

Applications

Components for mass transfer applications



Basic principles

The process

A distinction is made between absorption and desorption when purifying exhaust gases. Absorption describes the process by which one or more components are eliminated from gas mixtures with the aid of a wash medium.

Physical absorption: In addition to physical absorption, which is evaluated on the basis of the physical equilibrium curve, there is also chemical or biochemical absorption. The absorption of atmospheric oxygen by water is an example of physical absorption.

Biological exhaust gas purification: In biological exhaust gas purification processes, the pollutants are eliminated by bacteria. These bacteria are either suspended in water (biowashers) or mounted on a carrier (trickle bed reactors). Due to reaction and conversion of the dissolved gas, the result of the process is no longer determined exclusively by the physical equilibrium of the solution in biochemical or chemical absorption processes.

Exhaust gas purification plants operate as counter-flow systems or cross-flow washers. The structured packings supplied by GEA 2H Water Technologies can be used in all packed washers.

Know-how

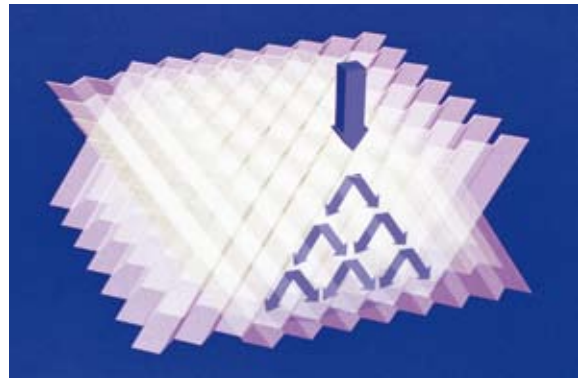
Individual solutions

In-house production of the films and packings allows us to realize individual customer requirements and thus guarantee higher resistance to temperature as well as greater mechanical strength.

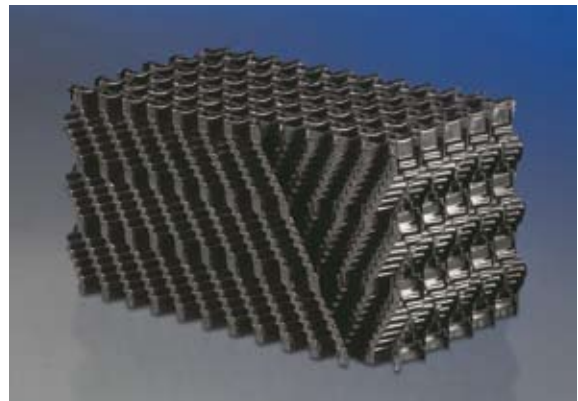
Plants can be built more cost-effectively and operated more efficiently. To meet the various requirements imposed with regard to chemical resistance, our packings are made of PP, PVC or PVDF depending on the application concerned. Customized designs can also be developed and produced on request.

The special surface structure of the packings ensures particularly uniform distribution of the liquid with very high and low liquid loads. This structure creates major turbulences within the packing and ensures an extremely large interstitial area between the liquid and gaseous phases, thus achieving optimum absorption values with low pressure loss.

Intermediate supporting grids or additional liquid distribution are not required for packings up to a height of 12 metres.



Cross-fluted structure



Your GEA 2H-Benefits

- More efficient
- Cost-effective
- Special surface structure

In many plants, the use of a demister for aerosol elimination is not required, as only droplets have to be eliminated. The TEP 130 mist eliminator component is a cost-effective alternative here, as it guarantees low pressure loss with high separation rates. The mist eliminator can also be supplied on request complete with supporting grid and lift-off protection.



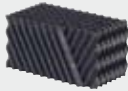


Support

2H Packing Software

The GEA 2H software team has developed a special program to assist our customers with the planning and construction of absorption and desorption plants. The program can calculate the required packings, for example, as well as the packing heights, their fluid dynamics and many other parameters. This convenient planning tool is available on request.



Technical Data

2H Type	FKP 312/ FKP 612	FKP 319/ FKP 619	FKP 327/ FKP 627	KVP 318/ KVP 618	KVP 323/ KVP 623
					
Material	PP / PVC / PVDF	PP / PVC / PVDF	PP / PVC / PVDF	PP / PVC / PVDF	PP / PVC / PVDF
Specific surface area [m ² /m ³]	240	150	125	150	125
Corrugation height [mm]	12	19	27	18	23
Max. length [mm]	2400	2400	2400	2400	2400
Max. width [mm]	600	600	600	600	600
Height [mm]	300 / 600	300 / 600	300 / 600	300 / 600	300 / 600
Max. application temp. [°C]	140*	140*	140*	140*	140*
Void ratio [%]	> 97	> 97	> 97	> 97	> 97

* Depending on the material selected

Typical Applications

Mass Transfer	Trickle bed reactors, gas washers	Trickle bed reactors, gas washers, desorption plants	Trickle bed reactors, gas washers, desorption plants	Biogas desulphurization, trickle bed reactors, gas washers	Biogas desulphurization, trickle bed reactors, gas washers
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General Remarks

