Kidde Fire Systems
Natura™ Inert Gas System
Component Description

IG-541 Cylinder Assembly

Effective: February 2025
K-38-2015 Rev AE

FEATURES

- ***Inert Gas Clean Agent Fire Suppression***
- ***Safe for Personnel and Equipment***
- ***Leaves No Residue***
- ***Environmentally Friendly***
- ***Release Unit offers Electric or Manual Actuation***
- ***Available in two Cylinder Sizes (80 or 140 Liter)***
- ***Available in two High-pressure options (200 bar or 300 bar)***
- **For Approvals, see the "COMPATIBILITY" table.**
- ***REACH and RoHS compliant***

Kidde Fire Systems Natura™ Inert Gas System (Natura IGS) using IG541 (herein referred to as Agent) are fixed fire extinguishing systems that use an inert gaseous mixture of 52% Nitrogen, 40% Argon, and 8% Carbon Dioxide (IG541), UN number 1956. Specification for IG541 is a Nitrogen/Argon/Carbon Dioxide 52%/40%/8% ratio by volume.

Natura IGS uses steel cylinders for gas storage. Each cylinder is manufactured in accordance with ISO 9809-2 and certified to TPED and/or UN/DOT.

Each cylinder is fitted with a pressure operated Natura High Pressure cylinder valve. The valve assembly is equipped with a safety burst disc in compliance with DOT and/or TPED requirements. Each cylinder valve has connection ports for the release unit or secondary gauge assembly, pilot line actuation hoses, and an agent discharge port.

Each cylinder and valve assembly is provided with an anti-recoil cap and a Safety Transport cap (Designed and tested to ISO 11117) as a safety feature designed to prevent uncontrolled, accidental discharge and damage during transport.

Standard cylinders are available in volumes of 80 or 140 liters filled with agent at pressures of 200 bar or 300 bar at a filling temperature of 15°C.

The cylinders are provided with the body painted red and green shoulder, with agency markings where applicable.

Figure 1 represents a typical cylinder assemblies. The Natura IGS equipment listed herein is designed for an operating temperature range of -4° to 130°F (-20° to 54°C).

WARNING

The anti-recoil cap and Safety Transport cap must be fitted whenever a valve is not connected to the piping system, or if the container brackets are to be removed. Failure to install the safety cap could result in violent movement of the container in the event of inadvertent actuation. Failure to follow these instructions could cause death, personal injury and/or property damage.

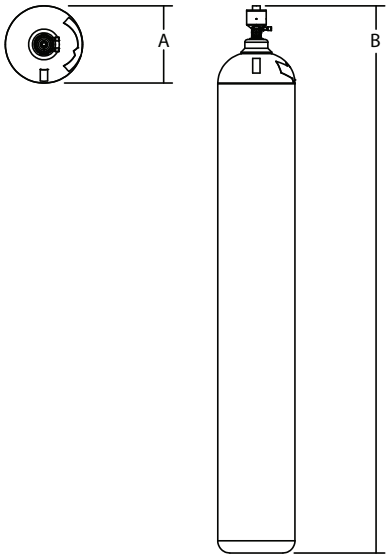

Figure 1. Typical Cylinder Assembly

Part Number	Capacity	Approximate Empty Weights	
		kg	lb
38-4280X1-541	80 L	103.0	227.1
38-4214X1-541	140 L	198.0	436.52
Part Number	**Capacity**	**Height (B)**	
		in	mm
38-4280X1-541	80 L	73.32	1862
38-4214X1-541	140 L	73.5	1867
Part Number	**Capacity**	**Diameter (A)**	
		in	mm
38-4280X1-541	80 L	10.51	267
38-4214X1-541	140 L	14.17	360
Part Number	**Capacity**	**Volume**	
		in^3	m^3
38-4280X1-541	80 L	4882	0.08
38-4214X1-541	140 L	8543.32	0.14

Note: Agent and pressure choice does not impact cylinder dimensions.

