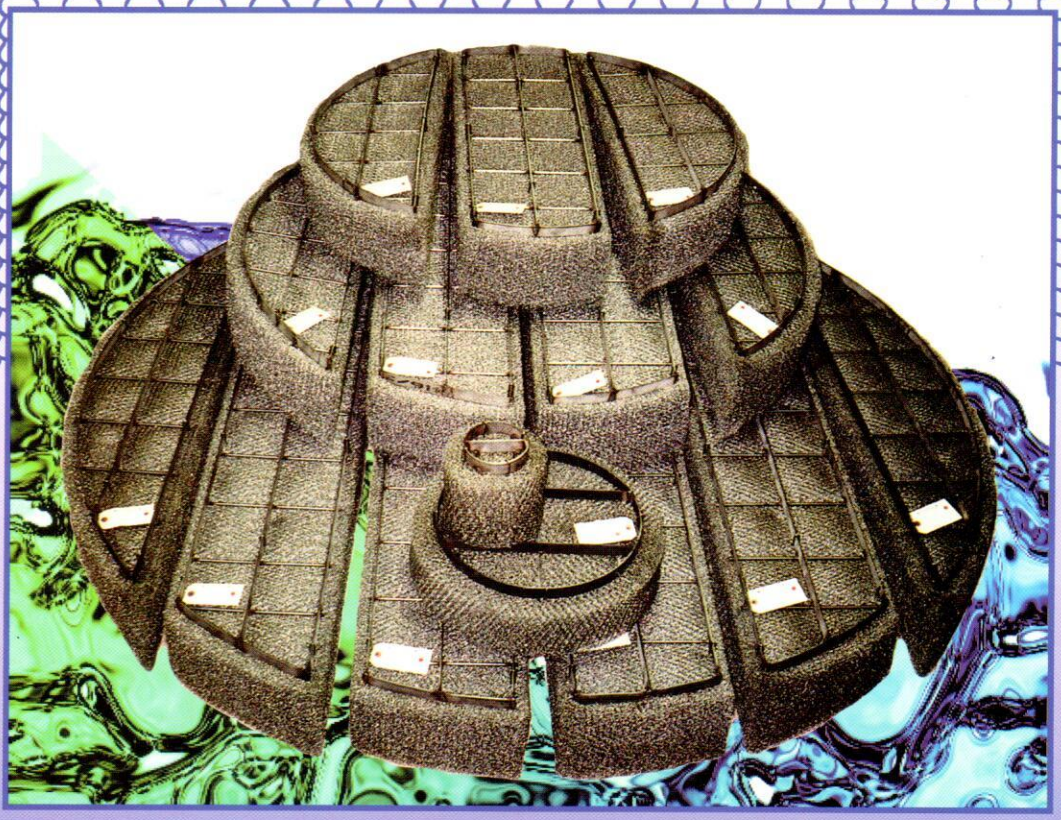
PETROMESH Inc.

KNITTED WIRE MESH PRODUCTS

Knitted Wire Mesh
Mist Eliminator Pads



Reduce Costs
Increase Capacity
Improve Process Efficiency
Customized Sizes
Fast Delivery

MANUFACTURED IN CALGARY, ALBERTA, CANADA

WWW.PETROMESH.COM

Introduction

Knitted wire mesh is used throughout the process industry in the separation of mist or small liquid droplets from a gas or a vapor stream. The mesh pad design formulas are based on the principle of liquid particles colliding with the wire matrix and coalescing into larger droplets. Gravity will then cause the large droplets to fall through the mesh pad and collect in the vessel sump. "Dry" gas will exit through the downstream side of the wire mesh pad while the liquid is removed from the vessel through a dump valve. The use of mist eliminator pads can be incorporated into both vertical and horizontal vessel configurations.

Petromesh manufactures several different styles of wire mesh mist eliminators. These styles are based on the density of the final mesh pad, the wire diameter used in the pad, and the crimp style that is used in the manufacturing process. A combination of styles can be used in a single pad. The most common pad styles are the 9#/ft3 or 12#/ft3 densities knit from 0.011" diameter wire.

