems.
- 3) The systems use a single method for detection and delivery of the extinguishing agent to the activation point.

- System operation pressure: 195 psig @ 70°F (13.5 bar @ 21.1°C).
- System operation temperature range: -20°C to +60°C.

Certificate No: 1400b to LPS 1666: Issue 1.0

Firetrace International LLC HFC-227ea Direct Low Pressure (DLP) Application Fixed Fire Suppression Systems

| Product Name | Container Size | Description | Detector Tube | Ventilation (Enclosed or Open Vents) | Air Flow (Forced / Natural) | LPCB Ref. No. |
|--------------|----------------|---------------------------|------------------------|--------------------------------------|-----------------------------|---------------|
| 920301 | 3 lb | 3 lb HFC-227ea DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400b/01 |

PART 4: SECTION 4**DIRECT LOW PRESSURE (DLP) APPLICATION SYSTEMS**

| Product Name | Container Size | Description | Detector Tube | Ventilation (Enclosed or Open Vents) | Air Flow (Forced / Natural) | LPCB Ref. No. |
|--------------|----------------|----------------------------|------------------------|--------------------------------------|-----------------------------|---------------|
| 898004 | 3 lb | 3 lb HFC-227ea DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400b/02 |
| | 1 kg | 1 kg HFC-227ea DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400b/03 |
| 920601 | 1 kg | 1 kg HFC-227ea DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400b/04 |
| | 6 lb | 6 lb HFC-227ea DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400b/05 |
| 898005 | 6 lb | 6 lb HFC-227ea DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400b/06 |
| | 2 kg | 2 kg HFC-227ea DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400b/07 |
| 921201 | 2 kg | 2 kg HFC-227ea DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400b/08 |
| | 12 lb | 12 lb HFC-227ea DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400b/09 |
| 898006 | 12 lb | 12 lb HFC-227ea DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400b/10 |
| | 5 kg | 5 kg HFC-227ea DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400b/11 |
| | 5 kg | 5 kg HFC-227ea DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400b/12 |

Notes:

- 1) Firetrace International LLC HFC-227ea DLP Systems shall be configured, installed, serviced and maintained in accordance with Firetrace International LLC System Manual 800023-006 – 12/01/2017.
 - 2) These systems are intended solely to provide enhanced local fire protection. They are not intended for use as whole room or building fire protection systems.
 - 3) The systems use a single method for detection and delivery of the extinguishing agent to the activation point.
- System operation pressure: 150 psig @ 70°F (10.3 bar @ 21.1°C).
- System operation temperature range: -20°C to +60°C.

Firetrace International Ltd

Unit 11, IO Centre, Salbrook Road, Salfords, Surrey RH1 5DY, United Kingdom

Tel: +44 0 1293 780 390 • Fax: +44 0 1293 780 399

E-mail: EMEA@firetrace.com • Website: www.firetrace.com

Certificate No: 1401a to LPS 1666: Issue 1.0

Firetrace International LLC 3M™ Novec™ 1230 Direct Low Pressure (DLP) Application Fixed Fire Suppression Systems

| Product Name | Container Size | Description | Detector Tube | Ventilation (Enclosed or Open Vents) | Air Flow (Forced / Natural) | LPCB Ref. No. |
|--------------|----------------|-------------------------------|------------------------|--------------------------------------|-----------------------------|---------------|
| 920205 | 2.5 lb | 2.5 lb Novec™ 1230 DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1401a/01 |
| | 2.5 lb | 2.5 lb Novec™ 1230 DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1401a/02 |
| 898001 | 1 kg | 1 kg Novec™ 1230 DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1401a/03 |
| | 1 kg | 1 kg Novec™ 1230 DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1401a/04 |
| 920505 | 5 lb | 5 lb Novec™ 1230 DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1401a/05 |
| | 5 lb | 5 lb Novec™ 1230 DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1401a/06 |
| 898002 | 2 kg | 2 kg Novec™ 1230 DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1401a/07 |
| | 2 kg | 2 kg Novec™ 1230 DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1401a/08 |

PART 4: SECTION 4

DIRECT LOW PRESSURE (DLP) APPLICATION SYSTEMS

| Product Name | Container Size | Description | Detector Tube | Ventilation (Enclosed or Open Vents) | Air Flow (Forced / Natural) | LPCB Ref. No. |
|--------------|----------------|------------------------------|------------------------|--------------------------------------|-----------------------------|---------------|
| 921005 | 10 lb | 10 lb Novec™ 1230 DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1401a/09 |
| | 10 lb | 10 lb Novec™ 1230 DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1401a/10 |
| 898003 | 5 kg | 5 kg Novec™ 1230 DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1401a/11 |
| | 5 kg | 5 kg Novec™ 1230 DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1401a/12 |

Notes:

- 1) Firetrace International LLC 3M™ Novec™ 1230 DLP Systems shall be configured, installed, serviced and maintained in accordance with Firetrace International LLC System Manual 800035-003 – 12/01/2017.
- 2) These systems are intended solely to provide enhanced local fire protection. They are not intended for use as whole room or building fire protection systems.
- 3) The systems use a single method for detection and delivery of the extinguishing agent to the activation point.
 - System operation pressure: 195 psig @ 70°F (13.5 bar @ 21.1°C).
 - System operation temperature range: -20°C to +60°C.

