

PRODUCT LISTING DATA SHEET

(Active Fire Protection Equipment)

Product designation

Thorn Security, FM200™, engineered gaseous 'Total Flooding' fire extinguishing system
(Refer to the Technical Specification section of this document for further specific detail)

Supplier

Tyco Fire & Security

Unit 1, 2-8 South Street, RYDALMERE, NSW, AUSTRALIA, 2116

Manufacturer

Tyco Electronic Products Group (TEPG)

160 Billet Road, WALTHAMSTOW, LONDON, UNITED KINGDOM, E1T 5DR

Supplier's description

The Thorn Security, FM200™, engineered gaseous 'Total Flooding' fire extinguishing system is of the fixed central-storage automatic and/or manual type. Automatic operation is usually by means of smoke or heat detectors in conjunction with a suitable CIE panel or single-hazard system-releasing panel. The Thorn FM-200® System is intended to extinguish fires of Classes 'A', 'B', and 'C' that occur in enclosures which are suitable for gaseous total-flooding type fire protection. Provided that appropriate 'Ex' rated ancillary devices, as covered by this listing, are fitted, this extinguishing system can be installed in hazardous locations.

The FM-200® (HFC-227ea, Heptafluoropropane) agent is manufactured only by Great Lakes Chemical Corporation, U.S.A. Authorised FM-200® stockists/re-fillers are usually located within reasonable distance from installed systems. FM-200® extinguishes fire by a combination of physical and chemical means. It does not significantly deplete the oxygen content in the enclosure, and tests have shown it to be less toxic than Halon 1301. It is stored in the Thorn System as a liquefied gas that is super-pressurised with Nitrogen to 24.8 bar at 20°C. Liquid FM-200® is colourless and odourless, has a vapour pressure of 405.4 kPa abs. at 21°C, an S.G. of 1.48, a boiling point of -16.4°C, and is non-combustible. Gaseous FM-200® has an Ozone Depleting Potential of 'zero' and an Atmospheric Lifetime estimated at 31 to 41 years. The Occupational Exposure Limit (Cardiac Sensitisation) values for FM-200® are NOAEL 9% and LOAEL >10.5%. The design concentration required for Thorn FM-200® systems is generally in the range 8% to 9%, but may be considerably higher for flammable liquids and flammable gases (e.g., 13.7% for Methanol, and 17.4% for Hydrogen). In Australia, FM-200® installations having design concentration above 9% must have a discharge-inhibiting arrangement, and those above 10.5% must have a lock-off valve, or serviceable self-contained breathing apparatus readily available to anyone needing to enter the enclosure.

The FM-200® system covered by listing afp - 1518 includes; carbon steel agent-storage containers (custom pre-charged with FM-200® and Nitrogen), container restraint and support brackets, manifold-support brackets, container-mounted piston-type agent release valves, stackable and side-mount type release actuators, flexible discharge bend assemblies, carbon steel pre-fabricated storage-system manifolds with inbuilt check valves, wrought-aluminium and brass agent nozzles (supplied custom pre-drilled), pressure switches for monitoring and interlocking, a manual pull station, a remote manual/pneumatic actuator, and various instruction and warning signs.



This product listing data sheet should be read in conjunction with the general requirements of the terms and conditions of listing under the ActivFire Scheme.

Conformance criteria and evaluation

The Thorn Security, FM200™, engineered gaseous 'Total Flooding' fire extinguishing system complies with the requirements of SSL Appraisal Specification FAS-102:Version 1.0, 'Gaseous Extinguishing Systems'.

The Thorn Security, FM-200®, Engineered Gaseous 'Total Flooding' Fire Extinguishing System has been fully investigated and tested by Underwriters' Laboratories Inc. (ULI) and is listed in the ULI Directory of Fire Protection Equipment and is subject to ULI's regular Follow-Up Service Audits.

Listing is subject to ActivFire Scheme terms and conditions as applicable to the designated registrant and supplier.

