Types of Safety Shields

Safety shields for flanges are most frequently specified, followed by shields for valves. From the standpoint of safety, all pipe joints are critical, since a sprayout can occur at any connection. However, the likelihood of a sprayout is greatest from flanges because their use outnumbers all other connections. Should a leak become uncontrolled, the consequences can be devastating.

RAMCO® Safety Shields are manufactured for all pipe connections such as:

- Flanges
- Couplings
- Valves of All Kinds
- Unions
- Expansion Joints
- Elbows
- Flow Meters
- Tees
- Hose Couplings
- Clamps
- Heat Exchangers
- Pumps
- Pressure Vessels
- Instruments
- Customized Connections
- Tube Fittings

RAMCO® Safety Shields can be divided into three groups:

- Spra-Gard® Safety Shields
- Econo-Gard® Safety Shields
- Metal Safety Safety Shields

Each group, in turn, contains shields that are manufactured from different materials — a total of eight are currently available. Each type can be fabricated in any size to accommodate the pipe system. While this selection is sufficient to handle virtually all applications, special safety shields can be customized on request.

One major difference among the wide variety of RAMCO® Safety Shields is temperature resistance. Up to 140°F (60°C) Econo-Gard® Shields are recommended, whereas TFE Spra-Gard® Shields resist temperatures up to 450°F (232°C). Beyond this, Metal Shields are required, demonstrating heat resistance as high as 2650°F (1454°C). Although there are situations in which higher temperatures occur, RAMCO® Safety Shields are not suitable for these environments.

RAMCO® Safety Shields are available in all piping standards (ANSI, DIN, BS, JIS, etc.) and can be customized for special sizes and configurations.

Spra-Gard® Safety Shield Products

RAMCO® Spra-Gard® Safety Shields, the work horse of safety shields, are most frequently specified because of their wide range of physical characteristics.

RAMCO® Spra-Gard® Safety Shields are fabricated in three proprietary thermoplastic textiles:

- **Teflon***
  (tetrafluoroethylene or TFE coated fiberglass)
- **Polypropylene** (PPL)
- **ECTFE**

The two woven cloths — **TFE** and **PPL** —are developed exclusively for RAMCO® according to specifications. These fabrics are produced to a patented design and a “porosity concept’’ that has been very carefully engineered. Rather than using impenetrable fabrics, Spra-Gard® Safety Shields are made of slightly porous textiles — too slight to permit a sprayout but sufficient to allow fluid to seep through to the indicating patch in the event of a leak.

ECTFE, a fluoropolymer clear film, is the material that forms the wide center band of the Spra-Gard® “See-Thru” Shields. This non-flammable film withstands temperatures up to 300°F (150°C) and has very high tensile strength. It also demonstrates excellent chemical resistance.

Another common feature of Spra-Gard® Shields is the sensitive pH patch or indicator that is incorporated in each safety shield. Should the slightest amount of leaking fluid come in contact with the patch, the patch undergoes color change immediately signaling trouble in the line. Yellow/orange in color, the indicator turns brilliant red with an acid leak and bright green with an alkali leak. While the affected patch can no longer be used, it can be removed and replaced with another patch after the shield has been neutralized. The shield is then ready for reuse.

Spra-Gard® Safety Shields have an overlap design. The shields wrap around the pipe connections completely to prevent a lateral sprayout. During installation, they are held in place by means of a velcro fastener. No tools are required, and a single installer can secure a shield over a flange or valve in less than a minute.

Each shield has a pair of tie-down cords. After it has been positioned over the joint and held firmly by its velcro fastener, the cords are drawn tightly around the pipe and secured with a square knot. Use of a square knot is essential, since pressure exerted against a square knot will tighten, ensuring that the shield will maintain its position over the pipe connection.

All Spra-Gard® Shields have been subjected to ultraviolet (UV) testing and have performed without degradation for approximately 500 hours.

Material is considered acceptable if it withstands approximately 200 hours of exposure without degradation. This is equivalent to approximately four to five years of outdoor exposure in the tropics and even longer in a temperate zone. Thus, Spra-Gard® Shields are inhibited against ultra-violet rays and can be installed both indoors and outdoors.

Other critical features of RAMCO® Spra-Gard® Safety Shields are their ability to resist ignition and flame propagation.

Because each Spra-Gard® Safety Shield is produced from a different thermoplastic cloth, parameters for pressure and temperature tolerance and chemical resistance vary.