



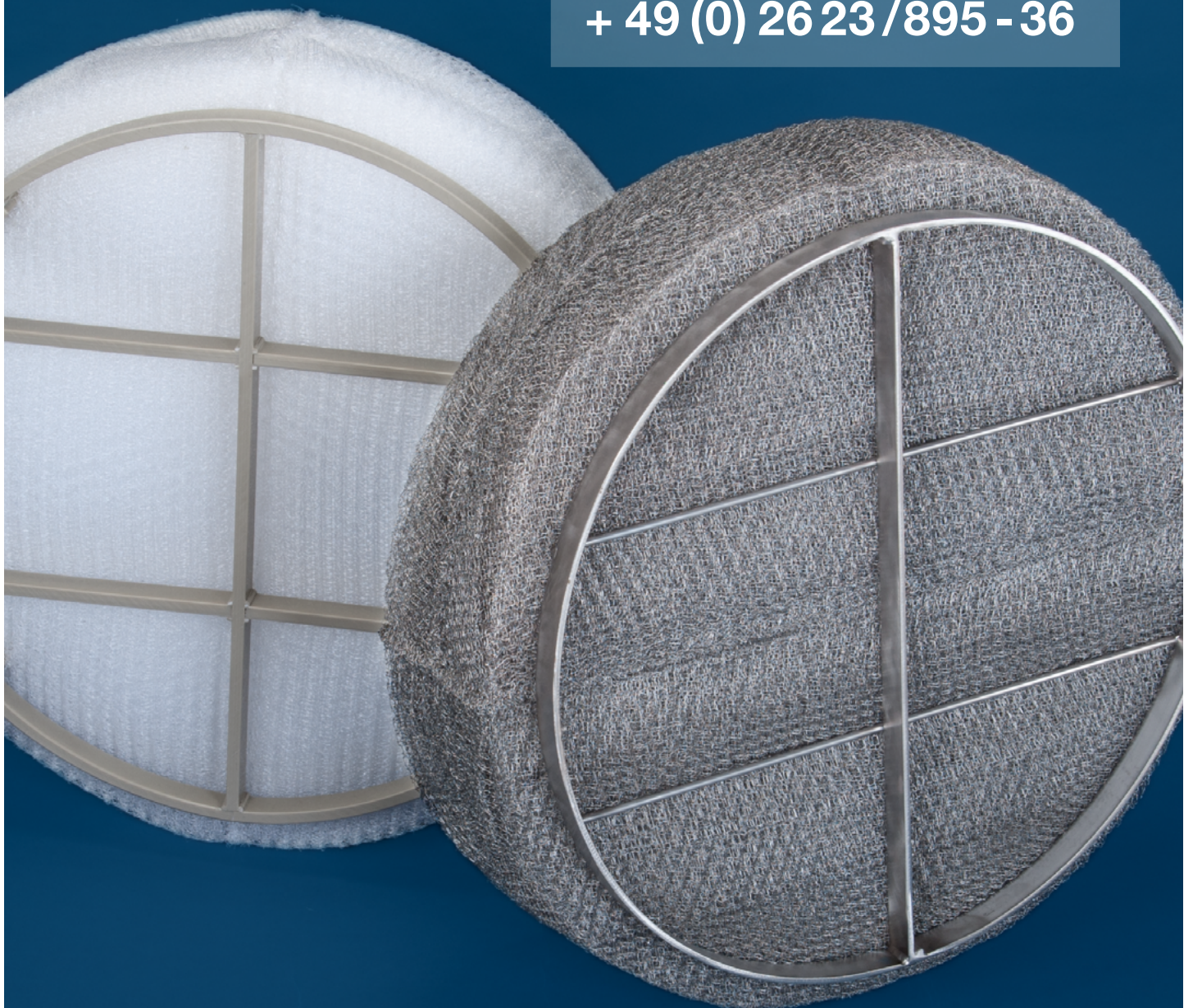
VEREINIGTE  
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MADE IN GERMANY

+++Tower Packings+++Inert-Balls+++Catalyst Support Materials+++Column Internals+++Droplet Separators+++

# DROPLET SEPARATORS (DEMISTER)

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# DROPLET SEPARATORS (DEMISTER)

For many decades, VFF droplet separators have been successfully used in a large variety of applications and design forms – up to 18 m in diameter.

Wire mesh droplet separators (Demister) are used for the removal of small liquid droplets (aerosols) from exhaust gases, exhaust air and steam.

VFF's portfolio includes a wide range of practical experience in the following applications and devices:

- Absorbers
- Seawater desalination equipment
- Washers
- Sulphuric acid plants
- Vacuum columns
- Sound absorbers
- Distillation and rectification plants
- Oil separators
- Evaporators, flash vessel systems
- Steam drums

During separation, the droplets enter the knitted wire mesh and collide with the wire surface due to their moment of gravity. The collected droplets coalesce at the cross points in the mesh and fall back as larger droplets into the vessel.

