



# WALCOOM

Walcoom Corporation



# RANDOM PACKING

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## Contents

1. Dixon Ring.....	3
2. Cannon Ring.....	4
3. Pall Ring.....	5
4. Raschig Ring.....	7
5. Super Mini Ring.....	9
6. Conjugate Ring.....	11
7. Cascade Mini Ring.....	12
8. Teller Rosette Ring.....	14
9. Super Raschig Ring.....	16
10. Intalox Saddle Ring.....	17
11. Super Intalox Saddle Ring.....	19
12. HY-Pak Ring.....	20
13. VSP Ring.....	21
14. Plastic Polyhedral Hollow Ball.....	22
15. Plastic Hollow Float Ball.....	23
16. Plastic Heilex Ring.....	23
17. Cross Spherical Ring.....	24
18. Lantern Ring.....	25
19. Snowflake Ring.....	26
20. Hi-Flow Ring.....	27
21. Tri-Pack Ring.....	28
22. Q-Pack Ring.....	29
23. Plastic Pentagon Ring.....	30

## "What types of random packings you want, What we can customize for you..."

Walcoom Corporation has been offering the random packing for more than 20 years, all standard random packings you can purchase from us. Additional, tell us your drawings and requirements, we will customize them for you. All types random packings in metallic, plastic and ceramic materials supply high performance in coal gas, petroleum, chemical and other fields for distillation, absorption, purification and other processes.

**Dixon ring** also called  $\theta$  packing ring, is made of stainless steel and other metallic wires. Weave the metal wires into rolls and then cut them into specified strips. Roll up the strips and form the dixon ring. The diameter of dixon ring is same as the height, which can supply high performance.

Pressure drop value is related to gas velocity, liquid spray volume, product weight, surface tension, viscosity and characteristic factor of tower packing.



Phosphor bronze Dixon ring



Stainless steel Dixon ring

## Application

The Dixon ring is widely used in laboratory and low-volume, high purity product separation process.

# RANDOM PACKING

**Table 1: Technical Parameter of Dixon Ring**

Item	Specs (mm)	Mesh Size (mesh)	Tower Diameter (mm)	Theoretical Plate (pcs/m)	Bulk Density (kg/m <sup>3</sup> )	Surface Area (m <sup>2</sup> /m <sup>3</sup> )	Void Friction	Pressure Drop (mbar/m)
DR-01	2 × 2	100	10-35	60-65	670	3700	91%	30
DR-02	3 × 3	100	20-50	50-55	520	2800	93%	15
DR-03	4 × 4	100	20-70	30-32	380	1700	95%	10
DR-04	5 × 5	100	20-100	15-20	295	1100	95%	10
DR-05	6 × 6	80	20-150	12-15	280	950	95%	10
DR-06	7 × 7	80	20-200	14-17	265	800	95%	8
DR-07	8 × 8	80	20-250	20-12	235	750	95%	8
DR-08	10 × 10	80	20-300	7-8	200	550	95%	8

**Cannon ring** has similar sizes with dixon ring, which is small but high efficient. It is commonly be made from stainless steel. Also, it can be made from Monel and other materials for excellent corrosion and rust resistance performance. The stainless steel or other metal plates are perforated into several tiny holes. As the points of the die push passing through the metal, jagged burrs are formed on the reverse side of the plates. The tensile strength is higher than other laboratory packings.



## Feature

- Suitable for laboratory and high purity products distillation towers.
- Unique wetting process and high filtering efficiency.
- Atmospheric and reduced Pressure environments.

**Table 2: Technical Parameter of Cannon Packing**

Item	Specs (mm)	Surface Area (m <sup>2</sup> /m <sup>3</sup> )	Theoretical Plate (pcs/m)	Bulk Density (kg/m <sup>3</sup> )	Pressure Drop (mbar/m)
CR-01	2 × 2	1500	22-23	576	23
CR-02	3 × 3	1380	20-22	540	30
CR-03	4 × 4	1340	14.5-15.5	480	147
CR-04	5 × 5	1029	14-15	410	195
CR-05	6 × 6	910	12-14	365	86
CR-06	7 × 7	670	6-7	290	65
CR-07	8 × 8	540	5	240	13
CR-08	9 × 9	360	5	140	9

## RANDOM PACKING

**Pall ring** is regarded as the second generation tower packing, which is the most widely used type. Rectangular windows are designed on the raschig ring and the pall ring forms. Pall ring has a unique multiple-blade design, which relatively enlarges the internal surface area and promotes the fluid-air exchange. The blades are bent into centers and contact with each other. The windows on the ring wall can improve the distribution of gas and liquid and increase the internal surface than raschig ring. Under the same pressure drop condition, pall ring's handling capacity is increased by 50% than raschig rings. Pall ring can be made from metallic, plastic and ceramic materials. All materials of pall rings have excellent corrosion resistance to be used in corrosive environments.