Certificate No: 1401b to LPS 1666: Issue 1.0

Firetrace International LLC HFC-227ea Direct Low Pressure (DLP) Application Fixed Fire Suppression Systems

| Product Name | Container Size | Description | Detector Tube | Ventilation (Enclosed or Open Vents) | Air Flow (Forced / Natural) | LPCB Ref. No. |
|--------------|----------------|----------------------------|------------------------|--------------------------------------|-----------------------------|---------------|
| 920301 | 3 lb | 3 lb HFC-227ea DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1401b/01 |
| | 3 lb | 3 lb HFC-227ea DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1401b/02 |
| 898004 | 1 kg | 1 kg HFC-227ea DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1401b/03 |
| | 1 kg | 1 kg HFC-227ea DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1401b/04 |
| 920601 | 6 lb | 6 lb HFC-227ea DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1401b/05 |
| | 6 lb | 6 lb HFC-227ea DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1401b/06 |
| 898005 | 2 kg | 2 kg HFC-227ea DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1401b/07 |
| | 2 kg | 2 kg HFC-227ea DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1401b/08 |
| 921201 | 12 lb | 12 lb HFC-227ea DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1401b/09 |
| | 12 lb | 12 lb HFC-227ea DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1401b/10 |
| 898006 | 5 kg | 5 kg HFC-227ea DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1401b/11 |
| | 5 kg | 5 kg HFC-227ea DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1401b/12 |

Notes:

- 1) Firetrace International LLC HFC-227ea DLP Systems shall be configured, installed, serviced and maintained in accordance with Firetrace International LLC System Manual 800023-006 – 12/01/2017.
- 2) These systems are intended solely to provide enhanced local fire protection. They are not intended for use as whole room or building fire protection systems.
- 3) The systems use a single method for detection and delivery of the extinguishing agent to the activation point.
 - System operation pressure: 150 psig @ 70°F (10.3 bar @ 21.1°C).
 - System operation temperature range: -20°C to +60°C.

Firetrace Limited

Unit 22, Knightsdale Road, Ipswich, Suffolk IP1 4JJ, United Kingdom

Tel: 01473 744090 • Fax: 01473744901

E-mail: info@firetrace.co.uk • Website: www.firetrace.co.uk

Certificate No: 1430a to LPS 1666: Issue 1.0

Firetrace® Ltd 3M™ Novec™ 1230 Direct Low Pressure (DLP) Application Fixed Fire Suppression Systems

| Product Name | Container Size | Description | Detector Tube | Ventilation (Enclosed or Open Vents) | Air Flow (Forced / Natural) | LPCB Ref. No. |
|----------------|----------------|-----------------------------|---------------|--------------------------------------|-----------------------------|---------------|
| 2Kg Firetrace® | 2 kg | 2 kg Novec™ 1230 DLP system | FT0115 | Enclosed only | None | 1430a/01 |

Notes:

- 1) Firetrace Ltd. 3M™ Novec™ 1230 DLP Systems shall be configured, installed, serviced and maintained in accordance with Firetrace Ltd. System Manual FIRETRACE LPCB 1116 - 04/03/2017.
- 2) These systems are intended solely to provide enhanced local fire protection. They are not intended for use as whole room or building fire protection systems.
- 3) The systems use a single method for detection and delivery of the extinguishing agent to the activation point.
 - System operation pressure: 12 bar @ 20°C.
 - System operation temperature range: -20°C to +60°C.

Jactone Products Limited

Springvale Business Park, Springvale Avenue, Bilston, West Midlands WV14 0QL, United Kingdom

Tel: +44 (0)1902 357777 • Fax: +44 (0)1902 357711

E-mail: sales@jactone.com • Website: www.jactone.com

Certificate No: 783d to LPS 1666: Issue 1.0

Jactone® PAFSS® 3M™ Novec™ 1230 Direct Low Pressure (DLP) Application Fixed Fire Suppression Systems

| Product Name | Container Size | Description | Detector Tube | Ventilation (Enclosed or Open Vents) | Air Flow (Forced / Natural) | LPCB Ref. No. |
|--------------|----------------|-------------------------------|---------------|--------------------------------------|-------------------------------|---------------|
| PAFSSND2 | 2 kg | 2 kg Novec™ 1230 DLP system | FSTFV300 | Enclosed & open options ⁴ | Forced & natural ⁵ | 783d/01 |
| PAFSSND25 | 2.5 kg | 2.5 kg Novec™ 1230 DLP system | FSTFV300 | Enclosed & open options ⁴ | Forced & natural ⁵ | 783d/02 |
| PAFSSND3 | 3 kg | 3 kg Novec™ 1230 DLP system | FSTFV300 | Enclosed & open options ⁴ | Forced & natural ⁵ | 783d/03 |

