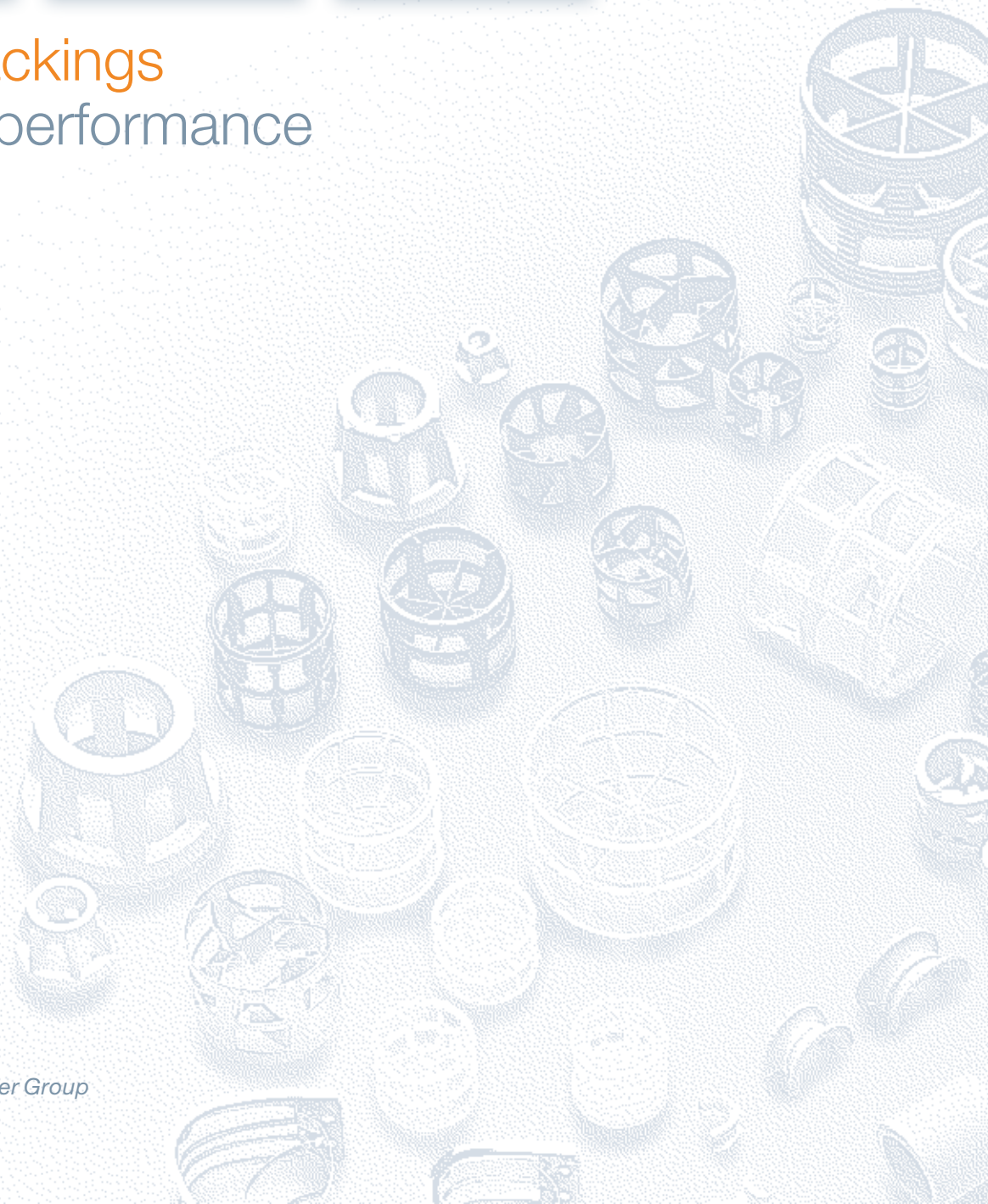




Tower packings

For high performance



High performance with RVT Process Equipment tower packings



Whatever a system, mass transfer, heat transfer or biological, selecting a tower packing that optimizes the total gas to liquid interface with a low pressure drop is sought after for optimal performance.