Stainless steel pall ring



Ceramic pall ring



Plastic pall ring



Different internal structure of plastic pall ring



## Feature

- 50% increased handling capacity than Raschig ring under same pressure drop.
- 50% pressure drop reduction under same handling capacity.
- 20% higher mass transfer efficiency.
- 20–40% packing volume saving.

## Application

- **Metal pall ring**
  - Vacuum distillation towers.
  - Dealing with heat-sensitive materials.
  - Dealing with easy decomposition materials.
  - Dealing with easy polymerization materials.
  - Dealing with easy carbonization materials.
- **Plastic pall ring.** Medium and low temperature distillation, absorption and washing towers in chemical, petroleum, chlor-alkali, coal gas and environmental protection industries.
- **Ceramic pall ring.** Contacting packing for carbon dioxide degassing tower, acid fog purifying tower, ozone contact reaction tower and other reaction towers.

## Material

- **Metallic:** Carbon steel, stainless steel 201, 304, 316, 316L.
- **Plastic:** PP, RPP, CPVC, PVDF and PVC.
- **Ceramic.**

**Table 3: Technical Parameters of Metal Pall Ring**

Item	Ring diameter (mm)	Diameter × Height × Thickness (mm)	Surface Area (m <sup>2</sup> /m <sup>3</sup> )	Void Fraction	Bulk Quantity (pcs/m <sup>3</sup> )	Packing Factor (m <sup>-1</sup> )
MPR-01	16	16 × 16 × 0.4	239	92.8%	143000	299
MPR-02	25	25 × 25 × 0.6	219	93.4%	55900	269
MPR-03	38	38 × 38 × 0.8	129	94.4%	13000	153
MPR-04	50	50 × 50 × 1.0	112	94.9%	6500	131
MPR-05	76	76 × 76 × 1.2	72	95.1%	1830	84

**Note:** Bulk density is different according to different materials.

# RANDOM PACKING

**Table 4: Technical Parameters of Plastic Pall Ring**

Item	Ring Diameter (mm)	Diameter × Height × Thickness (mm)	Surface Area (m <sup>2</sup> /m <sup>3</sup> )	Void Fraction	Bulk Quantity (pcs/m <sup>3</sup> )	Packing Factor (m <sup>-1</sup> )
PPR-01	16	16 × 16 × 1.1	188	91%	112000	249
PPR-02	25	25 × 25 × 1.2	175	90%	53500	239
PPR-03	38	38 × 38 × 1.4	115	89%	15800	220
PPR-04	50	50 × 50 × 1.5	112	90%	6500	154
PPR-05	76	76 × 76 × 2.6	73	92%	1930	94

**Note:** Bulk density is different according to different materials.

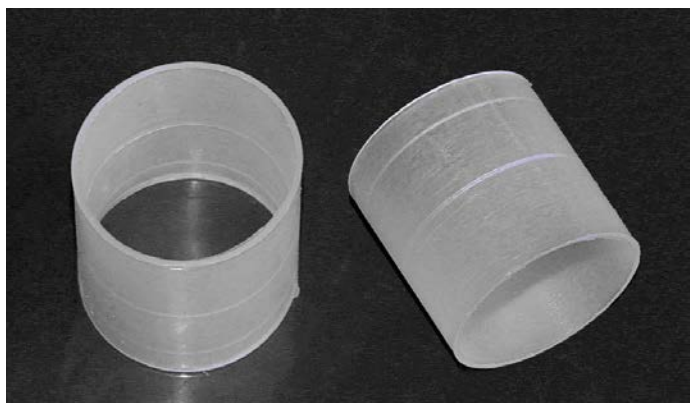
**Table 5: Technical Parameters of Ceramic Pall Ring**

Item	Diameter × Height × Thickness (mm)	Surface Area (m <sup>2</sup> /m <sup>3</sup> )	Void Fraction	Bulk Quantity (pcs/m <sup>3</sup> )	Bulk Density (kg/m <sup>3</sup> )	Packing Factor (m <sup>-1</sup> )
CPR-01	25 × 25 × 3	238	73%	54000	520	565
CPR-02	38 × 38 × 4	197	75%	13400	570	365
CPR-03	50 × 50 × 5	154	78%	6800	550	252
CPR-04	80 × 80 × 8	116	80%	1950	520	146