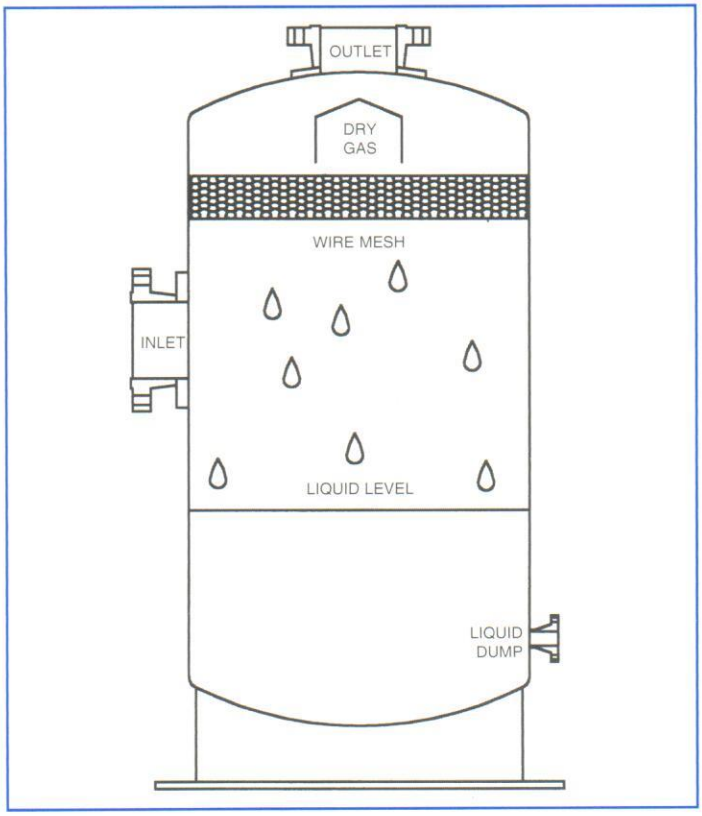
The following should be considered when determining which style of mesh is to be used:

1) The flow rate and properties of the process gas.
2) The flow rate and properties of the process liquid.
3) The minimum micron size of the liquid particles that are to be removed.
4) The potential for clogging due to a viscous fluid.

Typical Applications

Some of the typical applications include but are not limited to:

Scrubbers, Evaporators, Absorbers, Steam Drums, Refinery Vacuum Towers, Sulphur Plant Coalescers, Refinery Lube Towers.



Construction

PETROMESH "mist eliminator pads" are produced by knitting continuous lengths of wire to form a tube or sock. The "sock" is then flattened and crimped to form a final density depending on the style of mesh to be manufactured. Consistency is maintained through the use of continuous measurement to the 0.001" during the manufacturing process. Pads can be manufactured as one-piece pads in either 4" or 6" thickness or made as sectional pads that would be passed through a manway on a vessel and then placed back together to form the desired configuration. "Grids" are attached to both sides of the pad to maintain structural rigidity. Grids are normally manufactured from either 1/8"x1" SA-36 or Stainless Steel with 1/4" round bar supports. Oversize is built into each pad to ensure a tight fit against the vessel wall. Two standard wire diameters are 0.011" and 0.006". Most pads are made from 304L SS or 316L SS for corrosion purposes. Other materials are available. MTR's are integral to the manufacturing process.

Petromesh Mesh Styles

Model	Wire Diameter	Pad Density	Style Crimp
1109S	0.011"	9 lb/ft3	Standard
1112S	0.011"	12 lb/ft3	Standard
0608S	0.006"	8 lb/ft3	Standard
11108S	0.011"	10.8lb/ft3	Standard
1175H	0.011"	7.5 lb/ft3	H-bone
0612S	0.006"	12 lb/ft3	Standard
1105H	0.011"	5 lb/ft3	H-bone

Sizing and Selection

The following outlines basic sizing and selection of mesh style mist eliminator pads. Please refer to Petromesh Design Manual for further details on re-entrainment, pressure drop, and efficiency calculations. Contact the application engineers at Petromesh Inc. to confirm your final selection.

Sizing and selecting wire mist eliminator pads requires one to analyze four constraints:

1) The vapor velocity system limit for gravity separation defined by the Sounders-Brown equation.
2) The vapor velocity at which re-entrainment occurs.
3) The degree of separation required.
4) The pressure drop across the pad. Additionally, one should consider the volume required for slug capacity as well as the pressure drop from the entrance and exit of the vessel.