Limitations/conditions of conformance

Limitations/conditions of conformance, where identified on this Product Listing Data Sheet, are derived from qualifications within the report of the testing agency and/or other related technical documentation. It is recommended that all details with respect to design, assembly and installation restrictions should be checked against the designated supplier's/manufacture's current technical manual/data sheets and the requirements of the Authority having Jurisdiction.

The ActivFire listing is applicable only to those Thorn Security, FM-200®, Engineered Gaseous 'Total Flooding' Fire Extinguishing Systems that have been designed, installed, operated, and maintained, in accordance with the system's ULI-Listed Thorn FM-200® System Installation, Operation and Maintenance Manual, Publication 14A/3/1, Version 1.0, dated 7.1.99.

This ActivFire listing of the Thorn Security, FM-200®, Engineered Gaseous 'Total Flooding' Fire Extinguishing System is subject to the following limitations:

- (a) if designed to achieve a concentration of 9% or more, it shall *not* be able to automatically discharge while the enclosure is occupied
- (b) it shall not be installed in an enclosure that has significant non-closeable openings
- (c) the FM-200® storage containers shall not be transported or handled in situations where the temperature will be less than minus 20°C or more than 50°C,
- (d) the fill ratio of the storage containers shall not exceed 1.00 kg/litre or be less than 0.50 kg/litre,
- (e) the temperature of the area housing the installed storage containers shall be maintained in the range 0°C to 55°C,
- (f) the system shall not be installed where the non-fire enclosure temperature will be less than 0°C or more than 55°C
- (g) the FM-200® concentration achieved in the enclosure shall be not less than 7.35% for any risk, and not less than 8.0% for surface-burning fires involving Class 'A' fuels,
- (h) maximum coverage radius shall be 8.7 m for a 360° nozzle, and 10.05 m for a 180° nozzle,
- (i) maximum coverage area for either nozzle shall be 95.0 m²,
- (j) nozzles shall be installed at not more than 300 mm below the ceiling soffit,
- (k) maximum enclosure height shall be 3.2 m for a 360° nozzle, and 2.9 m for a 180° nozzle,
- (l) 180° nozzles shall be mounted adjacent to a wall and located to cover the entire area, and
- (m) minimum height of protected void spaces shall be 300 mm.

Technical specification

The following details are a representative extract of the technical specification for the Thorn Security, FM200®, Engineered Gaseous Total Flooding Fire Extinguishing System and may be subject to change. Complete and current details should be determined from the designated supplier's/major manufacturer's technical manual/data sheets.

FM-200® Container Details

Characteristic	Nominal Volume (litres)						
	8	16	32	52	106	147	180
Thorn Part No. 303-205-...	015	016	017	018	019	020	021
Maximum FM-200 Capacity (kg)	8.0	17.5	33.5	52	106.5	147.5	180
Minimum FM-200 Capacity (kg)	4.5	9.0	17.0	26.5	53.5	74	91
Diameter (mm)	254	254	254	406	406	406	406
Height to Valve Outlet (mm)	304	502	833	596	1021	1354	1634
Valve Outlet Size (mm)	25	25	25	50	50	50	50
Tare Weight (kg)	14.8	18.4	26.1	49.1	71.8	89.9	105.8

Supplementary information

Equipment Covered by Listing afp - 1518:

