



VEREINIGTE
FÜLLKÖRPER-FABRIKEN
GMBH & CO. KG



TÜVRheinland®
CERT
ISO 9001

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

VFF – Your expert for maritime exhaust gas treatment



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For decades, Vereinigte Füllkörper-Fabriken (VFF) has successfully supplied tower packings and internals made of a wide variety of materials worldwide for a wide range of applications in the chemical, petrochemical and pharmaceutical industries, in environmental technology, plant construction and other areas.

Packing elements for maritime exhaust gas purification

Energy-saving measures are becoming increasingly important in the field of exhaust-gas purification. VFF supports these measures through the production of tower packings with particularly low-pressure loss. This ensures that the energy expenditure for the flow through the packed bed and the associated CO₂ equivalents – i.e. the carbon footprint – is kept as low as possible.

For **maritime exhaust-gas purification**, not only the efficient removal of SO₂ from the combustion gases of ship fuels, among other things, but also the limited space must be taken into account.

The use of VFF high-performance tower packings

VFF-Twin-Pak® made of metallic materials or VSP® made of plastics allows a smaller dimensioning of the required column. In addition, by using such a space-saving counter current packed column, the choice of marine fuel is independent of its sulfur content. This guarantees a high degree of flexibility in the choice of fuel and allows for a cost-efficient responsiveness to the type, availability and price fluctuations of marine fuels.

VFF has many years of experience in the implementation of maritime applications. VFF has already successfully delivered large volumes of top-quality tower packings and the corresponding internals to various well-known plant manufacturers – even under high time pressure.

All from a single source – 100% made in Germany:

Tower packings when used in maritime exhaust gas purification, are cost-effective, reliable, hardly susceptible to pollution and very easy to handle. VFF can supply all the necessary components, such as demisters, distributors, retention and support grids, from a single source for an ideally coordinated unit inside the column. Everything is of course 100% Made in Germany, for the highest quality standards and great efficiency.

Short delivery times due to a large delivery capacity, a wide range of different materials, as well as expert advice and the highest quality standards make VFF an ideal partner in the field of maritime exhaust gas purification.

Column construction:

The illustration and the adjacent table show a typical product selection with some characteristics of the tower packings and internals.

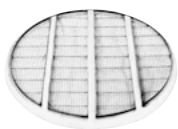


The VFF range includes many other products and is individually tailored to customer requirements.

Please do not hesitate to contact us if you have any questions.

Phone: +49 2623 / 895 - 23, Mail: kind@vff.com

Demister M/P



VFF demisters have been used successfully worldwide for many decades in various applications and designs – up to 18 m in diameter.

Liquid distributor M/P



Designation	min...max D [m]	max. Fg [$\sqrt{\text{PA}}$]	N(D) [1/m ²]	min...max S [m/h]	WA
FL-50, M, P	> 0,9	4,5	65...120	10...160	1:2

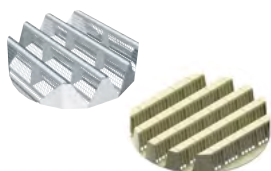
Retaining grid M/P



Designation	min...max D [m]	A(f) [%]	min. DN [mm]
RH-03, M, P	> 0,1	75	25 (10)

Grating, single or multi-piece

Profile support base M/P



Designation	min...max D [m]	A(f) [%]	min. DN [mm]
AU-10, M, P	> 1,0	to > 100	25

Tower Packing



Designation	Nominal size mm	Spec. surface [m ² /m ³]	Free volume [%]
VSP®, P	50	100	95
VSP®, P	90	78	97



VFF-Twin-Pak®, M	No 2	100	98
VFF-Twin-Pak®, M	No 3	80	98



Novalox®-M	70	60	98
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Abbreviations: M: Metal / P: Plastic / D: Diameter / Fg: Gas load factor / N(D): Number of drip points / S: Sprinkling density / WA: Working area / A(f): Free cross-sectional area / DN: Nominal dimension of a retaining cylindrical packing

Information: Subject to technical changes. All information is provided for preliminary informational purposes. No claims can be derived therefrom.



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Thurne

www.thurne.se

Your expert for:

- **DURANIT**® inert balls
- tower packings
- column internals
- droplet separators
- software for the basic column design

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www.vff.com



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