CYLINDER VALVES

Natura IGS uses a pneumatically operated high pressure cylinder valve, designed for an operating pressure of up to 366 bar (tested and CE marked according to EN 12094-4, tested and PI marked according to ATR D 2/11 (TPED).

Each valve includes quick connect connectors for the pilot actuation line to allow pneumatic opening of the valve. Each primary cylinder in the bank will be fitted with an electrical/manual release unit.

A pressure gauge/switch included in the release unit or secondary cylinder gauge assembly provides local and optional remote monitoring of the cylinder pressure. Normally the gauge/switch is electrically connected in a single loop configuration for common remote monitoring.

After a discharge the cylinder valve will close automatically when the pressure has fallen to < 3 bar. The residual gas content will prevent ingress of moisture ensuring the inside of the cylinder will remain dry, thus providing protection against corrosion.

Figure 2 represents valve arrangement.

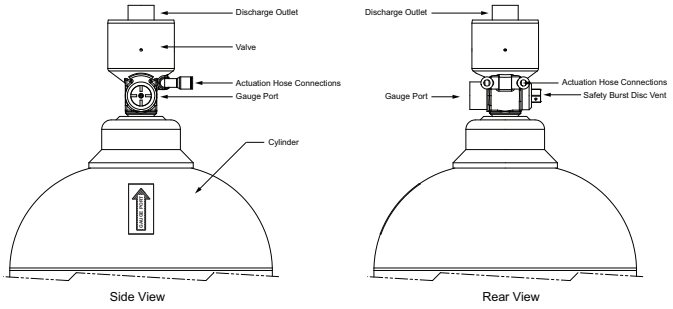

Figure 2. Valve General Arrangement,

PRESSURE VERSE TEMPERATURE FORMULAS

The following table lists the Agent pressure verses temperature formulas for IG541.

Temp. Unit	200 bar	300 bar
°F	P = 0.616(t) + 163.6	P = 1.019(t) + 239.7
°C	P = 1.108(t) + 183.3	P = 1.835(t) + 272.4

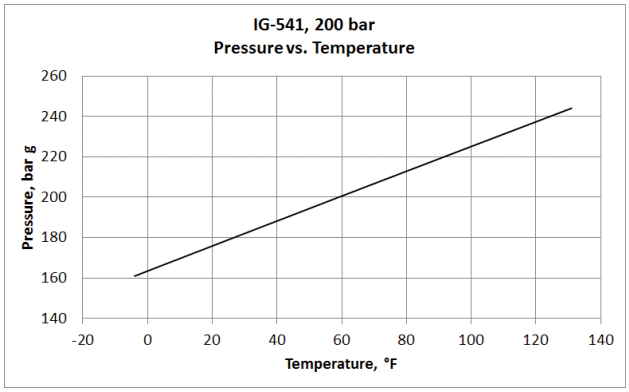

Figure 3. IG541 Pressure/Temperature Curve Isometric Diagram for 200 bar, U.S. Customary Units

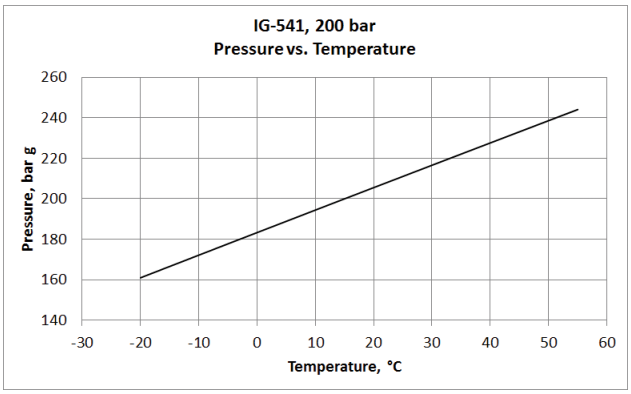

Figure 4. IG541 Pressure/Temperature Curve Isometric Diagram for 200 bar, SI Units

