

Amal



**PRODUCT
RANGE**



Amal

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.

Amal prides itself on extremely high standards, from concept through to testing and manufacturing. A specially selected team is committed to the careful engineering and interpretation of customer requirements.

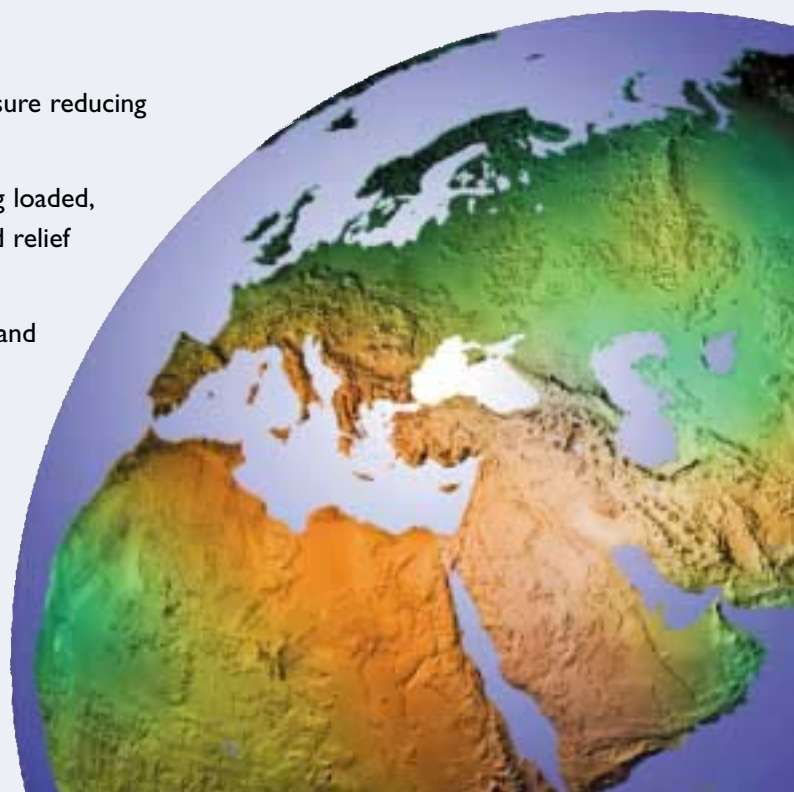
Amal's highly skilled engineers consistently offer application specific products, carefully assessing the customer's specifications and parameters, resulting in a cost effective and quality solution.

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 70 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.

Also available:

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



FLAME ARRESTERS

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

Many processes involve the storage of flammable liquids and the transportation of flammable gases or vapours through varying lengths of piping systems. 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's team of Product Designers and Application Engineers offer unrivalled expertise in this 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.



After more than 70 years of manufacturing and testing experience, Amal has conclusive proof that a crimped metal design of triangular cells is the most effective method of quenching potentially lethal or destructive flames. They can be used on all Gas Groups, i.e. IIA, IIB and IIC to EN50014, as well as B, C and D to US National Electrical Code Article 500.

TYPES OF ARRESTER

- **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.

HOW DO THEY WORK?

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.



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.

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

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



INTERNATIONAL APPROVALS

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 and NEMCO.

Amal Flame Arresters are also designed and certified to the Pressure Equipment Directive 97/23/EC.

WHY CHOOSE AN AMAL FLAME ARRESTER?

In a potentially hazardous environment, Amal has the most effective method of quenching flames in a pipeline. Amal has the technology, expertise and testing facilities to offer Flame Arresters of the highest quality.

Amal make Flame Arresters that work for all gas groups in the process industry, because anything less could be disastrous!



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Safety Systems UK Ltd
Sharp Street, Worsley
Manchester, UK
M28 3NA
Tel: +44 (0)161 703 1888
Fax: +44 (0)161 703 1985
Email: syssupport@safetysystemsuk.com
Web site: www.safetysystemsuk.com

Assistance:

Our experienced and fully trained team of Technical Sales Engineers and agents are available to give advice and assistance on the sizing and selection of the Amal Product Range.

This service is available to you by calling your local agent or our Amal Technical Sales Department, who will be happy to help.

Details of our worldwide network of distributors and regional offices are available on our website.

LOCAL AGENT

Simply photocopy and fax to us for more information on...

Please tick box where appropriate

- Bailey Pressure Reducing Valves
- Bailey Safety Relief Valves
- Birkett API/ASME Spring & Pilot SRV's
- Amal Flame Arresters
- Marston Bursting Discs & Explosion Vent Panels
- Marvac Pressure/Vacuum Valves

Please complete the following

Name: _____

Position: _____

Company: _____

Address: _____

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Tel No: _____

Fax No: _____

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Fax back to us on

Fax: +44 (0)161 703 1985



AMOV0203



Registered Office: Sharp Street, Worsley,
Manchester M28 3NA, UK.