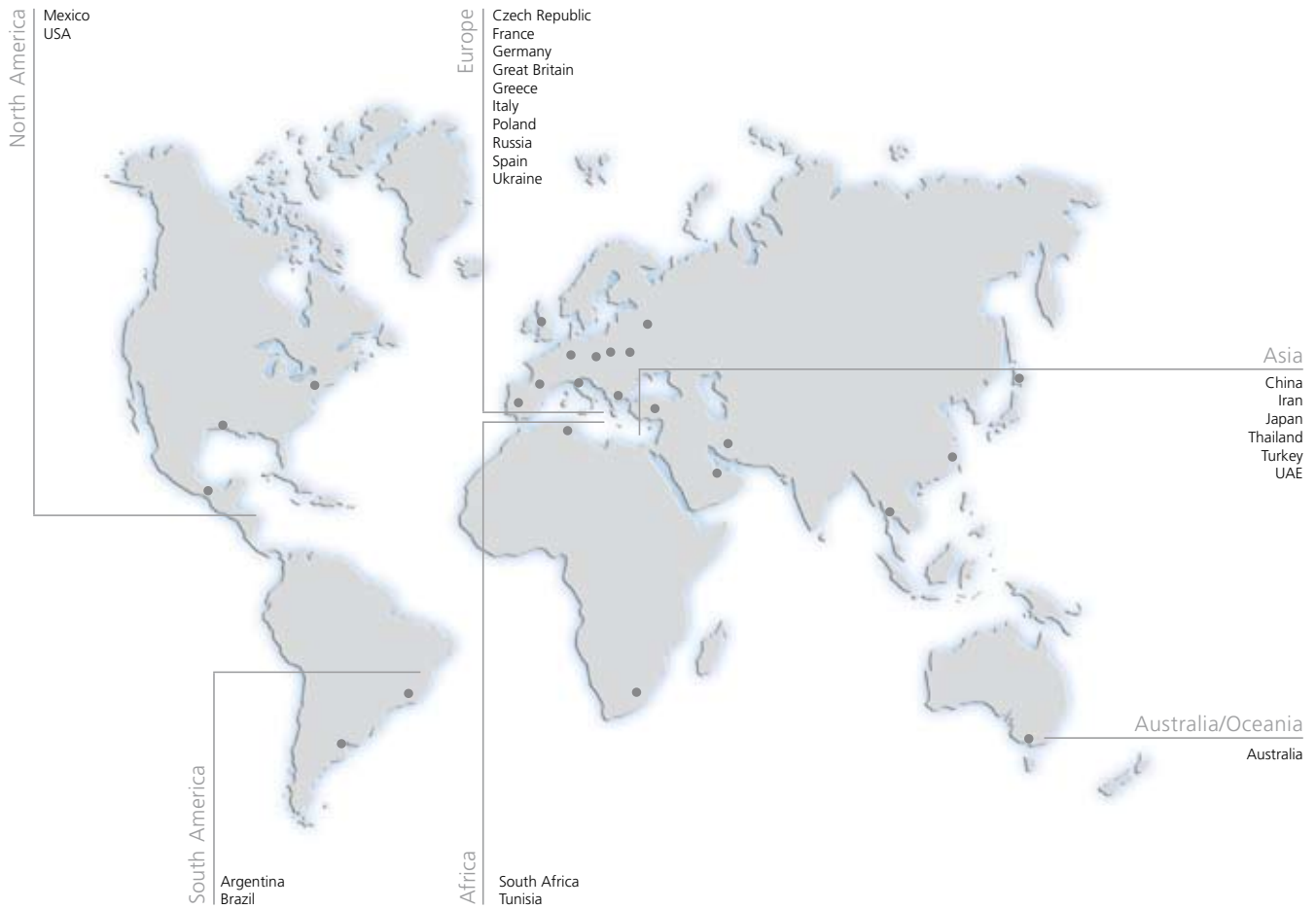
PVC-material:	Unplasticized (uPVC)
PP-material:	Impact-resistant, environmentally friendly
PVC and PP material:	Resistant to rot and fungi and most dissolved chemicals, UV-stabilized
Max. application temperature:	For material exchange applications, the operating temperature should be measured at the inlet pipe of the system and should not exceed 60 °C for PVC, 80 °C for standard PP, 100 °C for high-temperature PP and 140 °C for PVDF.
Flammability:	Products in flame retardant version according to American and European standards available on request. National regulations on fire protection should be taken into consideration before choosing a product.
Weight and bearing capacity:	Bearing capacity and weight/m ³ depend on sheet thickness. It will be selected according to customer specification in consideration of process conditions and safety factors for temperatures, lifetime and material properties.
Support requirements:	Recommendation for optimum solution for each application available on request.
Max. tolerances:	On all dimensions +/- 20 mm or 2 %, whichever is the greater. Tighter tolerances by prior agreement.

This information has been put together with greatest care. However, any performance data given in this leaflet is subject to compliance with certain surrounding conditions and hence may vary from case to case. Further, we reserve the right to make changes at any time without notice. We strongly recommend (i) reconfirmation with GEA 2H whether this information is still fully valid, before using it for final designs and (ii) to verify performance data taking into account the actual surrounding conditions. GEA 2H takes no responsibility for any consequences due to non-compliance with these recommendations.

Leading competence

Worldwide presence

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Hydrochloric Acid
Regeneration Plant



Desulfurization of biogas



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