
LPCB Red Book



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Part: 5 Watermist Systems

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Foreword by the United Arab Emirates (UAE) Acting Commander in Chief, Major General Rashid Thani Al Matrooshi

As the dynamic environment in our Region progresses, we the UAE Civil Defence Authority, has set forth a number of strategic goals for the delivery of public safety. Our strategic goals observe both the national and Ministry of Interior's strategic plan by;

“Providing an effective firefighting and emergency response system delivered by qualified and well trained people using the latest technologies to ensure lives and properties are safeguarded”

As a result, the UAE can be 'benchmarked' with other Countries that are witnessing a decline in fires and incidents when compared to the density of population. As an example, the number of fire incidents has been reduced by 39% in 2011 compared to 2010, with a marked reduction in small and medium fire incidents, together with a high percentage achievement of a 9 minute response time for first attendance at incidents.

“Providing excellent performance and support during disasters and crises”

Confirmation of performance and support are achieved during disasters and crisis situations. Civil Defence Departments conduct a range of joint fire safety and evacuation drills in association with other safety agencies for both the public and private sectors. Evacuation drills carried out in Dubai during 2011 was estimated at 356 drills, which targeted 178,530 persons. Customer satisfaction percentage achieved was 97.2%. The number of drills carried out has increased by 142.4% compared to the target number set out in our annual plan.

“Spreading a fire safety and awareness culture across the community “

In this regard, a National Safety campaign was launched targeting 'domestic safety' with an achieved target of 50% of homes in UAE being visited during a six month period. This was aimed at preventive awareness and removing violations which threaten public safety. During the campaign, 206,490 houses (61.4% of the total dwellings) were visited, again with a marked customer satisfaction percentage of 92%.

Similarly a National Safety campaign was also executed at industrial areas, with teams visiting industrial facilities at different industrial areas across the country. 31,647 facilities were inspected. The teams also managed to correct violation situations in 13,400 facilities and 53,426 people were trained in the basic skills of firefighting and awareness.

“Equipping operations with the best and appropriate equipment and technologies”

The latest state of the art technologies have been introduced for various services such as, 'e-engineering' for online drawing approval and the '24 x 7 smart system' for building electronic monitoring and protection. Currently 61.7% of buildings are connected to the system and 95.7% surveyed for connection.

In addition, the 'UAE Fire and Life Safety Code of Practice' with our Standard Operating Procedures (SOPs) is considered a first in the region. This will contribute to reduced costs and effort. Ultimately this will result in a decrease in accidents and improve command and control mechanisms.

“Achieving Strategic Partnership with Public/Private and Voluntary Organizations”

By ensuring, through careful selection, that products, systems and installers are approved with a listing by Civil Defence, following rigorous third party certification. This ensures that locally we receive the best performance of fire safety products, systems and technologies.

LPCB is widely recognised as an independent reference for all fire and security safety experts. Their testing laboratories and approvals services together with their leading team of highly qualified expert scientists and engineers, guides us all impeccably towards a qualified framework.



Major General Rashid Thani Al Matrooshi

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**

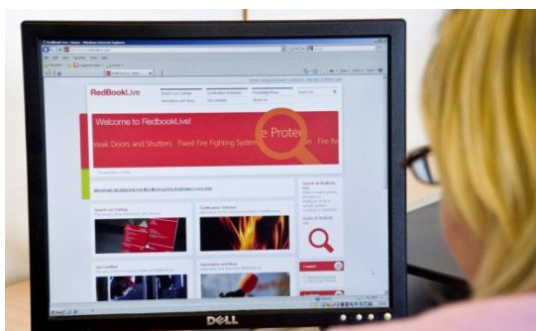
Volume 2:

- 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.

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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WATERMIST SYSTEMS

PART 5: WATERMIST SYSTEMS

INTRODUCTION

Watermist systems are employed to provide fire protection in a range of applications against defined fire hazards. They are designed to control, suppress or extinguish fires depending upon the specified fire hazard requirements. Watermist systems are sensitive to design and application variations it is therefore important that they are only employed with their defined scope of application and utilise only specified components.

A typical system comprises of nozzles which are connected via distribution pipework to a pressurised water supply. The system can either be self-contained or connected via a pumpset to a permanent water supply.

The LPCB approval of watermist systems requires both individual components and complete system fire performance to be assessed. The scope for the field of application of an LPCB watermist system approval is defined within the relevant LPS standard:

- LPS 1283: Issue 1.1 - Requirements and test methods for the approval of watermist systems for use in commercial low hazard occupancies.
- LPS 1285: Issue 1.1 - Requirements and test methods for the approval of watermist systems for use in domestic and residential occupancies.

For further guidance on the implementation of watermist systems for Domestic and Residential applications see BRE guidance digest DG534 (www.brebookshop.com [≤<http://www.brebookshop.com>≥](http://www.brebookshop.com)).

