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# SYNERT

200 BAR / 300 BAR INERT GAS SYSTEM



VdS



Supply & Installed by:



**NFPA INDIA Pvt. Ltd.**  
NATIONAL FIRE PROTECTION ARMOUR  
GOVT. APPROVED CLASS-A LICENCE AGENCY

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**NFPA INDIA Pvt. Ltd.**  
NATIONAL FIRE PROTECTION ARMOUR  
GOVT. APPROVED CLASS-A LICENCE AGENCY

Manufactured by,  
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Supply & Installed by:  
  
**National Fire Protection Armour**  
YOUR SAFETY सारथी



## SYNERT 200 BAR / 300 BAR INERT GAS SYSTEM

SYNERT GAS SYSTEM is the safe, natural way to extinguish a fire. SYNERT GAS SYSTEM is safer and more economical than any other system on the market.

### SYNERT GAS SYSTEM: THE LATEST TECHNOLOGY

SWASTIK SYNERGY has introduced an improvement in systems using IG-01,IG-55,IG-100,IG-541 as the extinguishing agent with the latest technology, providing benefits to the facility itself and the protected enclosure.

This innovative technology enables to optimize the design of the firefighting system with IG-01,IG-55,IG-100,IG-541 as the discharge pressure and flow control allow users to reduce the size of tubing needed for proper distribution of the agent and reduce overpressure that take place in the protected enclosure, minimizing the area for the relief of excess pressure.

SYNERT systems are designed to suppress fires involving class A, B and C hazards. The systems are designed to be total flooding and consist of a fixed supply of agent connected to a piping system with nozzles to direct the agent into an enclosed hazard. Inert gas extinguishes fires by lowering the oxygen content below the level that supports combustion. In simple terms if the oxygen content of the atmosphere is reduced to a level below 15%, most ordinary combustibles will not burn. Since SYNERT agents are stored as a gas, it discharges as an invisible gas, allowing people to safely exit a protected space without obscured vision.

SYNERT gas systems are particularly valuable in extinguishing fires in enclosures containing hazards or equipment where a clean, electrically non-conductive medium is essential or where the cleaning up of foam, water or powder would be problematic.

### MAXIMUM PROTECTION, MINIMUM STORAGE

SYNERT GAS SYSTEM containers allow you to protect single- or multiple-hazard areas typically requiring less floor space than other inert gas systems.

#### Think of the cost savings!

You no longer need to purchase, install and maintain several individual protection systems for your multi-risk facility. One SYNERT GAS SYSTEM does it all.

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#### Temperature Range:

The components are designed and tested to operate in the temperature range -20 °C to 50 °C or as stated in separate component listings.

#### SYNERT Agents:

Under normal conditions SYNERT agents is an odourless colourless gas.

SYNERT Gases do not support combustion, nor have an impact on the ozone layer, and has no global warming potential. Inert Gases are supplied as under:

Name of Gas	Contents
SYNERT IG-01	Argon
SYNERT IG-55	50% Argon, 50% Nitrogen
SYNERT IG-100	Nitrogen
SYNERT IG-541	52% Nitrogen, 40% Argon, 8% Co2

Storage containers are designed to hold agent in gaseous form at a nominal pressure of 200 bar or 300 bar at 15 °C.

Handling and Installation of SYNERT equipment should only be carried out by persons experienced in dealing with this type of equipment. The following specification applies to SYNERT agents:

#### SYNERT AGENT SPECIFICATION

Pressure (300 Bar System)	295 Bar – 300 Bar at 15° C
Pressure (200 Bar System)	195 Bar – 200 Bar at 15° C
Moisture	Max 12 ppm

#### HOW IS IT ACTUATED?

The extinguishing principle of inert gases focuses on reducing oxygen concentration in the affected zone. When a fire starts SYNERT Gases rapidly penetrates the area and reduces the oxygen level percentage from the usual level of 21% to a limit that fluctuates between 13% and 11%, the amount sufficient for combustion to stop and to be safe for the people in the room. Due to the stratification of the gases, protection is achieved throughout the space, regardless of how high the ceiling is. During its discharge, there is excellent visibility and, since it leaves no residue, there are no destructive effects to the equipment, which will continue functioning normally and, of course, there will be nothing to clean up.