RVT's tower packings meet these requirements.

Available in a multitude of geometrical configurations as well as materials of construction, RVT Process Equipment provides a packing for almost every application.



Hiflow®-Rings

The Hiflow®-Ring is a 3rd generation high performance tower packing which provides an optimal design of high mechanical stability, void fraction and superior mass transfer. When a higher performance packing is required the Hiflow®-Ring can handle higher capacities of gas and/or liquid than conventional packing due to its open structure and

optimized design without sacrificing mass transfer performance. The mechanical stability and light weight of the Hiflow®-Rings make them ideal for highly packed beds without requiring additional intermediate support grids. Due to the exceptional mechanical design the tendency for the liquid to migrate to the column wall is minimized.



Hiflow®-Rings

| type size | bulk density kg/m ³ | surface area m ² /m ³ | void fraction in % |
|-----------------|--------------------------------|---|--------------------|
| Ceramics | | | |
| 20-4 | 693 | 280 | 71 |
| 35-5 | 658 | 128 | 73 |
| 50-6 | 466 | 102 | 81 |
| 75-9 | 485 | 70 | 80 |

Weight data refer to porcelain

| | | | |
|-----------------|----|-----|----|
| Plastics | | | |
| 15-7 | 80 | 313 | 91 |
| 25-7 | 85 | 214 | 91 |
| 38-1 | 51 | 150 | 94 |
| 50-0 | 50 | 110 | 94 |
| 50-3 | 52 | 95 | 94 |
| 50-6 | 46 | 90 | 94 |
| 90-7 | 27 | 76 | 97 |

Weight data refer to polypropylene

| | | | |
|---------------|-----|-----|----|
| Metals | | | |
| 25-5 | 372 | 185 | 95 |
| 28-5 | 372 | 185 | 95 |
| 38-5 | 255 | 145 | 96 |
| 40-5 | 244 | 143 | 97 |
| 50-5 | 175 | 95 | 98 |
| 110-8 | 147 | 52 | 98 |

Weight data refer to stainless steel 1.4301 (AISI 304) with 0.5 mm and 0.8 mm wall thickness

Standard materials

Ceramics: porcelain
stoneware
alumina

Plastics: PP, PPH, HDPE, PVC
C-PVC, PVDF, PFA

Metals: carbon steel, stainless steel,
titanium, hastelloy,
nickel, copper, aluminium

Raflux-Rings

Raflux-Rings are a second generation tower packing which are generally classified as a standard tower packing. The next evolution to the cylindrical ring, the Raflux Ring has an open structure which reduces the pressure drop while maintaining the same surface area of

the packing. Raflux-Rings are available in a variety of sizes and materials (ceramics, plastics and metals). Known for its balance between mass transfer performance and pressure drop Raflux Rings remain one of the most commonly used tower packings in industry.

Raflux rings

| type size | bulk denisty kg/m ³ | surface area m ² /m ³ | void fraction in % |
|---|--------------------------------|---|--------------------|
| Ceramics without cross partition | | | |
| 25 | 610 | 220 | 73 |
| 35 | 572 | 165 | 76 |
| 50 | 528 | 120 | 78 |
| 75 | 638 | 98 | 78 |
| 80 | 672 | 80 | 79 |
| 100 | 670 | 64 | 71 |
| Ceramics with cross partition | | | |
| 35 | 638 | 165 | 72 |
| 38 | 594 | 150 | 73 |
| 50 | 572 | 118 | 75 |
| 75 | 672 | 101 | 71 |
| 80* | 927 | 110 | 61 |
| 100* | 504 | 87 | 64 |