This section lists both individual approvals for components and for complete watermist systems.

The equipment listed in this section has been assessed against the relevant LPCB schedule of requirements for watermist components. The schedules are specified in SD0231 and are based on existing LPS and EN standard test methodologies from both sprinkler and gaseous system components wherever possible.

As part of the LPCB approval requirements the production facilities must carry ISO 9001 with a suitable scope. The Factory Production Control (FPC) processes are also audited by LPCB to ensure the ongoing conformity of the production process.

In order to function correctly the approved components must be specified, installed and maintained in accordance with the manufacturer's technical instructions.

Watermist component approval does not mean LPCB watermist system approval. LPCB watermist system approval requirements are set out in Section 2.

PART 5: SECTION 1.2

WATERMIST NOZZLES

This section lists products approved in accordance with:

LPCB Schedule of requirements, SD0231 Appendix 4.

As detailed in DPC Draft BS8489-1, 2015-04-24 clause 11.4 and SD0231 Appendix 3 (In service testing protocol) all LPCB approved watermist nozzles should be inspected and samples removed and tested at regular 3 yearly intervals.

Each entry details:

- Nominal orifice size in millimetres
- Temperature ratings in degrees centigrade for automatic nozzles. For open nozzles the temperature rating is listed as N/A.
- The heat sensing element is listed as follows:
 - † indicates a glass bulb sensing element. No addition mark is used for other types of sensing element or open heads.
- Nozzle type and orientation:
 1. U indicates that the nozzle should be installed in an upright orientation.
 2. P indicates that the nozzle should be installed in a pendent orientation.
 3. CC indicates that the nozzle is concealed and should be installed in the orientation designated by the manufacturer's approval (U or P).
 4. W indicates that the nozzle should be installed on a sidewall
- K-factor, the discharge coefficient in LPM/bar^{1/2}, where LPM is litres per minute.
- Minimum and maximum design (operating) pressure, i.e. nozzle operating pressure, for a developed spray of water mist, in bar.
-
- Minimum standby pressure, in bar. The lowest pressure to which a closed automatic nozzle may be exposed prior to activation (either in a closed or flowing system).
-
- Maximum standby pressure, in bar. The highest pressure to which a closed automatic nozzle may be exposed in a closed system (for the life of the system), e.g. maximum pressure maintained by jockey pump prior to activation.

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Certificate No: 1360a to an LPCB Schedule of requirements

Prevent Systems Automatic Low Pressure Water Mist System Nozzles

Product Name	Nominal orifice (mm)	Type	Temperature rating, °C	K-factor, LPM/bar^{1/2}	Design pressure (bar)	Standby pressure (bar)	LPCB Ref. No.
Prev3exp	15	P	57, 68, 93	14	5.2 to 16	4 to 12	1360a/01
Prev5exp	15	P	57, 68, 93	30	2.4 to 16	2 to 12	1360a/02
Prev2exp	15	P	57, 68, 93	13.4	8.4 to 16	4 to 12	1360a/03
Prev2up	15	U	57, 68, 93	13.4	8.4 to 16	4 to 12	1360a/04

Notes:

- (1) Components shall be installed and maintained in accordance with manufacturer's instructions,
"Datasheet: Prev3exp automatic low pressure water mist nozzle: Part 1", February 2016, rev. 4.0
"Datasheet: Prev5exp automatic low pressure water mist nozzle: Part 1", February 2016, rev. 4.0
"Datasheet: Prev2exp automatic low pressure water mist nozzle, Part 1 October 2016, rev. 4
"Datasheet: Prev2up automatic low pressure water mist nozzle: Part 1", October 2016, rev. 4.0

(2) Stainless steel nozzles

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Certificate No: 1129b to an LPCB Schedule of requirements

