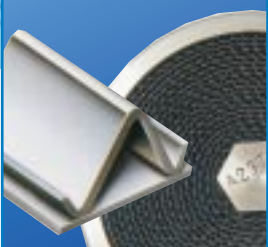


Pressure & Flame Protection

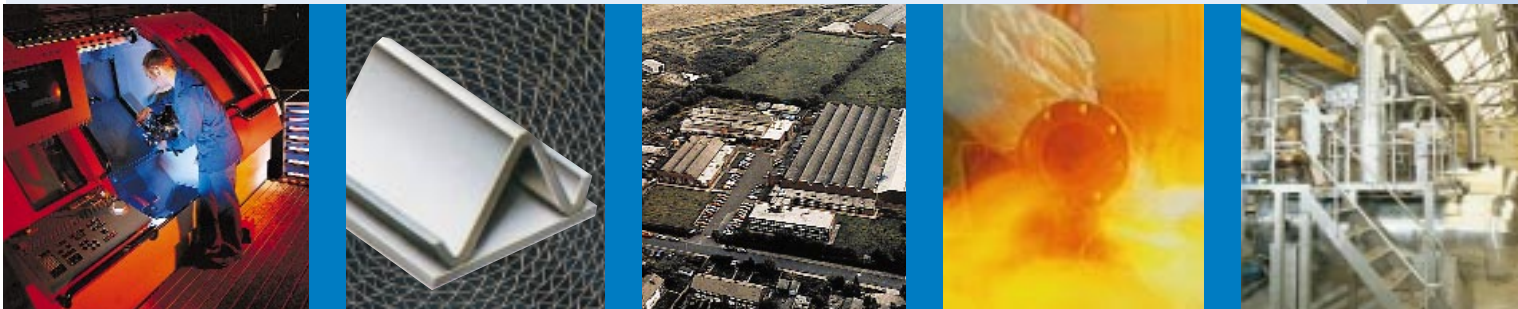


Amal

Flame Arresters

Flame Protection

Amal are not only known for the high quality of their products but also for the exemplary levels of commitment and dedication shown to their customers. This commitment to complete customer satisfaction is why Amal Flame Arresters are sold around the world in safety critical applications.



Technical Expertise and Flexibility

Amal prides itself on extremely high standards, from concept through to testing and manufacturing. A team of Product Designers and Application Engineers offer unrivalled expertise in the area of safety critical technology. This team is on hand to support its many customers, around the world, in their efforts to achieve optimum safety levels.

Amal's highly skilled engineers consistently offer application specific products, carefully assessing the customer's specifications and parameters, resulting in a cost effective and quality solution.

Testing facilities are crucial to Amal's high performance products. Therefore Amal invests in state-of-the-art technology, striving to maintain their technological advantage.

With over 80 years experience in the Flame Arresting industry Amal's customers know that when the name Amal is on their Flame Arrester, it is a sign of quality, a guarantee of plant protection and a reassurance that they have a supplier that cares.

International Standards

Amal has become a name synonymous with quality, and quality in the area of flame control must be assured. That is why Amal is certified to the highest international standard - ISO 9001.

The quality system is also approved in accordance with ATEX Directive 94/9/EC.

In addition Amal Flame Arresters are designed, tested and certified to EN 12874 in accordance with ATEX Directive 94/9/EC and have been tested and/or approved by: BS 7244: 1990, USCG, IMO, FTZU, PTB, BAM, PROCHEM, CSA, HSE, INERIS, GOST-R and NEMCO. Amal Flame Arresters are also designed and certified to the Pressure Equipment Directive 97/23/EC.

Also available:

- **Bailey** - Safety relief, pressure reducing and isolating valves.
- **Birkett** - API/ASME spring loaded and pilot operated safety relief valves and thermal relief valves.
- **Marston** - Bursting discs and explosion vent panels.
- **Marvac** - Tank protection valves.
- **Cash** - Cryogenic valves.



Amal

Flame Arresters

Amal specialises in the design, specification and manufacture of Flame Arresters.

A Flame Arrester is a passive explosion protection device with no moving parts. The secret to the success of a Flame Arrester lies in the element design. The Amal element has a superior crimped metal design, which in section presents a matrix of triangular passages or cells with guaranteed uniformity. All gases have a defined gap through which a flame will not pass, this is the Maximum Experimental Safe Gap (MESG). When a gas (or vapour) mixture ignites, the element matrix prevents further propagation by absorbing and dissipating heat from the burning gas (or vapour) on the incoming side of the arrester. As the flame enters the flame arrester element, the temperature is progressively reduced. This results in the gas being cooled to below the point where auto-ignition would otherwise occur when exiting the element.



In-Line (Gas and Vapours)

Detonation (Unstable): For flames with supersonic speeds and shock wave.

Deflagration: For flames with sub-sonic speeds.



In-Line (Liquid)

Detonation: For use in filling and emptying lines on storage tanks.



End-of-Line

Deflagration: For flames with sub-sonic speeds.

Can be supplied "Endurance burn proof".

Firebloc

Combined Flame Arrester and Pressure/Vacuum Relief Valve.

Incorporating "Endurance burn" technology.

Testing Facilities

Amal are one of the few manufacturers who have their own test facilities, where a customer's actual pipe configurations or equipment can be tested in their unique flame and explosion laboratory.

Computer-controlled test instrumentation is used to measure flame speeds and explosion pressures in test pipe-work. Amal's engineers then utilise closed circuit

video equipment to accurately assess the performance of differing types of Flame Arresters, in varying situations.

This impressive development and testing facility has the capability and resources to test Flame Arresters in accordance with all recognised standards.

Materials

When selecting the materials of construction for a Flame Arrester element, serious consideration should be given to the corrosion characteristics of the gases. Amal manufacture elements from Stainless Steel 316L

as standard, and have the capability to produce elements from many commercially available materials, including Hastelloy®, Nickel, Monel® and Tantalum.

Applications

Amal provide Flame Arresters wherever a potentially flammable gas is being transported, or a flammable liquid is being stored. Here are a few examples of typical application areas:

- Thermal Oxidisers
- Vapour Recovery
- Oil and Gas Terminals
- Atmospheric and Low Pressure Storage Tanks
- Marine Terminal Storage and Loading Facilities
- Chemical and Petrochemical Plants
- Onshore and Offshore Oil and Gas
- Diesel Engines
- Gas Analysers and Calorimeters
- Coal Mines
- Vacuum Pumps
- Fans and Blowers
- Sewage and Waste Water Treatment

Accessories

Amal have the ability to supply a wide range of accessories. Listed here are just some of the options available:

- Steam Jacketed with Manifolds
- Temperature Sensors
- Inspection Ports
- Endoscope Connections
- Differential Pressure Measurement
- Steam or Water Cleaning Systems
- Drains



Why Choose an Amal Flame Arrester?

In a potentially hazardous environment, Amal has the most effective method of quenching flames in a pipeline. When a confined flammable gas or vapour ignites, the flame may travel along the pipe at alarming speeds, with potentially devastating results. Where there is potential for ignition, suitable measures need to be taken to ensure that in the event of these materials igniting, damage to plant is minimised and threats to life are eliminated. The best solution is an Amal Flame Arrester.

Amal has the technology, expertise and testing facilities to offer Flame Arresters of the highest quality, with conclusive proof that a crimped metal design of triangular cells is the most effective method of quenching potentially lethal or destructive flames.

Amal make Flame Arresters that work for all gas groups in the process industry, to EN12874 as well as B, C and D to US National Electrical Code Article 500, because anything less could be disastrous!





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