

Pesflow
ONE STOP INDUSTRIAL VALVE SOLUTIONS

TUVINDIA



FLAME ARRESTER

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Overview

Storage tanks & other vessels containing flammable and explosive chemicals and mixture are prevalent in chemical process industries plants. Flame Arresters are installed on such equipment to prevent potential hazards associated with flammable and explosive materials. Flame Arresters can stop the spread of a fire, limit the spread of an explosive

Deflagration Type

Deflagration is an explosive that propagates at subsonic velocity

- An Atmospheric deflagration, which occurs in open air without a noticeable increase in Pressure.
- A pre-volume deflagration, which is initiated by an internal ignition source and occurs in a confined volume.
- An inline deflagration, which is an accelerated explosive within Pipe that travels along the axis Of the pipe at the flame propagation speed.

Maximum Experimental Safe Gap

If a flammable gas or mixture enters a narrow gap between two plates, the flame propagates through the gap in the direction of the unburned gas. Heat is transferred from the flame front to the walls of the gap. The narrower and the longer the gap, the larger the influence of the cold wall on the flame profile. With an appropriately sized gap, the heat transfer extinguishes the flame and prevents flashback. This is a flame arrester's principal operation.

Special Features

- Design of flame arrester such that it gives maximum flow and low pressure drop.
- Easy cleaning, less clogging and less maintenance.
- Removable element design allows for easy inspection, cleaning and replacement.
- Fluoropolymer coated body and hardware are provided for outstanding corrosion and chemical resistance.

event, protect potentially explosive mixtures from igniting, and confine a fire within an enclosed, controlled location. A flame arrester works by forcing a flame front through very narrow channels (MESG). As it travels through the device, but the passages are so narrow that the flame can no longer be maintained.

Detonation Type

Detonation is an explosion that propagates at supersonic velocity and is characterised by a shock wave.

Burning Type

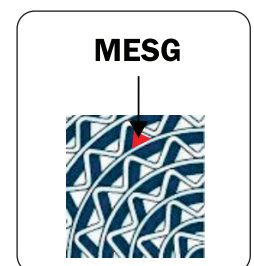
Short term burning: Stabilized burning for a specific time period (3-5 Minutes).

Endurance Burning: Stabilized burning for an unlimited time

MESG SELECTION CRITERIA

MESG (mm)	IEC Group	Reference Material
> 0.9	IIA	Propane
0.5 – 0.9	IIB	Ethylene
< 0.5	IIC	Hydrogen

Corrugated matrix replaceable type flame element.



Provision available for standard temperature port in all type of flame arrester.

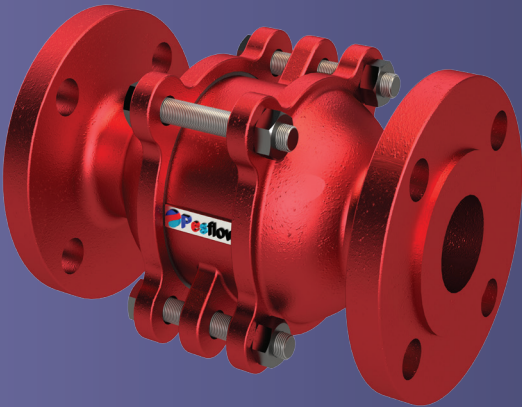
Flame arrester are available in A216 Gr. WCB, SS 304 and SS 316 and flame cage/element will be in SS 304, SS 316, SS 316Ti and C.

Flame arrester designed and manufactured as per API 2000 7th edition and tested as per ISO 16852.



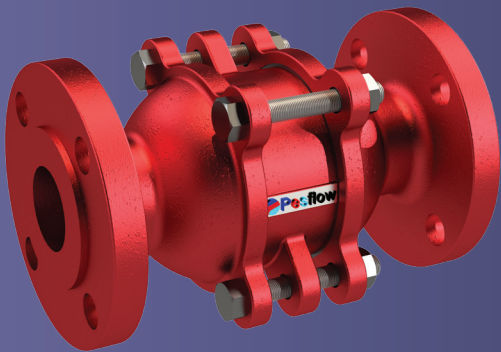
End of Line Deflagration

- Body of flame arrester is invest casting (lost wax process).
- Size available 1/2" (15 NB) to 24" (200 NB).
- IIA/IIB/IIC gas group.
- Available in A216 Gr. WCB, Cf8, CF8M, CF3, CF3M and aluminium LM6.
- Flame element available in SS 304, SS 316, SS 316Ti, Hastelloy C.



Inline Deflagration

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APPLICATIONS

Flame arresters are used across a wide range of process industries, including refining, pharmaceuticals, chemicals, petrochemicals, pulp & paper, oil and gas exploration & production, landfills, mining, power generation,

bulk liquid transport, and storage tanks. They are also critical in processes where exothermic reactions generate combustible or reactive gases—such as blending, reacting, separation, mixing, drilling, and digesting.

BENEFITS OF PRODUCT

Installing our flame arresters in pipelines with potential ignition sources significantly enhances safety by preventing hazardous incidents that

could harm personnel, damage equipment and process plants, impact the environment, and cause production loss.

PERFORMANCE-AFFECTING PARAMETERS

Flame arrester performance depends on the MESG gap of the element bank; clogging due to process or gas/vapour changes reduces efficiency, so periodic cleaning as per the maintenance manual is essential. Flame

arresters must be operated only within their designed temperature, pressure, and gas/vapour limits—deviations can increase flame speed and allow deflagration to pass downstream.

TESTING OVERVIEW

- Flow Capacity
- Dimensional Checks
- Endurance Burn & Continuous Flame Test
- Explosion & Flashback Test
- Hydrostatic Pressure Test
- Pneumatic Air Leakage Test
- Leak Test
- Deflagration Test
- Additional Burning Test
- Flame Transmission Test etc.

*and other tests may be performed as per customer request.



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