Weight data refer to stoneware, deviations possible due to particularities of production process

*structured packing

| | | | |
|-----------------|----|-----|----|
| Plastics | | | |
| 15-7 | 80 | 313 | 91 |
| 25-0 | 90 | 220 | 90 |
| 25-7 | 56 | 163 | 93 |
| 25-8 | 78 | 220 | 91 |
| 38-8 | 68 | 175 | 92 |
| 50-1 | 54 | 110 | 93 |
| 50-7 | 41 | 85 | 94 |
| 50-8 | 60 | 110 | 93 |
| 90-0 | 56 | 86 | 94 |
| 90-8 | 38 | 86 | 96 |

Weight data refer to polypropylene

| | | | |
|---------------|-----|-----|----|
| Metals | | | |
| 15-3 | 340 | 360 | 96 |
| 25-5* | 393 | 215 | 95 |
| 35-5* | 285 | 145 | 96 |
| 38-5 | 250 | 135 | 95 |
| 50-5* | 207 | 112 | 97 |
| 70-7 | 198 | 78 | 98 |
| 90-8 | 165 | 65 | 98 |

Weight data refer to stainless steel 1.4301 (AISI 304) with standard wall thickness between 0.3mm and 1.0mm

*also available with crimps

Standard materials

Ceramics: porcelain
stoneware

Plastics: PP, PPH, HDPE, PVC,
C-PVC, PVDF, PFA

Metals: carbon steel, stainless steel,
titanium, hastelloy,
nickel, copper, aluminium





RMSR – RVT Metal Saddle Rings

The RMSR (RVT Metal Saddle Ring) is one of the industry's highest performance metal random tower packing which has an excellent mass transfer efficiency while maintaining a very low pressure drop. Although it has an open structure the design provides a high

mechanical stability able to withstand heavy liquid loading and extremely tall bed heights. Additionally the RMSR tower packing generates a uniformly packed bed inside the column ensuring optimal gas-liquid interaction and minimal channeling.

RVT Metal Saddle Rings (RMSR)

| type size | bulk density kg/m ³ | surface area m ² /m ³ | void fraction in % |
|---------------|--------------------------------|---|--------------------|
| Metals | | | |
| 25-3 | 228 | 235 | 97 |
| 40-4 | 241 | 170 | 97 |
| 50-4 | 158 | 115 | 98 |
| 60-4 | 127 | 90 | 98 |
| 70-5 | 116 | 67 | 98 |

Weight data refer to stainless steel 1.4301 (AISI 304) with standard wall thickness between 0.3mm and 0.6mm



HiDur™ Inert Ceramic Balls

Balls are the simplest design of all packings. Refineries and petrochemical plants are the primary users for balls as they are using them as catalyst support media. While balls can technically be used for packed bed applications they are rarely utilized as they have an extremely high pressure drop with relatively low surface area.

HiDur™ Inert Ceramic Balls

| type size | bulk density kg/m ³ | surface area m ² /m ³ | void fraction in % |
|-----------------|--------------------------------|---|--------------------|
| Ceramics | | | |
| 1/8" | 1350 | 720 | 44 |
| 1/4" | 1350 | 520 | 44 |
| 3/8" | 1350 | 360 | 44 |
| 1/2" | 1350 | 275 | 45 |
| 3/4" | 1350 | 190 | 45 |
| 1" | 1350 | 144 | 45 |
| 1 1/2" | 1350 | 100 | 45 |
| 2" | 1350 | 72 | 45 |

Weight data refer to stoneware, deviations possible due to particularities of production process

Standard materials

Ceramics: porcelain, stoneware, mullite, alumina

Saddles

Saddles are classified as standard tower packing. Even though high performance tower packings are leading the way in terms of superior performance the saddle tower packing is still utilized in many applications due to its proven performance and cost effectiveness.

Ceramic saddles are still the number one selling ceramic product in acid industries as they have excellent mechanical and corrosion properties at uncomparable low costs. A further application is the utilization in regenerative thermal oxidizers (RTO).