**Raschig ring** is the first generation tower packing. It has simple structure and economical cost to be widely accepted and used in various fields. The material of Raschig ring can be metal, plastic and ceramic. The height of Raschig ring is same to the diameter. It can be made into 6–150 mm. And the most popular sizes ranges from 25 mm to 75 mm. Because its mass transfer efficiency is low and handling capacity is small, so it is replaced than other high efficient random packings.



Stainless steel Raschig ring



Plastic Raschig ring



Ceramic Raschig ring

# RANDOM PACKING

## Feature

- Acid and alkali resistance.
- Temperature resistance.
- Simple structure and low cost.

## Application

- Drying tower.
- Absorption tower.
- Washing tower.
- Actifier column.

## Material

- Metal. Carbon steel, stainless steel 304, 304L, 316, 316L, 410, etc.
- Plastic. PE, PP, PVC, PVDF, CPVC, RPP.
- Ceramic.

**Table 6: Technical Parameters of Metal Raschig Ring**

Item	Diameter× Height × Thickness (mm)	Surface Area (m <sup>2</sup> /m <sup>3</sup> )	Void Fraction	Bulk Density (kg/m <sup>3</sup> )	Bulk Quantity (pcs/m <sup>3</sup> )	Packing Factor (m <sup>-1</sup> )
RRM-01	16 × 16 × 0.5	350	90%	660	2480000	460
RRM-02	25 × 25 × 0.8	220	93%	610	55000	290
RRM-03	50 × 50 × 1.0	110	95%	430	7000	130
RRM-04	80 × 80 × 1.0	60	96%	400	1820	80

**Table 7: Technical Parameters of Ceramic Raschig Ring**

Item	Diameter× Height × Thickness (mm)	Surface Area (m <sup>2</sup> /m <sup>3</sup> )	Void Fraction	Bulk Density (kg/m <sup>3</sup> )	Bulk Quantity (pcs/m <sup>3</sup> )	Packing Factor (m <sup>-1</sup> )
RRC-01	16 × 16 × 3	250	66%	820	178000	870
RRC-02	25 × 25 × 3	147	78%	510	42000	310
RRC-03	38 × 38 × 4	100	80%	458	12000	195
RRC-04	50 × 50 × 5	80	81%	465	5600	156
RRC-05	76 × 76 × 9	62	75%	575	1700	147

**Table 8: Technical Parameters of Plastic Raschig Ring**

Item	Diameter× Height × Thickness (mm)	Bulk Quantity (pcs/m <sup>3</sup> )	Bulk Density (kg/m <sup>3</sup> )
RRP-01	25 × 25 × 1	48500	88
RRP-02	50 × 50 × 1.5	6500	65



# RANDOM PACKING

**Super mini ring** also called flat ring, is an advanced random packing in the column tower packing. It has similar structure with cascade mini ring, which has low height and wall windows. But there is not flanging structure at the top and bottom. It can improve the packing strength through adjust the arc of internal blade. It has reasonable flow structure, low pressure drop and high mass transfer performance. Super mini ring has two main types, which are different in the internal blades, which names as QH-1 and QH-2.



QH-1 super mini ring



Common type QH-2 super mini ring



Quincunxes type QH-2 super mini ring



Plastic super mini ring



Ceramic super mini ring

## Feature

- High mechanical strength.
- Large handling capacity.
- High mass transfer.
- High flux and low pressure drop.
- Uniform gas and liquid distribution.

## Application

- Liquid-liquid extraction.
- Gas-liquid mass transfer.
- Vacuum distillation.
- Thermal sensitive material distillation.
- Decomposable plant material distillation.
- Easy polymerization material distillation.
- Easy carbonization material distillation.