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#### CYLINDER SIZE DETAILS

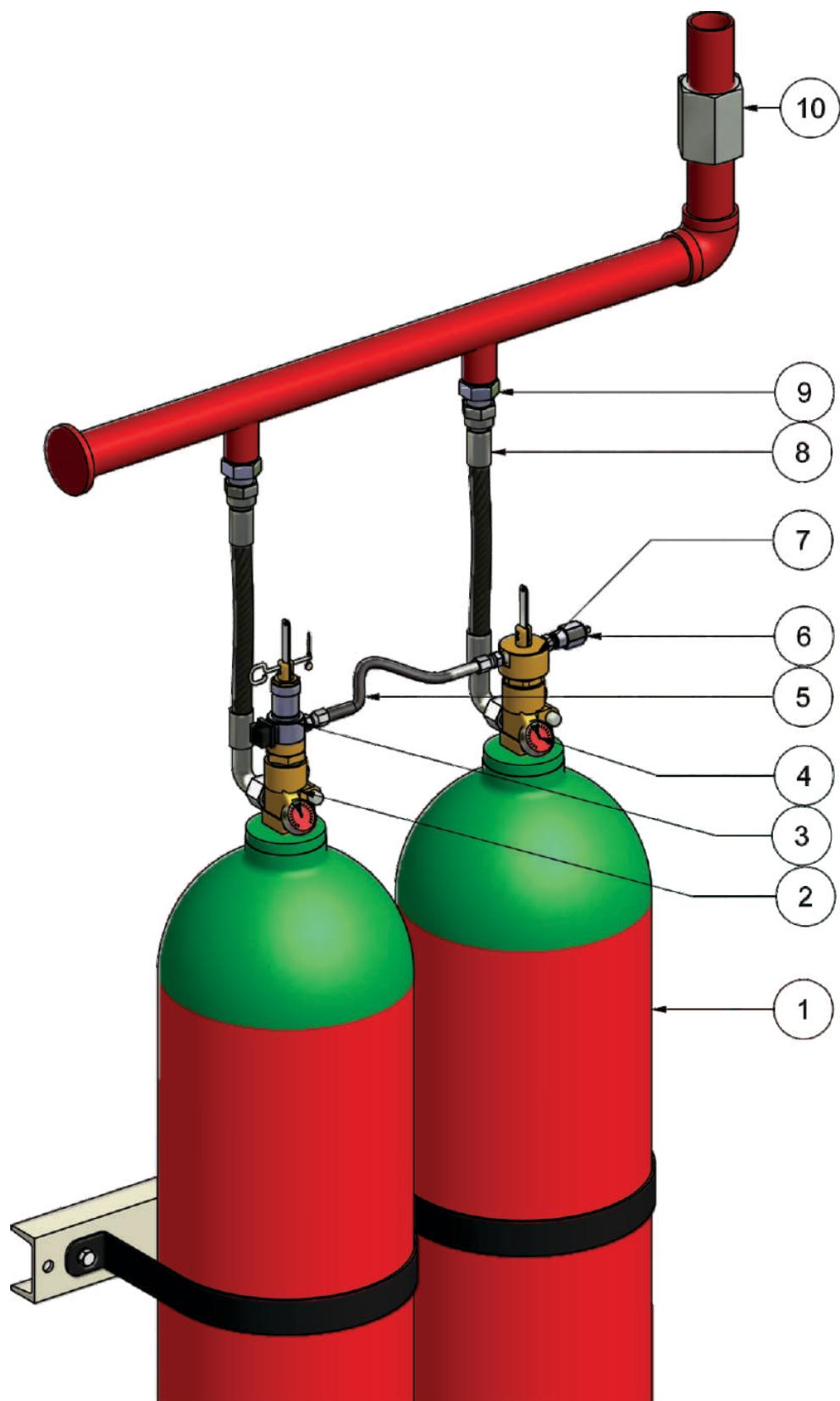
Pressure	Container Size
200 Bar	68 Litre
200 Bar	80 Litre
200 Bar	100 Litre
200 Bar	120 Litre
200 Bar	140 Litre
300 Bar	68 Litre
300 Bar	80 Litre
300 Bar	100 Litre
300 Bar	120 Litre
300 Bar	140 Litre

#### STANDARDS FOLLOWED

- IS 14520
- VdS 2344:2014-07
- VdS 2454:2013-07



## COMPONENTS OF SYNERT GAS SYSTEM



NO.	DESCRIPTION
1	SYNERT Gas Cylinder
2	Cylinder Valve
3	Electric & Manual Actuator
4	Pressure Gauge
5	Pilot Hose
6	Bleeder Valve
7	Pneumatic & Manual Actuator
8	Discharge Hose
9	Check Valve
10	Pressure Reducing Device





### OUR COMMITMENT : Services and Guarantees

#### Projects:

Swastik Synergy offers its assistance to engineers when it comes to projects for the detection, control of fires, providing advice regarding systems and coverage for each built space. The projects department carries out system design and sizing, hydraulic calculations, the calibration of diffusers and the facility's isometrics, advising on the effectiveness of the equipment in each at-risk space and suggesting operations for installation.

#### Customer Service:

For Swastik Synergy, each customer is important. We are aware that not everyone has the same needs, and so our team of professionals provides personal attention that is suitable for your requirements.