Saddles

| type size | bulk density kg/m ³ | surface area m ² /m ³ | void fraction in % |
|-----------------|--------------------------------|---|--------------------|
| Ceramics | | | |
| # 0,5 | 770 | 540 | 67 |
| # 0,75 | 660 | 338 | 72 |
| # 1 | 616 | 250 | 74 |
| # 1,5 | 561 | 164 | 76 |
| # 2 | 540 | 120 | 77 |
| # 3 | 513 | 68 | 78 |

Weight data refer to stoneware, deviations possible due to particularities of production process

| Plastics | | | |
|-----------------|-----|-----|----|
| 1" | 105 | 258 | 89 |
| 2" | 84 | 120 | 92 |

Weight data refer to polypropylene



Hiflow® saddles

| type size | bulk density kg/m ³ | surface area m ² /m ³ | void fraction in % |
|-----------------|--------------------------------|---|--------------------|
| Plastics | | | |
| 2" | 53 | 83 | 95 |

Weight data refer to polypropylene

| Ceramics | | | |
|-----------------|-----|-----|----|
| # 2 | 528 | 132 | 79 |
| # 3,5 | 440 | 78 | 81 |



Berl Saddles

| type size | bulk density kg/m ³ | surface area m ² /m ³ | void fraction in % |
|-----------------|--------------------------------|---|--------------------|
| Ceramics | | | |
| 3/8" | 840 | 660 | 65 |
| 3/4" | 700 | 430 | 68 |
| 1" | 630 | 260 | 70 |
| 1 1/2" | 580 | 178 | 73 |
| 2" | 540 | 120 | 75 |

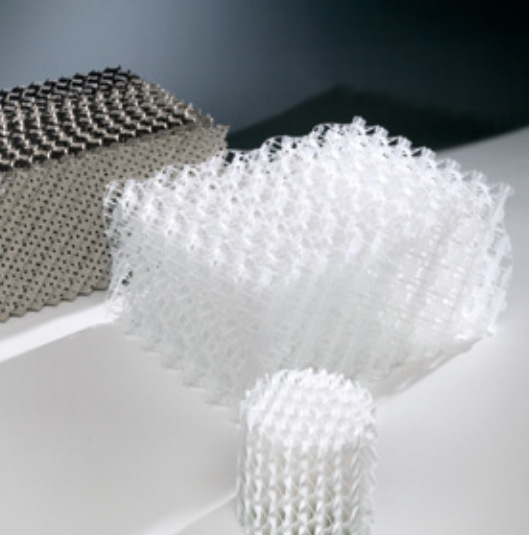
Weight data refer to stoneware, deviations possible due to particularities of production process



Standard materials

Ceramics: stoneware, porcelain, mullite, alumina

Plastics: PP, PPH, HDPE, PVC, C-PVC, PVDF, PFA



Structured packings

RVT Process Equipment provides next to random tower packings a broad range of innovative and conventional structured packings in metallic, thermoplastic and ceramic materials.

Structured packings made of plastics

- Lattice structured packings Hiflow® PLUS made of PP, PE and PPH
- Structured packings in sheet structure made of PVDF and PTFE

Structured packings made of metals

- X (60°) or Y (45°) corrugation angles
- Standard (type N) or high-capacity (type S) corrugation geometry
- Smooth or textured surface
- Perforated or unperforated
- 0.1 to 0.4mm metal sheet thickness
- Materials: carbon steel, stainless steel, others on request

Ceramic packings

- For high temperatures and corrosive process conditions



Biological carrier media

In both air and water pollution control applications biological treatment systems are becoming more commonplace.

For these processes RVT offers carrier media with the appropriate specific surface area, the most suited geometry and material selected.