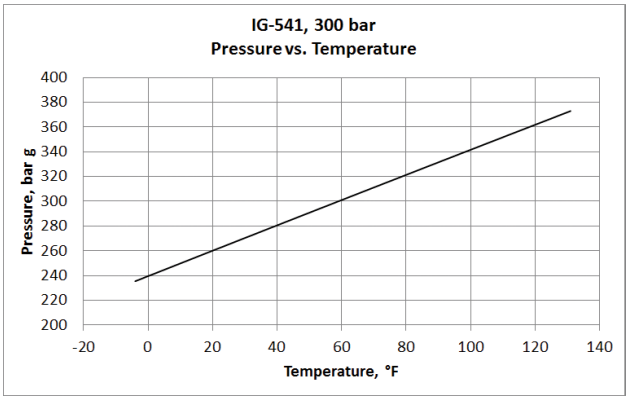

Figure 5. IG541 Pressure/Temperature Curve Isometric Diagram for 300 bar, U.S. Customary Units

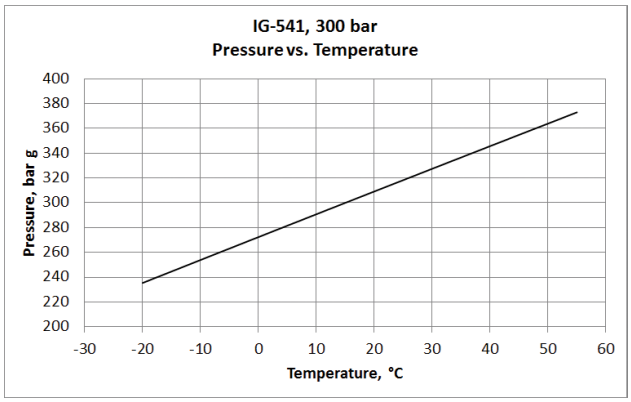

Figure 6. IG541 Pressure/Temperature Curve Isometric Diagram for 300 bar, SI Units

PURITY

Each element shall conform to the following purity specification:

Nitrogen:

- Nitrogen greater than or equal to 99.7%
- Oxygen less than or equal to 10 ppm.
- Water less than or equal to 10 ppm.

Argon:

- Argon greater than or equal to 99.99%.
- Oxygen less than or equal to 10 ppm.
- Water less than or equal to 10 ppm.

Carbon Dioxide:

- Carbon Dioxide greater than or equal to 99.7%
- Oxygen less than or equal to 10 ppm.
- Water less than or equal to 10 ppm.

Note: Only principal contaminants are shown. Other measurements may include: Carbon Monoxide, Carbon Dioxide, Nitrogen Oxide, and Nitrogen Dioxide most < 20 ppm.

COMPATIBILITY

Series	DIOM P/N	Approvals*
Natura™ Inert Gas System	06-237619-001	UL, FM
Natura™ Inert Gas System	06-237598-001	LPCB
* For additional listings, contact Kidde Fire Systems		

ORDERING INFORMATION

Use the following part numbers when ordering cylinders.

Part Number	Description
38-428021-541	Kidde Fire Systems 80L Natura™ Cylinder filled with IG541 to 200 bar
38-428031-541	Kidde Fire Systems 80L Natura™ Cylinder filled with IG541 to 300 bar
38-421421-541	Kidde Fire Systems 140L Natura™ Cylinder filled with IG541 to 200 bar
38-421431-541	Kidde Fire Systems 140L Natura™ Cylinder filled with IG541 to 300 bar

SPARE PARTS FOR CYLINDERS

The following spare parts are available for the cylinder.

Part Number	Description
38-400011-001	Anti-recoil cap, with actuation test pin
15-9604-0011	Safety Transport Cap for 80L cylinders
15-9604-0014	Safety Transport Cap for 140L cylinders

EXPORT INFORMATION (USA)
Jurisdiction: EAR
Classification: EAR99
This document contains technical data subject to the EAR.

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