
Mist Eliminators

For removing liquid entrainment

Aug 04



PRODUCT DESCRIPTION

Four styles of mist eliminators are offered for the removal of liquid droplets and mists from air streams.

- **Chevron Curved Blades**
- **Kimre Composite Mesh Pads**
- **Packed Beds**
- **Cyclone Separators**

Contact ARMATEC for recommendation and design of unit best suited for your application.

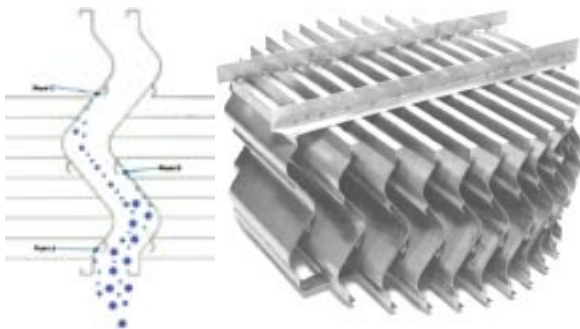
CHEVRON CURVED BLADES

Principles of Operation

Chevron-type mist eliminators work on the principle of direct impaction combined with centrifugal force. The liquid droplets are collected in a series of troughs located in bundles of parallel curved blades.

Features

- Removal efficiencies of 99+% over a range of gas velocities of 2m/s to 6m/s.
- Design optimises moisture removal and pressure drop to provide most economical system.
- Modular units accommodate a wide variety of vessel cross sections including round, rectangular and irregular shapes for optimum effect.
- Wide range of module sizes for specific applications..
- Low installation costs.
- Smooth surfaces minimise solids buildup; units seldom require maintenance. Where flush sprays are required, standard 35mm blade spacing permits easy penetration.
- Highly corrosion-resistant and can withstand a wide range of temperatures, depending on material of construction. Available in plastics and stainless steel.



Stainless steel 4-bend chevron-type mist eliminator

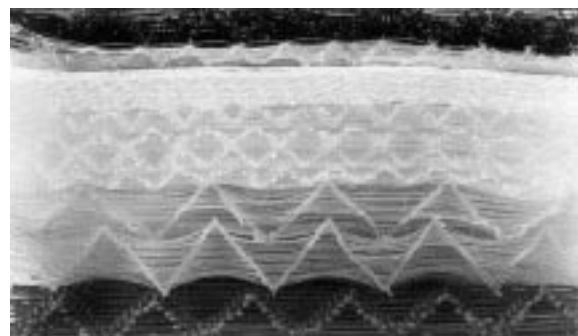
KIMRE COMPOSITE MESH PADS

Principles of Operation

Kimre Composite Mesh Pads work on the principle of direct impaction. The liquid droplets are collected in direct collision with structured, interlocked monofilaments within the mesh pad. Because particle size distribution and flow conditions are subject to unpredictable variations or in-plant data on them are not fully or completely known, Kimre has developed composite pads for stagewise removal. These uniquely designed B-GON Mist Eliminators have several layers of differing coarseness. Heavy loads of solid particulates or liquids can be stopped with coarse styles while less coarse styles eliminate small liquid droplets.

Features

- Removal efficiencies of 99+% for droplets and particulates above 1 micron over a range of gas velocities of 1m/s to 3m/s.
- Highest collection efficiency of any material. Collection efficiencies are much higher than wire mesh pads as Kimre pads have 93% of the fibres perpendicular to the gas flow.
- The number of layers in a required mist eliminator can be determined experimentally or calculated based on data from Kimre.
- The composite pads are a robust design and less sensitive to fluctuating operating conditions.
- Available in a range of plastics to suit the service conditions. Polypropylene is the most commonly used material.
- Mesh pad packs are light in weight so are easily handled and installed.
- Can be made into cassettes so that they can be removed and replaced in a short time, eg for cleaning.



Kimre composite mesh pad cross section showing layers of differing sized filaments for collecting range of mist particle sizes.

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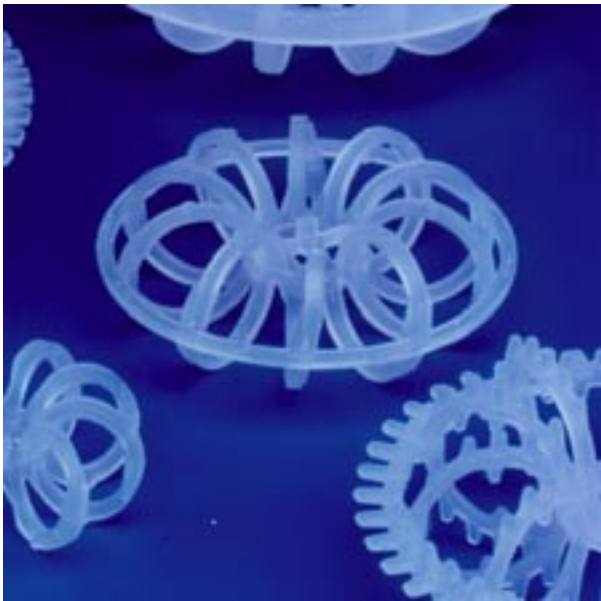
PACKED BEDS

Principles of Operation

Packed bed mist eliminators work on the principle of direct impaction. The liquid droplets are collected in a direct impact with a portion of the packed bed media. ARMATEC typically supplies this style of mist eliminator with Tellerette Type 2R as standard. More information on this packing can be found in a specific bulletin on Tellerette packing.

Features

- Removal efficiencies of 99+% over a range of gas velocities of 1m/s to 3m/s for particle sizes 10 microns and over. These gas velocities and particle sizes are as typically found in packed bed scrubbers
- A 300 mm deep packed bed of Tellerettes Type 2R will remove 99+% of droplets 10 to 1500 microns in size.
- Extremely low pressure drop due to open nature of packing.
- Packing placed by random dumping onto a grid of packing support plates.
- Packing is available in a range of plastic materials. Polypropylene is standard and is moulded in New Zealand.
- Tellerettes Type 2R are moulded in New Zealand and are readily available ex stock.



Tellerette Packing Type 2R is located at the centre of the picture and is used as a mist eliminator, especially in packed bed scrubbers. Tellerette Packing Type 1 is located at the lower left of the picture and is used in smaller diameter applications.

CYCLONE SEPARATORS

Principles of Operation

Cyclone separators work on the principle of centrifugal force. The air stream is forced into a spiral pattern, and the solid particles and liquid droplets are forced by centrifugal forces to the outside of the cyclone where they are collected on the wall of the cyclone and drain to the bottom.

Features

- Removal efficiencies vary depending on the diameter of the cyclone and its height.
- No internals such as packing so ideal for air streams contaminated with solids that may plug or precipitate.
- Cyclone separators are large in size compared to other styles of mist eliminators, and hence more costly.
- Pressure drops are high at 50 to 100 mm water gauge and this must be allowed for in the design.
- Ideal as a mist eliminator after a venturi scrubber being used for particulate scrubbing.
- Can be used as a prescrubber for product recovery.
- Can be manufactured in a range of materials including corrosion resistant fibreglass, and stainless steel for food applications.
- Can be fitted with a high pressure spray on the inlet especially if there are particulates in the airstream. This collects the solid particles and assists the cyclone to be self-cleaning to a high degree.



Stainless steel cyclone separator after a venturi scrubber on a food plant application. The system removed dust discharged from drier operations.

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