Bioflow

| type size | bulk density kg/m ³ | surface area m ² /m ³ | void fraction in % |
|-----------------|--------------------------------|---|--------------------|
| Plastics | | | |
| Bioflow 9 | 145 | 800 | 9 x 7 |
| Bioflow 40 | 92 | 305 | 40/45 x 35 |

Materials

- PE-/PP-regranulate
- PE, virgin black
- PE, virgin natural



Cylindrical rings

Cylindrical Rings represent the most basic form of standard packing and are available in a vast range of materials (plastic, metal and ceramic) and thicknesses. Due to the high mechanical strength and the wide range of material cylindrical rings can be adapted to almost any process or system



Cylindrical rings

| type size | bulk density kg/m ³ | surface area m ² /m ³ | void fraction in % |
|-----------------|--------------------------------|---|--------------------|
| Ceramics | | | |
| 6 | 1050 | 700 | 54 |
| 8 | 1000 | 623 | 57 |
| 10 | 820 | 499 | 64 |
| 15 | 780 | 274 | 66 |
| 25 | 610 | 174 | 73 |
| 38 | 550 | 121 | 76 |
| 50 | 520 | 86 | 77 |
| 80 | 536 | 81 | 77 |
| 100 | 670 | 64 | 71 |

Weight data refer to stoneware, deviations possible due to particularities of production process

| | | | |
|-----------------|-----|-----|----|
| Plastics | | | |
| 15-1,5 | 164 | 350 | 81 |
| 25-1,5 | 138 | 220 | 85 |
| 35-1,5 | 82 | 150 | 90 |
| 50-1,75 | 71 | 110 | 92 |
| 80-2,5 | 66 | 65 | 93 |

Weight data refer to polypropylene

| | | | |
|---------------|-----|-----|----|
| Metals | | | |
| 15-5 | 567 | 360 | 93 |
| 25-5 | 393 | 215 | 95 |
| 35-5 | 285 | 145 | 96 |
| 50-5 | 207 | 112 | 97 |

Weight data refer to stainless steel 1.4301 (AISI 304)

Support systems

In acid applications, due to the aggressive nature of the gaseous and liquid components being handled, support plates of special design, manufactured from acid resistant ceramic materials, are used almost exclusively.

Depending on your specific needs, the appropriate support plate can be supplied.



Standard materials

Ceramics: porcelain
stoneware
alumina

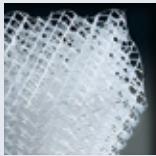
Plastics: PP, PPH, HDPE, PVC,
C-PVC, PVDF, PFA

Metals: carbon steel,
stainless steel,
titanium,
hastelloy, nickel,
copper, aluminium

The way to RVT Process Equipment



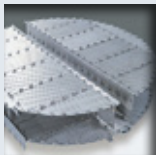
Tower packings for mass and heat transfer



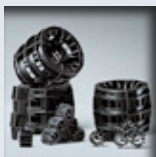
Structured packings for mass and heat transfer



Column internals



Mass transfer trays



Biological carrier media



Turn-key units for waste gas scrubbing



Ammonia recovery processes



Combustion plants for the disposal of exhaust air, waste gases and liquid media



Our addresses

RVT Process Equipment GmbH
Paul-Rauschert-Straße 6
96349 Steinwiesen, Germany

Phone +49 (0) 9262 77-0
Fax +49 (0) 9262 77-771
E-Mail info@rvtpe.de

RVT Process Equipment, Inc.
9047 Executive Park Drive
Suite 222
Knoxville, TN 37923, USA

Phone +1 (865) 694-2089
Fax +1 (865) 560-3115
E-Mail info@rvtpe.net

Kunshan
RVT Process Equipment Co., Ltd
No. 66 - 68, Shaojing Road
Development Zone Kunshan
215300 Kunshan
Jiangsu province
P.R. China

Phone +86 (512) 55 18 82 55
Fax +86 (512) 55 18 81 87
E-Mail hui.chen@rvtpe.com