## Specifications

- Material:
  - Metal. Stainless steel 304, 304 L, 316, 316 L and others.
  - Plastic. PE, PP, PVC, PVDF, CPVC, RPP.
  - Ceramic.
- Height-diameter ratio:
  - Plastic super mini ring. 1:5 to 2:5
  - Metal super mini ring. 1:5 to 2:5

**Table 9: Technical Parameter of Metal Super Mini Ring**

Item	Diameter× Height × Thickness (mm)	Surface Area (m <sup>2</sup> /m <sup>3</sup> )	Void Fraction	Bulk Density (kg/m <sup>3</sup> )	Bulk Quantity (pcs/m <sup>3</sup> )	Packing Factor (m <sup>-1</sup> )
<b>SMRM-01</b>	16 × 5.5 × 0.5	348	92%	604	630000	312
<b>SMRM-02</b>	25 × 9.0 × 0.6	228	94%	506	160000	280
<b>SMRM-03</b>	38 × 12.7 × 0.7	150	95%	390	48000	175
<b>SMRM-04</b>	50 × 17 × 0.8	115	97%	275	21500	156

**Table 10: Technical Parameter of Plastic Super Mini Ring**

Item	Diameter× Height × Thickness (mm)	Surface Area (m <sup>2</sup> /m <sup>3</sup> )	Void Fraction	Bulk Density (kg/m <sup>3</sup> )	Bulk Quantity (pcs/m <sup>3</sup> )	Packing Factor (m <sup>-1</sup> )
<b>SMRP-01</b>	38 × 12 × 1.2	145	92%	70	46000	186
<b>SMRP-02</b>	50 × 17 × 1.5	128	93%	67	21500	159
<b>SMRP-03</b>	76 × 26 × 2.5	116	93%	58	6500	144

**Table 11: Technical Parameter of Ceramic Super Mini Ring**

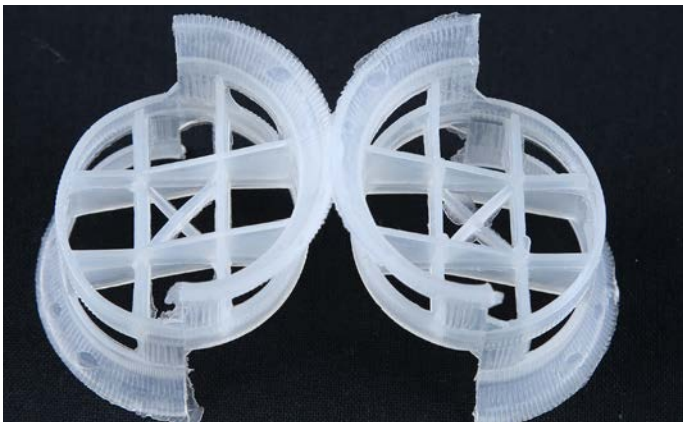
Item	Diameter× Height × Thickness (mm)	Surface Area (m <sup>2</sup> /m <sup>3</sup> )	Void Fraction	Bulk Density (kg/m <sup>3</sup> )	Bulk Quantity (pcs/m <sup>3</sup> )	Packing Factor (m <sup>-1</sup> )
<b>SMRC-01</b>	16 × 10 × 1.5	250	87%	750	300500	1150
<b>SMRC-02</b>	25 × 16 × 2.0	180	85%	700	87040	800
<b>SMRC-03</b>	30 × 18 × 2.5	170	85%	690	55000	850
<b>SMRC-04</b>	38 × 23 × 3.5	140	85%	720	27600	905
<b>SMRC-05</b>	50 × 30 × 4.5	110	84%	650	10100	880

# RANDOM PACKING

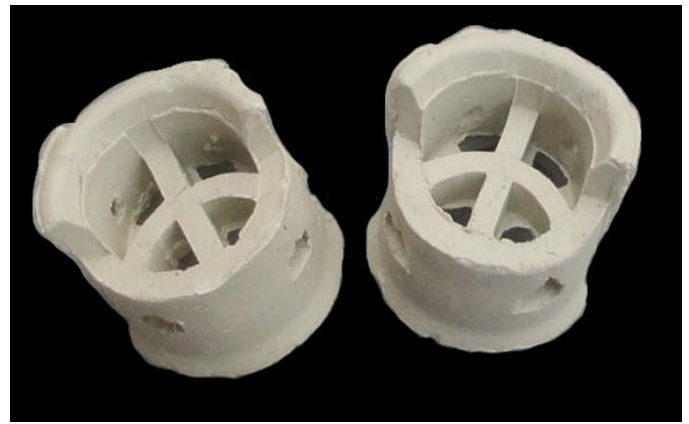
**Conjugate ring** available for metallic, plastic and ceramic materials, is an high efficient random packing in column towers. It takes good advantages of annular rings and saddle rings. Suitable height-diameter-ratio, uniform void fraction and conjugate curved rib structure contribute uniform liquid and gas distribution, low pressure drop and high mass transfer performance.