Notes:

- 1) Jactone® PAFSS® DLP Systems shall be configured, installed, serviced and maintained in accordance with Jactone® PAFSS® System Manual PAFSSNDLPS1666 - ISSUE 1.0 - 03/01/2017.
- 2) These systems are intended solely to provide enhanced local fire protection. They are not intended for use as whole room or building fire protection systems.
- 3) The systems use a single method for detection and delivery of the extinguishing agent to the activation point.
 - System operation pressure: 15 bar @ 20°C.
 - System operation temperature range: -20°C to +60°C.
- 4) The above systems may have air vents at low and/or high level (refer note 1).

PART 4: SECTION 4

DIRECT LOW PRESSURE (DLP) APPLICATION SYSTEMS

5) The above systems may have forced ventilation (refer note 1).

Regulus Fire Systems

Suite 2, 8435 N. 90th Street, Scottsdale, Arizona 85258, USA

Tel: +1 480 607 1218 • Fax: +1 480 315 1316

E-mail: info@regulusfire.com • Website: www.regulusfire.com

Certificate No: 1400Aa to LPS 1666: Issue 1.0

Regulus Fire Systems 3M™ Novec™ 1230 Direct Low Pressure (DLP) Application Fixed Fire Suppression Systems

| Product Name | Container Size | Description | Detector Tube | Ventilation (Enclosed or Open Vents) | Air Flow (Forced / Natural) | LPCB Ref. No. |
|--------------|----------------|-------------------------------|------------------------|--------------------------------------|-----------------------------|---------------|
| 02-921542 | 2.5 lb | 2.5 lb Novec™ 1230 DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400Aa/01 |
| | 2.5 lb | 2.5 lb Novec™ 1230 DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400Aa/02 |
| 02-899338 | 1 kg | 1 kg Novec™ 1230 DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400Aa/03 |
| | 1 kg | 1 kg Novec™ 1230 DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400Aa/04 |
| 02-921842 | 5 lb | 5 lb Novec™ 1230 DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400Aa/05 |
| | 5 lb | 5 lb Novec™ 1230 DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400Aa/06 |
| 02-899339 | 2 kg | 2 kg Novec™ 1230 DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400Aa/07 |
| | 2 kg | 2 kg Novec™ 1230 DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400Aa/08 |
| 02-922342 | 10 lb | 10 lb Novec™ 1230 DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400Aa/09 |
| | 10 lb | 10 lb Novec™ 1230 DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400Aa/10 |
| 02-899340 | 5 kg | 5 kg Novec™ 1230 DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400Aa/11 |
| | 5 kg | 5 kg Novec™ 1230 DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400Aa/12 |

Notes:

- 1) Regulus Fire Systems 3MTM Novec™ 1230 DLP Systems shall be configured, installed, serviced and maintained in accordance with Regulus Fire Systems System Manual 02-801372-000 - 11/08/2017.
- 2) These systems are intended solely to provide enhanced local fire protection. They are not intended for use as whole room or building fire protection systems.
- 3) The systems use a single method for detection and delivery of the extinguishing agent to the activation point.
 - System operation pressure: 195 psig @ 70°F (13.5 bar @ 21.1°C).
 - System operation temperature range: -20°C to +60°C.

Certificate No: 1400Ab to to LPS 1666: Issue 1.0

Regulus Fire Systems HFC-227ea Direct Low Pressure (DLP) Application Fixed Fire Suppression Systems

| Product Name | Container Size | Description | Detector Tube | Ventilation (Enclosed or Open Vents) | Air Flow (Forced / Natural) | LPCB Ref. No. |
|--------------|----------------|---------------------------|------------------------|--------------------------------------|-----------------------------|---------------|
| 02-921638 | 3 lb | 3 lb HFC-227ea DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400Ab/01 |
| | 3 lb | 3 lb HFC-227ea DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400Ab/02 |