#### Technical Support:

With the aim of guaranteeing the smooth running of facilities, Swastik Synergy carries out operating and commissioning tests on the equipment. Furthermore, it works with the installer throughout the installation process.

#### Equipment Warranty:

Swastik Synergy provide warranty the sound operation of its equipment for 1 year starting from the delivery date; we take responsibility for the replacement or repair of any equipment in which manufacturing anomalies or faults are detected, and which is delivered to our factory in Khopoli.

### PHYSICAL PROPERTIES

#### Physical Properties of IG-01

Property	Unit	Value
Molecular Mass	—	39.9
Boiling Point at 1.013 bar (absolute) <sup>a</sup>	°C	-185.9
Freezing Point	°C	-189.4
Critical Temperature	°C	-122.3
Critical Pressure	bar abs <sup>a</sup>	49.0
Critical Volume	cm <sup>3</sup> /mol	—
Critical Density	kg/m <sup>3</sup> ?	536
Vapour Pressure 20°C	bar abs <sup>a</sup>	—
Liquid Density 20°C	kg/m <sup>3</sup> ?	—
Saturated Vapour Density 20°C	kg/m <sup>3</sup> ?	—
Specific Volume of Superheated Vapour at 1.013 bar and 20°C	m <sup>3</sup> /kg	0.602
Chemical Formula	Ar	
Chemical Name	Argon	

<sup>a</sup> 1 bar = 0.1 MPa = 10<sup>5</sup> Pa; 1 MPa = 1 N/mm<sup>2</sup>

#### Physical Properties of IG-100

Property	Unit	Value
Molecular Mass	—	39.9
Boiling Point at 1.013 bar (absolute) <sup>a</sup>	°C	-185.9
Freezing Point	°C	-189.4
Critical Temperature	°C	-122.3
Critical Pressure	bar abs <sup>a</sup>	49.0
Critical Volume	cm <sup>3</sup> /mol	—
Critical Density	kg/m <sup>3</sup> ?	536
Vapour Pressure 20°C	bar abs <sup>a</sup>	—
Liquid Density 20°C	kg/m <sup>3</sup> ?	—
Saturated Vapour Density 20°C	kg/m <sup>3</sup> ?	—
Specific Volume of Superheated Vapour at 1.013 bar and 20°C	m <sup>3</sup> /kg	0.602
Chemical Formula	N <sub>2</sub>	
Chemical Name	Nitrogen	

<sup>a</sup> 1 bar = 0.1 MPa = 10<sup>5</sup> Pa; 1 MPa = 1 N/mm<sup>2</sup>

#### Physical Properties of IG-55

Property	Unit	Value
Molecular Mass	—	33.98
Boiling Point at 1.013 bar (absolute) <sup>a</sup>	°C	—
Freezing Point	°C	—
Critical Temperature	°C	—
Critical Pressure	bar abs <sup>a</sup>	—
Critical Volume	cm <sup>3</sup> /mol	—
Critical Density	kg/m <sup>3</sup> ?	—
Vapour Pressure 20°C	bar abs <sup>a</sup>	—
Liquid Density 20°C	kg/m <sup>3</sup> ?	—
Saturated Vapour Density 20°C	kg/m <sup>3</sup> ?	—
Specific Volume of Superheated Vapour at 1.013 bar and 20°C	m <sup>3</sup> /kg	0.708
Chemical Formula	N <sub>2</sub> 50% by volume Ar 50% by volume	
Chemical Name	Nitrogen Argon	

<sup>a</sup> 1 bar = 0.1 MPa = 10<sup>5</sup> Pa; 1 MPa = 1 N/mm<sup>2</sup>

#### Physical Properties of IG-541

Property	Unit	Value
Molecular Mass	—	33.98
Boiling Point at 1.013 bar (absolute) <sup>a</sup>	°C	—
Freezing Point	°C	—
Critical Temperature	°C	—
Critical Pressure	bar abs <sup>a</sup>	—
Critical Volume	cm <sup>3</sup> /mol	—
Critical Density	kg/m <sup>3</sup> ?	—
Vapour Pressure 20°C	bar abs <sup>a</sup>	—
Liquid Density 20°C	kg/m <sup>3</sup> ?	—
Saturated Vapour Density 20°C	kg/m <sup>3</sup> ?	—
Specific Volume of Superheated Vapour at 1.013 bar and 20°C	m <sup>3</sup> /kg	0.708
Chemical Formula	N <sub>2</sub> 52% by volume Ar 40% by volume CO <sub>2</sub> 8% by volume	
Chemical Name	Nitrogen Argon Carbon Dioxide	

<sup>a</sup> 1 bar = 0.1 MPa = 10<sup>5</sup> Pa; 1 MPa = 1 N/mm<sup>2</sup>