

# SAPPHIRE® PLUS Total Flood Fire Suppression System

## Features

- UL/ULC Listed and FM Approved
- Fully meets EN 12094
- Designed according to NFPA 2001, EN 15004, and ISO 14520
- UL and FM verified software
- Selector valve systems
- Available with standard pressure gauge or contacted pressure gauge for pressure monitoring
- Electric, pneumatic, or manual operation
- Centralized storage locations
- Reduced pipe diameters for traditional systems

## Applications

The ANSUL® SAPPHIRE® PLUS Total Flood Fire Suppression System utilizes 3M™ Novec™ 1230 Fire Protection Fluid as the suppression agent. Novec 1230 fluid is effective for the following total flooding fire suppression applications:

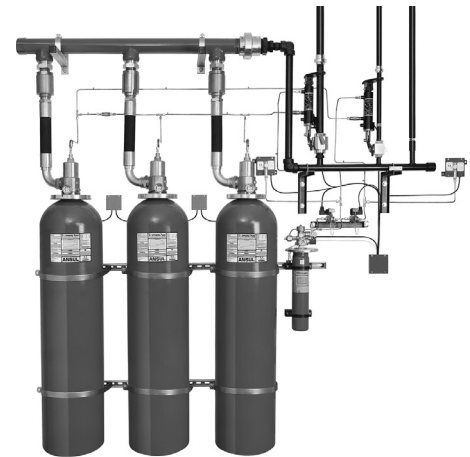
- Data centers
- Electrical switching rooms
- Machinery spaces
- Medical facilities
- Heritage and cultural sites
- Air traffic control
- Oil and gas facilities

## Description

Conventional SAPPHIRE systems use a storage pressure of 363 psi (25 bar) or 609 psi (42 bar), which is suitable for many applications. The SAPPHIRE PLUS system uses a storage pressure of 1,015 psi (70 bar) to provide the designer with more flexibility when planning the layout of the system. This super-pressurization means the containers can be placed further from the hazard area, if required. The use of smaller pipe diameters, and the use of selector valves help to protect multiple areas using one bank of containers.

## Approvals and Listings

- UL/ULC Listed
- FM Approved
- CE Marked



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## Specifications

Environmental Data	
Ozone Depletion Potential (ODP)	0
Global Warming Potential (GWP)	1
Atmospheric Lifetime (ALT)	3 to 5 days
Operating and storage temperature	0 °F to 122 °F (-18 °C to 50 °C) (UL, FM, and CE)  32 °F to 149 °F (0 °C to 65 °C) (UL and FM)
<b>Note:</b> Temperature range is dependent on fill density and nozzle coverage. For details, refer to the latest revision of the <i>SAPPHIRE PLUS Total Flood Fire Suppression System Manual</i> (Part No. 571000).	

Physical Properties of 3M Novec 1230 Fluid		
Properties	Unit	Value
Molecular weight	–	316.04
Boiling point at 1,013 bar (absolute)	°F (°C)	120.6 (49.2)
Freezing point	°F (°C)	-162.4 (-108.0)
Vapor pressure 68 °F (20 °C)	bar abs*	0.3260
Liquid density 68 °F (20 °C)	g/ml	1.616
Saturated vapor density 68 °F (20 °C)	kg/m <sup>3</sup>	4.3305
Heat of vaporization at boiling point	kJ/kg	88.0
Chemical formula	CF <sub>3</sub> CF <sub>2</sub> C(O)CF(CF <sub>3</sub> ) <sub>2</sub>	
Chemical name	Dodecafluoro-2-methylpentan-3-one	

\* 1 bar = 0.1 MPa = 100,000 Pa = 14.5 psi;  
1 MPa = 1 N/mm<sup>2</sup>

Safety Data Sheets (SDS) are available at [www.ansul.com](http://www.ansul.com)

## Ordering Information

### From Marinette, Wisconsin, USA (UL/ULC Listed and FM Approved)

Standard <sup>1</sup> Gauge/Con. Part No.	Contacted <sup>1</sup> Gauge/Con. Part No.	DOT*/TPED		Height to Outlet		Diameter		Nom. Tare Weight		Min. Agent Weight		Max. Agent Weight		Manifold Bracket Height with AHA	
		Nom. Size L	Temp. (lb)   °F (°C)	in.	(mm)	in.	(mm)	lb	(kg)	lb	(kg)	lb	(kg)	in.	(mm)
303700041	303700047	15 (50)	122 (50)	27.3	(694)	8	(204)	64.6	(29.3)	10	(4.5)	46	(21)	51.5	(1308)
303700042	303700048	30 (100)	122 (50)	38.2	(972)	9	(229)	85.5	(38.8)	20	(9)	92	(42)	62.4	(1585)
303700043	303700049	45 (140)	122 (50)	42.2	(1071)	10.5	(267)	133.2	(60.4)	30	(14)	138	(63)	63.3	(1685)
303700044	303700050	60 (190)	122 (50)	56.1	(1425)	10.5	(267)	176.6	(80.1)	40	(18)	185	(84)	85.7	(2177)
303700045	303700051	120 (370)	122 (50)	60.9	(1546)	14.1	(360)	310	(140.6)	80	(36)	370	(168)	90.4	(2298)
303700065	303700066	150 (470)	122 (50)	74.3	(1888)	14.1	(360)	376.6	(166.6)	100	(45)	463	(210)	103.9	(2640)
303700053	303700059	15 (50)	149 (65)	27.3	(694)	8	(204)	64.6	(29.3)	10	(4.5)	44	(20.3)	51.5	(1308)
303700054	303700060	30 (100)	149 (65)	38.2	(972)	9	(229)	85.5	(38.8)	20	(9)	89	(41)	62.4	(1585)
303700055	303700061	45 (140)	149 (65)	42.2	(1071)	10.5	(267)	133.2	(60.4)	30	(14)	133	(60.8)	63.3	(1685)
303700056	303700062	60 (190)	149 (65)	56.1	(1425)	10.5	(267)	176.6	(80.1)	40	(18)	178	(81)	85.7	(2177)
303700057	303700063	120 (370)	149 (65)	60.9	(1546)	14.1	(360)	310	(140.6)	80	(36)	357	(162)	90.4	(2298)
303700067	303700068	150 (470)	149 (65)	74.3	(1888)	14.1	(360)	376.6	(166.6)	100	(45)	446	(202.5)	103.9	(2640)