PART 4: SECTION 4

DIRECT LOW PRESSURE (DLP) APPLICATION SYSTEMS

| Product Name | Container Size | Description | Detector Tube | Ventilation (Enclosed or Open Vents) | Air Flow (Forced / Natural) | LPCB Ref. No. |
|--------------|----------------|-------------------------------|------------------------|--------------------------------------|-----------------------------|---------------|
| 02-899341 | 1 kg | 1 kg HFC-227ea DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400Ab/03 |
| | 1 kg | 1 kg HFC-227ea DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400Ab/04 |
| 02-921938 | 6 lb | 6 lb HFC-227ea DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400Ab/05 |
| | 6 lb | 6 lb HFC-227ea DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400Ab/06 |
| 02-899342 | 2 kg | 2 kg HFC-227ea DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400Ab/07 |
| | 2 kg | 2 kg HFC-227ea DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400Ab/08 |
| 02-922538 | 12 lb | 12 lb HFC-227ea DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400Ab/09 |
| | 12 lb | 12 lb HFC-227ea DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400Ab/10 |
| 02-899343 | 5 kg | 5 kg HFC-227ea DLP system | P/N: 200005 6mm o/d | Enclosed only | None | 1400Ab/11 |
| | 5 kg | 5 kg HFC-227ea DLP system | P/N: 200007 8mm o/d | Enclosed only | None | 1400Ab/12 |

Notes:

- 1) Regulus Fire Systems HFC-227ea DLP Systems shall be configured, installed, serviced and maintained in accordance with Regulus Fire Systems System Manual 02-801360-000 - 11/08/2017.
- 2) These systems are intended solely to provide enhanced local fire protection. They are not intended for use as whole room or building fire protection systems.
- 3) The systems use a single method for detection and delivery of the extinguishing agent to the activation point.
 - System operation pressure: 150 psig @ 70°F (10.3 bar @ 21.1°C).
 - System operation temperature range: -20°C to +60°C.

PART 4: SECTION 5

CONDENSED AEROSOL EXTINGUISHING GENERATORS

These generators comprise a non-pressurized container filled with a dry solid fire extinguishing compound which, when activated, discharges an aerosol to extinguish the fire. They are designed to be fixed in place for “total flooding” applications, where the whole protected risk area is filled to achieve a specific design application density.

Subject to satisfactory performance and function tests, including full scale fire tests, these generators can be designated for use against the following classes:

- Class A (solid surface burning fires)
- Class B (liquid pool fires)

The selection and specification of fire protection equipment should be based on the completion of a suitable risk assessment and local regulatory requirements.

Generators are typically activated by appropriate fire detectors with the aim of ensuring that they operate early in the fire development phase. Guidance on the use, limitations, safety considerations and precautions, venting and structural strength of compartments, detection, actuation and control arrangements as well as commissioning, acceptance and maintenance procedures can be found in prEN 15276 parts 1 and 2.

Condensed aerosol generators are approved on the basis that they will be installed and maintained in accordance with prEN 15276 and the manufacturer’s instructions.

FirePro Systems Limited

6 Koumandarias & Spyrou Araouzou Street, Tonia Court No 2, 6th Floor, Limassol CY3036, Cyprus

Tel: +357-25-379999 • Fax: +357-25-354432

E-mail: info@firepro.com • Website: www.firepro.com

Certificate No: 1417a to SD0228 and Selected Clauses of prEN15276-1 and prEN15276-2 (Sept 2017)

Condensed Aerosol Generator

| Product Name | Description | LPCB Ref. No. |
|---------------------|---|----------------------|
| FP-1200 (note 1) | Condensed aerosol generator (electrical activation only) and mounting bracket | 1417a/01 |
| FP-2000 (note 1) | Condensed aerosol generator (electrical activation only) and mounting bracket | 1417a/02 |
| FP-3000 (note 1) | Condensed aerosol generator (electrical activation only) and mounting bracket | 1417a/03 |
| FP-4200 (note 2) | Condensed aerosol generator (electrical activation only) and mounting bracket | 1417a/04 |
| FP-5700 (note 1) | Condensed aerosol generator (electrical activation only) and mounting bracket | 1417a/05 |

General Notes:

This approval covers the components listed when used in accordance with the FirePro “Instruction, information and user manual” version 7.0, dated 18th October 2017.

This approval does not cover system design, system performance or installation.

The Application Densities for these components, as defined in prEN15276-1 Clause 5.2, for the following applications are:

- Class A (surface burning fire only) - 97.6 g/m³
- Class B - 68.6 g/m³

The component approval does not cover applications for:

- Potentially Explosive Atmospheres, or
- Grouped Power or Data Cables.

Table Notes:

(1) The Product is available in 4 variants:

FP-xxxx - Mild Steel Body

FP-xxxxS - Stainless Steel Body

FP-xxxxT - Mild Steel Body; Thermal Activation Model Variant in Electrical Activation Mode Only

FP-xxxxTS - T Variant with Stainless Steel Body

(2) The Product is available in 2 variants:

FP-xxxxT - Mild Steel Body, Thermal Activation Model Variant in Electrical Activation Mode Only

FP-xxxxTS - T Variant with Stainless Steel Body