Description	TEPG Part No.
10 mm aluminium nozzle - 180°, NPT	310-205-022
10 mm aluminium nozzle - 360°, NPT	310-205-023
10 mm brass nozzle, non-drilled, NPT	310-205-028
100 mm 2 port manifold	307-205-004
100 mm 3 port manifold	307-205-005
100 mm 4 port manifold	307-205-006
100 mm 5 port manifold	307-205-007
100 mm 6 port manifold	307-205-008
106 litre FM-200 container assembly	303-205-019
147 litre FM-200 container assembly	303-205-020
15 mm aluminium nozzle - 180°, NPT	310-205-011
15 mm aluminium nozzle - 360°, NPT	310-205-015
15 mm brass nozzle, non-drilled, NPT	310-205-029
150 mm 3 port manifold	307-205-009
150 mm 4 port manifold	307-205-010
16 litre FM-200 container assembly	303-205-016
180 litre FM-200 container assembly	303-205-021
20 mm aluminium nozzle - 180°, NPT	310-205-024
20 mm aluminium nozzle - 360°, NPT	310-205-025
20 mm brass nozzle, non-drilled, NPT	310-205-030
25 mm aluminium nozzle - 180°, NPT	310-205-012
25 mm aluminium nozzle - 360°, NPT	310-205-016
25 mm brass nozzle, non-drilled, NPT	310-205-031
25 mm container valve (spare part)	302-205-001
32 litre FM-200 container assembly	303-205-017
32 mm aluminium nozzle - 180°, NPT	310-205-026
32 mm aluminium nozzle - 360°, NPT	310-205-027
32 mm brass nozzle, non-drilled, NPT	310-205-032
32 mm discharge hose	306-205-001
40 mm aluminium nozzle - 180°, NPT	310-205-013
40 mm aluminium nozzle - 360°, NPT	310-205-017
40 mm brass nozzle, non-drilled, NPT	310-205-033

Supplementary information (continued)**Equipment Covered by Listing afp - 1518 (continued):**

Description	TEPG Part No.
50 mm aluminium nozzle - 180°, NPT	310-205-014
50 mm aluminium nozzle - 360°, NPT	310-205-018
50 mm brass nozzle, non-drilled, NPT	310-205-034
50 mm container valve (spare part)	302-205-003
50 mm discharge hose	306-205-002
52 litre FM-200 container assembly	303-205-018
65 Manifold bracket	311-205-015
8 litre FM-200 container assembly	303-205-015
80 mm 2 port manifold	307-205-001
80 mm 3 port manifold	307-205-002
80 mm 4 port manifold	307-205-003
Container bracket, 52 - 180 litre sizes	311-205-014
Container bracket, 8 - 32 litre sizes	311-205-013
Door caution plate (Lock-off)	314-205-001
Door caution plate (No lock-off)	314-205-002
Electrical actuator - standard (stackable type)	304-205-001
Flexible pilot hose, 1/4" BSP swivel x 710 long	306-205-003
Local manual actuator	304-205-003
Low pressure switch	304-205-006
Male adaptor, pilot hose, 1/4" BSPT x 1/4" BSPP	309-013-005
Male elbow, brass, 1/4" BSPT x 1/4" BSPP	309-013-004
Male tee, brass, 1/4" BSPP x 1/4" BSPT branch	309-013-003
Manifold Bracket Kit, 100 mm	311-205-011
Manifold Bracket Kit, 150 mm	311-205-012
Manifold Bracket Kit, 80 mm	311-205-010
Manifold check valve, 32 mm	302-205-008
Manifold check valve, 50 mm	302-205-009
Manual release caution plate	314-205-003
Pneumatic actuator	304-205-004
Pressure switch	304-205-007
Pressure switch - flameproof	305-205-003
Pressure switch - standard	305-205-002
Pressure trip	305-202-002
Remote manual release unit (Pneumatic)	302-205-004
Remote-controlled manual actuator (Mechanical)	304-205-005
Side-mounted electric actuator - flameproof (with Schraeder/swivel-nut assembly)	304-205-008
Supervisory pressure switch (container pressure)	305-205-001
T528 manual release unit	526-001-018
Installation, Operation and Maintenance Manual (Engineered Systems - UL Version), Version 1.0, Dated 7.1.99	14A/3/1, Version 1.0
User manual, Tyco Electronic Product Group FM-200® Flow Calculation Software, Version 2.00a	User Manual 14a-Flow (U.L. #Ex 4678)
Tyco Electronic Product Group FM-200® Flow Calculation Software, Version 2.00a	