\* Canada and the USA mutually recognize the regulatory approvals for UN pressure receptacles. This means that UN pressure receptacles manufactured in accordance with 49 CFR (Code of Federal Regulations) marked with USA as the country of approval, commonly referred to as DOT, satisfy the TC requirements.

### From Great Yarmouth, UK (UL Listed and FM Approved)

Standard <sup>1</sup> Gauge/Con. Part No.	Contacted <sup>1</sup> Gauge/Con. Part No.	TPED		Height to Outlet		Diameter		Nom. Tare Weight		Min. Agent Weight		Max. Agent Weight		Manifold Bracket Height with AHA	
		Nom. Size L	Temp. (lb)   °F (°C)	in.	(mm)	in.	(mm)	lb	(kg)	lb	(kg)	lb	(kg)	in.	(mm)
303700001	303700007	15 (50)	122 (50)	27.3	(694)	8	(204)	64.6	(29.3)	10	(4.5)	46	(21)	51.5	(1308)
303700002	303700008	30 (100)	122 (50)	38.2	(972)	9	(229)	85.5	(38.8)	20	(9)	92	(42)	62.4	(1585)
303700003	303700009	45 (140)	122 (50)	42.2	(1071)	10.5	(267)	133.2	(60.4)	30	(14)	138	(63)	63.3	(1685)
303700004	303700010	60 (190)	122 (50)	56.1	(1425)	10.5	(267)	176.6	(80.1)	40	(18)	185	(84)	85.7	(2177)
303700005	303700011	120 (370)	122 (50)	60.9	(1546)	14.1	(360)	310	(140.6)	80	(36)	370	(168)	90.4	(2298)
303700006	303700012	180 (560)	122 (50)	70.2	(1783)	16	(406)	473.6	(214.8)	120	(54)	555	(252)	103.9	(2640)
303700013	303700019	15 (50)	149 (65)	27.3	(694)	8	(204)	64.6	(29.3)	10	(4.5)	44	(20.3)	51.5	(1308)
303700014	303700020	30 (100)	149 (65)	38.2	(972)	9	(229)	85.5	(38.8)	20	(9)	89	(41)	62.4	(1585)
303700015	303700021	45 (140)	149 (65)	42.2	(1071)	10.5	(267)	133.2	(60.4)	30	(14)	133	(60.8)	63.3	(1685)
303700016	303700022	60 (190)	149 (65)	56.1	(1425)	10.5	(267)	176.6	(80.1)	40	(18)	178	(81)	85.7	(2177)
303700017	303700023	120 (370)	149 (65)	60.9	(1546)	14.1	(360)	310	(140.6)	80	(36)	357	(162)	90.4	(2298)
303700018	303700024	180 (560)	149 (65)	70.2	(1783)	16	(406)	473.6	(214.8)	120	(54)	535	(243)	103.9	(2640)

### From Mumbai, India (UL Listed)

Standard <sup>1</sup> Gauge/Con. Part No.	Contacted <sup>1</sup> Gauge/Con. Part No.	PESO		Height to Outlet		Diameter		Nom. Tare Weight		Min. Agent Weight		Max. Agent Weight		Manifold Bracket Height with AHA	
		Nom. Size L	Temp. (lb)   °F (°C)	in.	(mm)	in.	(mm)	lb	(kg)	lb	(kg)	lb	(kg)	in.	(mm)
303700025	303700033	34 (110)	122 (50)	34.1	(865)	10.5	(267)	114.6	(52)	23	(10.5)	105	(47.5)	58.2	(1479)
303700026	303700034	80 (250)	122 (50)	70.6	(1794)	10.5	(267)	222.7	(101)	53	(24)	246	(112)	100.2	(2546)
303700027	303700035	120 (370)	122 (50)	51.9	(1317)	16	(406)	363.8	(165)	80	(36)	370	(168)	81.5	(2069)
303700028	303700036	180 (560)	122 (50)	72.3	(1837)	16	(406)	469.6	(213)	119	(54)	555	(252)	101.9	(2589)
303700029	303700037	34 (110)	149 (65)	34.1	(865)	10.5	(267)	114.6	(52)	23	(10.5)	100	(45.5)	58.2	(1479)
303700030	303700038	80 (250)	149 (65)	70.6	(1794)	10.5	(267)	222.7	(101)	53	(24)	238	(108)	100.2	(2546)
303700031	303700039	120 (370)	149 (65)	51.9	(1317)	16	(406)	363.8	(165)	80	(36)	357	(162)	81.5	(2069)
303700032	303700040	180 (560)	149 (65)	72.3	(1837)	16	(406)	469.6	(213)	119	(54)	535	(243)	101.9	(2589)

<sup>1</sup> Type of pressure gauge (Standard or Contacted) installed on container assembly per each part number.

**Note:** The converted metric values in this document are provided for dimensional reference only and do not reflect an actual measurement.

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