The allowable velocity is usually the starting point for determining the type of mesh pad that should be specified. The equation is:

$$V_{max}(ft/sec.) = K\sqrt{(\rho_L - \rho_G)/\rho_G}$$

The K factor does change and is dictated by the application and experience. This value will also change due to the operating pressure of the system. A value of 0.35 is used for mesh densities of $9\#/ft^3$ to $12\#/ft^3$ in low-pressure systems, where the flow is vertical. Once the allowable velocity is determined using the Sounders-Brown equation, the size is determined using the given gas flow rate:

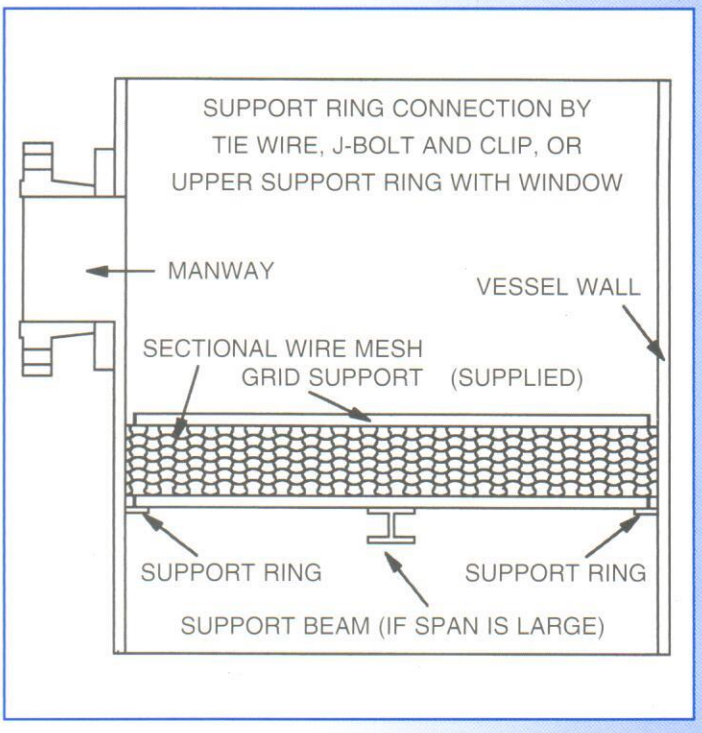
$$Area(ft2) = Q_g\ (ft^3/sec)/\ V_{max}(ft/sec)$$

This Sounders-Brown equation can be used as long as the liquid entrainment is less then 0.1% (v/v). If the liquid load is larger then this, the re-entrainment velocity may become the design constraint.

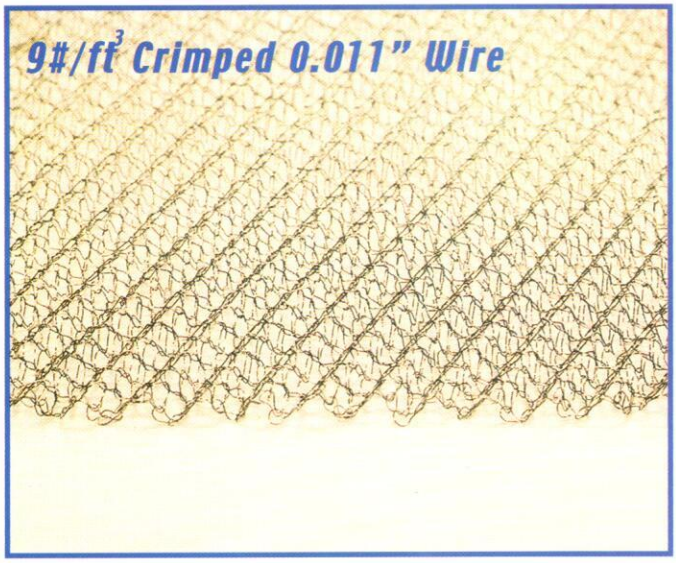
The pressure drop across a mist eliminator pad is usually less then 1-2" of water and can be considered negligible for most applications.

The degree of separation or efficiency is determined by the inlet liquid droplet size, the void space in the pad, the vapor velocity, and the diameter of the wire in the pad. As inlet droplet size is difficult to measure, one rule of thumb is, to get better separation, select a thicker, higher density pad with smaller wire diameter.

Typical Installation



9#/ft^3 Crimped 0.011" Wire



One Piece Pad with 316 SS Grids

Customized Sectional Pad

Ready to Roll Bulk Mesh

PETROMESH Inc.

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