Stainless steel conjugate ring



Plastic conjugate ring



Ceramic conjugate ring

## Feature

- Low pressure drop and high flux.
- Uniform liquid and gas distribution.
- Excellent operating flexibility.
- Small channeling and wall flow.
- High organic acid and organic acid resistance.
- High & low temperature resistance.

## Application

- **Plastic conjugate ring.** Alcohol purification, sulfuric acid absorption, Methyl methacrylate distillation, waster gas purification, water purification.
- **Ceramic conjugate ring.** Drying tower, absorption tower, cooling tower, washing tower, regeneration tower in chemical, metallurgy, coal gas and oxygen production.
- **Metal conjugate ring.** Vacuum distillation, gas washing, purification and dealing of heat sensitive, easy decomposing, easy polymerized and easy carbonized materials.

## Material

- **Metal:** Stainless steel 304, 304 L, 316, 316 L and others.
- **Plastic:** PE, PP, PVC, PVDF, CPVC, RPP.

**Table 12: Technical Parameters of Metal Conjugate Ring**

Item	Diameter× Height × Thickness (mm)	Surface Area (m <sup>2</sup> /m <sup>3</sup> )	Void Fraction	Bulk Density (kg/m <sup>3</sup> )	Bulk Quantity (pcs/m <sup>3</sup> )	Packing Factor (m <sup>-1</sup> )
CRM-01	25 × 25 × 0.3	185	95%	312	75000	216
CRM-02	38 × 38 × 0.5	116	96%	275	19500	131
CRM-03	50 × 50 × 0.8	86	96%	275	9770	97
CRM-04	76 × 76 × 1.0	81	97%	245	3980	95

**Table 13: Technical Parameters of Plastic Conjugate Ring**

Item	Diameter× Height × Thickness (mm)	Surface Area (m <sup>2</sup> /m <sup>3</sup> )	Void Fraction	Bulk Density (kg/m <sup>3</sup> )	Bulk Quantity (pcs/m <sup>3</sup> )	Packing Factor (m <sup>-1</sup> )
CRP-01	25 × 25 × 1.0	185	95%	96	74000	216
CRP-02	40 × 34 × 1.5	130	93%	61	18650	162
CRP-03	37 × 37 × 1.5	142	91%	80	16320	188
CRP-04	50 × 40 × 1.5	104	80%	66	9500	164
CRP-05	76 × 76 × 2.5	81	95%	81	3980	94

**Table 14: Technical Parameters of Ceramic Conjugate Ring**

Item	Diameter× Height × Thickness (mm)	Surface Area (m <sup>2</sup> /m <sup>3</sup> )	Void Fraction	Bulk Density (kg/m <sup>3</sup> )	Bulk Quantity (pcs/m <sup>3</sup> )	Packing Factor (m <sup>-1</sup> )
CRC-01	25 × 25 × 3	175	78%	520	64000	369
CRC-02	38 × 38 × 4	118	80%	470	14000	230
CRC-03	50 × 50 × 5	72	81%	450	6300	135

**Cascade mini ring** has a flanging structure on the top, which can not only increase the mechanical strength but improve the directional ratio through breaking the packing symmetry. Additional, it increase the void fraction between cascade rings and ensures uniform liquid and gas distribution and high mass transfer performance. Cascade mini ring has half height-diameter-ratio of pall ring, which reduces the pressure drop and increase the flux.



Stainless steel cascade mini ring

## RANDOM PACKING



Plastic cascade mini ring



Ceramic cascade mini ring

### Feature

- Half height-diameter-ratio of pall ring.
- Improved mechanical strength.
- Point contact of gas and liquid.
- Larger void fraction and low pressure drop.

### Application

Petroleum, chemical, chlorine-alkali, gas, environmental protection fields.