The separation efficiency, which is influenced by the void space and the specific wire mesh surface area, improves with increasing flow velocity. Due to flooding, the maximum flow velocity must not be exceeded, otherwise re-entrainment will occur.

The achievable limiting droplet size for 99.9% fractional separation efficiency is within a range of 5  $\mu\text{m}$  to 12  $\mu\text{m}$  for standard mesh types. By means of a special design and layout of mesh types, limiting droplet downsizing to 3  $\mu\text{m}$  or less is possible.

As an integral part of our service, we offer our customers professional practical support for the material selection of the particular application, as well as configuration calculations for optimal operations and the best separation efficiency, while taking the primary influencing factors into consideration.

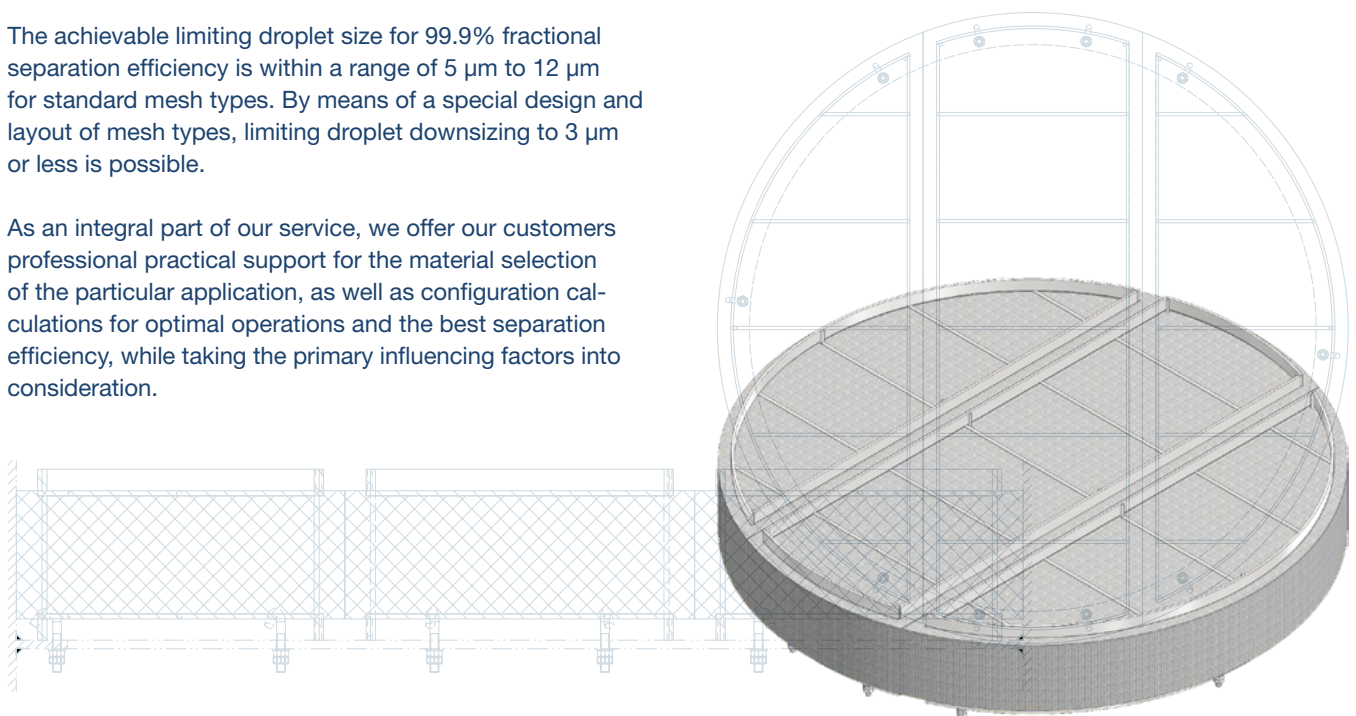
The wire mesh droplet separators are produced with thin wires in various mesh sizes, whereby a wire diameter in the range of 0.5 mm to 0.1 mm is typically used. The specific surface area of the mesh pad covers a range from approx. 150  $\text{m}^2/\text{m}^3$  to 1100  $\text{m}^2/\text{m}^3$ .

Typically, specially constructed supports and/or cover grids are delivered as support for the mesh pads, which are arranged so that the free inflow area is a minimum of 90%.

During the installation of the wire mesh, it must be ensured that the mesh pad is tightly fitted along the wall of the column, so that gas bypassing will not occur.

VFF offers a wide range of metallic materials and plastics as well as metal-plastic combinations, in order to be able to handle the temperature and/or corrosive conditions of the particular application, for example.

The pad height of the wire mesh droplet separators is between 100 and 150 mm in most applications. If the gas or steam flow contains very fine mist, such as that created during condensation, a considerably higher pad height or a multiple layer design may be necessary.



