DEMISTER® Mist Eliminators

High collection efficiency and low pressure drop.

The DEMISTER® mist eliminator is an assembly of YORKMESH knitted mesh that is supported with high open area grids.

DEMISTER mist eliminators are made to any size and shape from a wide range of materials, both metal and non-metal. Stainless steels and exotic alloys are fully annealed to provide maximum corrosion resistance.

Based on years of actual in-plant performance, Koch-Glitsch engineers use special families of mesh styles for particular equipment and processes to meet customer efficiency requirements.

How a DEMISTER® Mist Eliminator Works

1. A vapor stream carrying entrained liquid droplets passes through a DEMISTER pad. The vapor moves freely through the knitted mesh.

2. The inertia of the droplets causes them to contact the wire surfaces and coalesce.

3. The large, coalesced droplets formed in the mesh ultimately drain and drop to the vessel bottom.

Characteristics of DEMISTER® Mist Eliminators

- Easy to install in all process equipment
- Most cost-effective solution when equipment sizes are set by other requirements
- High efficiency with low pressure drop
- Emergency delivery available

Materials of Construction

- Stainless steel
- Nickel-based alloys
- Titanium
- Aluminum
- Copper
- Polypropylene
- Fluoroplastics
- Other special materials available on request. For example, Alloy 66 and SX® are specially designed materials used to extend service life in sulfuric acid plants.

Comparative pressure drop of several DEMISTER® mist eliminators in air-water system at atmospheric conditions.
Comparative efficiencies of various DEMISTER® mist eliminator styles in air-water system at atmospheric conditions.

**Design Parameters**

For general design, Equation 1 has been used as a velocity guideline for many years.

**Equation 1**

\[ V = K \left( \frac{(\rho_L - \rho_v)}{\rho_v} \right)^{\frac{1}{2}} \]

**Table 2. Units for Equation 1**

<table>
<thead>
<tr>
<th></th>
<th>English</th>
<th>Metric</th>
</tr>
</thead>
<tbody>
<tr>
<td>(V) - design velocity</td>
<td>ft/sec</td>
<td>m/sec</td>
</tr>
<tr>
<td>(\rho_L) - liquid density</td>
<td>lb/ft³</td>
<td>Kg/m³</td>
</tr>
<tr>
<td>(\rho_v) - vapor density</td>
<td>lb/ft³</td>
<td>Kg/m³</td>
</tr>
<tr>
<td>(K) - capacity factor</td>
<td>ft/sec</td>
<td>m/sec</td>
</tr>
</tbody>
</table>

The recommended design value of “\(K\)” varies depending on several system factors, which include liquid viscosity, surface tension, entrainment loading, and the content of dissolved and suspended solids. Recommended “\(K\)” values are also highly dependent on the mesh structure and vessel geometry.

Over 60 years ago, Koch-Glitsch developed the traditional mist eliminator styles that became the worldwide standards in the chemical process industries. The industry adopted a standard guideline, \(K = 0.35 \text{ ft/sec [0.107 m/sec] for calculations based on these traditional KOCH-OTTO YORK® styles.}

Improved high capacity styles have been developed. This development continues today.

Excellent performance is often obtained from 30-110% of the calculated design value. Operating pressure drop is usually negligible, < 1 in. [25 mm] wc. For high vacuum applications, high performance is routinely achieved with \(\Delta P\) on the order of 0.1 in. [2-3 mm] wc.

**High Capacity DEMISTER® Mist Eliminators**

Koch-Glitsch has developed and refined a new family of DEMISTER mist eliminators that replace traditional knitted mesh styles.

The new high capacity styles take advantage of improved knowledge about the way internal wire geometry affects capacity and performance in the same way that structured packing surpassed random packing performance in distillation columns.

Compared to the older styles, the high capacity DEMISTER styles from Koch-Glitsch can provide:

- 20% or more design capacity.
- Lower pressure drop.
- Higher efficiency at design velocity.
- Equal or better corrosion and fouling resistance.

<table>
<thead>
<tr>
<th>Traditional Style</th>
<th>High Capacity</th>
<th>Capacity Gain</th>
<th>Efficiency Gain</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>371</td>
<td>215</td>
<td>&gt;35%</td>
<td>Same</td>
<td>Glass fiber &amp; metal for maximum efficiency</td>
</tr>
<tr>
<td>326</td>
<td>194</td>
<td>&gt;25%</td>
<td>Same</td>
<td>Ultra-efficiency design for fine particles</td>
</tr>
<tr>
<td>421</td>
<td>709</td>
<td>&gt;20%</td>
<td>Same</td>
<td>Heavy duty, high efficiency design</td>
</tr>
<tr>
<td>431</td>
<td>172</td>
<td>&gt;20%</td>
<td>Same</td>
<td>General purpose style</td>
</tr>
<tr>
<td>931</td>
<td>708</td>
<td>&gt;22%</td>
<td>Same</td>
<td>High open area for viscous or dirty liquid</td>
</tr>
</tbody>
</table>

**Comparative efficiencies of various DEMISTER® mist eliminator styles in air-water system at atmospheric conditions.**