Telesto Mist Systems Open Low Pressure Water Mist System Nozzles

Product Name	Fitting	Type (3)	Temperature rating (4)	k-factor (LPM/bar ^{1/2}) (5)	Design pressure see (6) (Datasheet date)	Standby pressure (4)	LPCB Ref. No.
NGWP 1	(1)	P	n/a	13.5	09.03.2017	n/a	1129b/01
NGWP 14	(1)	P	n/a	14.7	09.03.2017	n/a	1129b/02
NGWP 46	(1)	P	n/a	13.6	09.03.2017	n/a	1129b/03
NGWP 49	(1)	P	n/a	29.9	09.03.2017	n/a	1129b/04
NGWP 62	(1)	P	n/a	30.4	09.03.2017	n/a	1129b/05
NGWP 63	(1)	P	n/a	39.5	09.03.2017	n/a	1129b/06
NCSFH 5	(2)	P	n/a	4.90	08.03.2017	n/a	1129b/07
NCSFH 8	(2)	P	n/a	3.08	08.03.2017	n/a	1129b/08
NCSFH 10	(2)	P	n/a	2.49	08.03.2017	n/a	1129b/09
NCSFH 11	(2)	P	n/a	1.88	08.03.2017	n/a	1129b/10
NCSFH 16	(2)	P	n/a	3.09	08.03.2017	n/a	1129b/11
NCSFH 19	(2)	P	n/a	4.20	08.03.2017	n/a	1129b/12
NCSFH 24	(2)	P	n/a	6.82	08.03.2017	n/a	1129b/13
NCSFH 29	(2)	P	n/a	3.41	08.03.2017	n/a	1129b/14
NCFSFH 3	(2)	P	n/a	1.60	08.03.2017	n/a	1129b/15
NCFSFH 4	(2)	P	n/a	2.10	08.03.2017	n/a	1129b/16
NCFSFH 13	(2)	P	n/a	2.50	08.03.2017	n/a	1129b/17
NCFSFH 14	(2)	P	n/a	3.47	08.03.2017	n/a	1129b/18
NCFSFH 34	(2)	P	n/a	1.60	08.03.2017	n/a	1129b/19
NCSSFH 01.S	(2)	W	n/a	4.40	08.03.2017	n/a	1129b/20
NCSSFH 02.S	(2)	W	n/a	2.45	17.02.2015	n/a	1129b/21
NCSSFH 03.S	(2)	U	n/a	21.0	17.12.2015	n/a	1129b/22

Notes:

- (1) Inlet ¾" BSP female
- (2) Inlet ½" BSP male
- (3) Type P can be used in other orientations
- (4) Open nozzles, no temperature actuation and no valve at nozzle
- (5) Evaluated for m-Mist only
- (6) Design pressures listed on datasheets "Telesto MIST SYSTEMS DATA SHEET [Product Name] NOZZLE [Date]", evaluated for k-factor compliance.

Notes not in table:

- (7) This is solely a nozzle component approval. There is no LPCB watermist system approval scheme currently for complete system fire performance.
- (8) Components shall be installed and maintained in accordance with manufacturer's instructions
- (9) Stainless steel nozzles

PART 5: SECTION 2

WATERMIST SYSTEMS

The watermist fire protection systems listed in this section are approved to requirements of :

- LPS 1283: Requirements and test methods for the approval of watermist systems for use in commercial low hazard occupancies, or
- LPS 1285: Requirements and test methods for the approval of watermist systems for use in residential and domestic hazard occupancies

In order for the systems to be listed in this section they also require the primary components, as identified in the system listing to be LPCB approved components as detailed in Part 6: Section 1.

Please note that use of LPCB approved components does not imply an LPCB approved system. Only systems listed in this section and used within the scope of the approval are approved by LPCB.

LPCB strongly recommends that the design and installation of these systems be carried out by an LPCB approved installer (LPS 1204, see Part 4, Section 1).

Each entry details:

- Risk, type of area/occupancy (Scope of application)
- Nozzle operating pressure range, in bar
- Maximum nozzle spacing, in m
- Maximum ceiling height, in m
- Maximum floor area, in m²
- Notes covering:
 - wet/dry pipe,
 - additives,
 - water supply
 - fire test data references

This section lists equipment approved in accordance with the relevant requirements in LPS 1655 *Requirements and test methods for LPCB approval and listing of local application watermist systems for use as Personal Protection Systems (PPS) in residential and domestic occupancies within buildings.*

PPS are local application watermist systems designed to protect a specific area within an enclosed volumetric space (i.e. a room) from fire. Because PPS are designed for local area application i.e. to suppress a fire within a specific discharge area, care must be taken to ensure that the risk profile is appropriate. A risk assessment needs to indicate that the principal fire hazard is within the discharge area, of one or more PPS. If the fire hazard is not localised then a suppression system that covers the whole of the dwelling or risk area should be specified.

For the purposes of approval, the PPS comprises a set of components, a system manual including a scope of application and the specific detection arrangements that were used in the fire tests.

It is essential that maintenance is carried out in accordance with the manufacturer's instructions. Accordingly any system that is not maintained in accordance with the manufacturer's instructions will be outside the scope of this approval and listing standard.

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Certificate No: 752a to LPS 1665: Issue 1.0

UltraGuard 2TM

Product Name	Description	LPCB Ref. No.
UltraGuard 2TM	Personal Protection Watermist System consisting of 110 litre water tank, Prevent 14 sidewall nozzle and 12volt Marco pump. Actuation by means of twin Apollo Orbis ORB-OH-13001APO multi sensor detectors controlled by a HAES panel and power supply.	752a/01

Notes:

- 1) Approved for use when installed and maintained in accordance with UltraGuard 2 Installation and Maintenance Manual Rev 0.
- 2) Approved for use when system actuation is by twin hard wired Apollo Orbis ORB-OH-13001APO multi sensor detectors, with alert on first detection and actuation on second detection (i.e. arranged as "double knock").