# TYPE SELECTION

On request, all metallic demisters are also available in a technically degreased version.

Standard wire mesh form and width, as well as standard wire diameter

| VFF type         | Spec. surface<br>[m <sup>2</sup> /m <sup>3</sup> ] ** | Spec. weight<br>[kg/m <sup>3</sup> ]**        | Free **<br>Volume [%] | Material                                                                                                | Design and application                                                                                                                                                   |
|------------------|-------------------------------------------------------|-----------------------------------------------|-----------------------|---------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>T-01-M</b>    | 150                                                   | Material: AISI 304: 80                        | 99,0                  | AISI 304<br>AISI 321<br>AISI 316<br>AISI 316Ti<br>Monel<br>Nickel<br>Titanium<br>Tantalum<br>and others | Standard types of metal with low to high packing density for almost all applications.                                                                                    |
| <b>T-02-M</b> *1 | 255                                                   | Material: AISI 304: 130                       | 98,2                  |                                                                                                         |                                                                                                                                                                          |
| <b>T-02-M-2</b>  | 280                                                   | Material: AISI 304: 144                       | 98,2                  |                                                                                                         |                                                                                                                                                                          |
| <b>T-03-M</b>    | 345                                                   | Material: AISI 304: 170                       | 97,6                  |                                                                                                         |                                                                                                                                                                          |
| <b>T-03-M-2</b>  | 380                                                   | Material: AISI 304: 191                       | 97,5                  |                                                                                                         |                                                                                                                                                                          |
| <b>T-10-M</b>    | 420                                                   | Material: AISI 304: 125                       | 98,4                  | AISI 304<br>AISI 321<br>AISI 316<br>AISI 316Ti<br>Monel<br>Nickel<br>Titanium<br>Tantalum<br>and others | High-performance metal types with similar packing density as group 1, however, with higher specific surface area for high separation performance with smallest droplets. |
| <b>T-20-M</b>    | 510                                                   | Material: AISI 304: 150                       | 98,1                  |                                                                                                         |                                                                                                                                                                          |
| <b>T-30-M</b>    | 590                                                   | Material: AISI 304: 175                       | 97,8                  |                                                                                                         |                                                                                                                                                                          |
| <b>T-01-P</b> *2 | 550                                                   | Material: PP: 50                              | 94,5                  | PE<br>PP<br>PVC<br>and others                                                                           | Standard plastic materials for aggressive media and temperatures up to 80 °C                                                                                             |
| <b>T-02-P</b>    | 880                                                   | Material: PP: 80                              | 91,2                  |                                                                                                         |                                                                                                                                                                          |
| <b>T-03-P</b>    | 1100                                                  | Material: PP: 90                              | 89,0                  |                                                                                                         |                                                                                                                                                                          |
| <b>T-10-P</b> *3 | 570                                                   | Material: Hostafion: 80                       | 95,5                  | ETFE (Hostafion)<br>ECTFE (Halar)<br>PVDF<br>PFA<br>and others                                          | High-persistent plastics for very aggressive media and temperatures up to 180 °C                                                                                         |
| <b>T-20-P</b>    | 715                                                   | Material: Hostafion: 100                      | 94,4                  |                                                                                                         |                                                                                                                                                                          |
| <b>T-30-P</b>    | 890                                                   | Material: Hostafion: 130                      | 92,7                  |                                                                                                         |                                                                                                                                                                          |
| <b>T-01-P-HT</b> | 750                                                   | Material: PP: 65                              | 92,7                  | PP<br>ETFE (Hostafion)<br>PVDF<br>PFA                                                                   | These types are thermally pre-shrunk and can therefore be applied without considerable deformations to 80 °C, 140 °C or 210 °C respectively.                             |
| <b>T-10-P-HT</b> | 700<br>920                                            | Material: Hostafion: 92<br>Material: PFA: 195 | 91,4<br>90,7          |                                                                                                         |                                                                                                                                                                          |
| <b>T-03-MP</b>   | 560                                                   | Material combination:<br>AISI 304/PP: 190     | 94,0                  | Stainless steel/PP<br>Stainless steel/<br>Teflon                                                        | These types consist of mesh with different wire materials (stainless steel and plastic) and are used for coalescence.                                                    |
| <b>T-10-MP</b>   | 560                                                   | Material combination:<br>AISI 304/Teflon: 150 | 94,0                  |                                                                                                         |                                                                                                                                                                          |

\*1 Standard type made from stainless steel for universal application in evaporators, distillers, rectification plants and others.

\*2 Standard type made from PP for universal application for air and gas washers

\*3 Standard type made from ETFE (Hostafion, heavy construction) for the separation of droplets and mist in sulphuric acid plants

\*\* All information are approximated and their limits may be varied upon customer's request.

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- column internals
- droplet separators
- software for the basic column design



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