### Material

- **Metal.** Stainless steel 304, 304 L, 316, 316 L and others.
- **Plastic.** PE, PP, PVC, PVDF, CPVC, RPP.
- **ceramic.**

Table 15: Technical Parameter of Metal Cascade Mini Ring

Item	Diameter× Height × Thickness (mm)	Surface Area (m <sup>2</sup> /m <sup>3</sup> )	Void Fraction	Bulk Density (kg/m <sup>3</sup> )	Bulk Quantity (pcs/m <sup>3</sup> )	Packing Factor (m <sup>-1</sup> )
RCRM-01	25 × 12.5 × 0.5	221	95%	383	98120	257
RCRM-02	38 × 19 × 0.6	153	96%	325	30040	173
RCRM-03	50 × 25 × 0.8	109	96%	308	12340	123
RCRM-04	76 × 38 × 1.2	72	96%	306	3540	81



**Table 16: Technical Parameter of Plastic Cascade Mini Ring**

Item	Diameter× Height × Thickness (mm)	Surface Area (m <sup>2</sup> /m <sup>3</sup> )	Void Fraction	Bulk Density (kg/m <sup>3</sup> )	Bulk Quantity (pcs/m <sup>3</sup> )	Packing Factor (m <sup>-1</sup> )
RCRP-01	25 × 13 × 1.2	228	90%	98	81500	313
RCRP-02	38 × 19 × 1.4	133	93%	58	27200	176
RCRP-03	50 × 25 × 1.5	114	94%	55	10740	143
RCRP-04	76 × 37 × 3.0	90	93%	698	3420	112

**Table 17: Technical Parameter of Ceramic Cascade Mini Ring**

Item	Diameter× Height × Thickness (mm)	Surface Area (m <sup>2</sup> /m <sup>3</sup> )	Void Fraction	Bulk Density (kg/m <sup>3</sup> )	Bulk Quantity (pcs/m <sup>3</sup> )	Packing Factor (m <sup>-1</sup> )
RCRC-01	25 × 15 × 3	210	73%	650	72000	540
RCRC-02	38 × 23 × 4	153	74%	630	21600	378
RCRC-03	50 × 30 × 5	102	76%	580	9100	232
RCRC-04	76 × 46 × 9	75	78%	530	2500	158

**Teller rosette ring** is made of metal or plastic materials. Metal rosette ring is combined with twelve small rings in radial direction. The plastic teller rosette ring has different small ring quantities with metal teller rosette ring. Ten or other quantities of small rings are arranged in radical direction. The special structure of teller rosette ring makes it large void fraction, non-jam, large flux and low pressure drop. Because there are large quantities of fluid volume in the packing gap, so it extend stop time of liquid and increase the contacting period of liquid and gas and improve the mass transfer efficiency.



Metal teller rosette ring



Plastic teller rosette ring

## Feature

- Large void fraction and low pressure drop.
- Fully contacting of liquid and gas.
- Temperature and corrosion resistance.
- Non-jam and large flux.

## Application

- Plastic teller rosette ring. Media temperature ranges from 60°C to 150 °C. Gas washing and purifying towers.
- Metal teller rosette ring. Vacuum distillation, coal gas dehydrators and other column towers.

## Material

- **Metal.** Aluminum steel, aluminum alloy steel, stainless steel 304, 304 L, 316, 316 L and others.
- **Plastic.** PE, PP, PVC, PVDF, CPVC, RPP.

**Table 18: Technical Parameters of Plastic Teller Rosette Ring**

Item	Diameter (mm)	Height (mm)	Bulk Quantity (pcs/m <sup>3</sup> )	Bulk Density (kg/m <sup>3</sup> )	Surface Area (m <sup>2</sup> /m <sup>3</sup> )	Void Fraction
RTRR-01	25	9	170000	195	82	90%
RTRR-02	47	19	32500	185	88	91%
RTRR-03	51	19	25000	180	98	75%
RTRR-04	59	19	17500	150	92	64.7%
RTRR-05	73	27.5	8000	127	98	68.8%
RTRR-06	95	37	3900	94	90	58.5%
RTRR-07	100	37	3300	78	93	56.1%
RTRR-08	145	48	1100	65	95	38.5%

**Table 19: Technical Parameters of Metal Teller Rosette Ring**

Item	Diameter× Height × Thickness (mm)	Surface Area (m <sup>2</sup> /m <sup>3</sup> )	Void Fraction	Bulk Density (kg/m <sup>3</sup> )
MTRR-01	50 × 25 × 0.8	112.8	96.2%	85–100
MTRR-02	75 × 27.5 × 1	136.1	97.3%	120–150
MTRR-03	100 × 40 × 1.2	140	96.5%	216.6
MTRR-04	108 × 45 × 1.2	53.4	95%	170–200

# RANDOM PACKING

**Super Raschig ring** also called double layer conjugate ring, is an advanced random packing than Raschig ring. It is made of carbon steel, stainless steel and aluminum alloy steel materials. Compared with traditional random packing, it has 33% higher loading capacity and 67% pressure drop and 12% higher separating efficiency. It has thinner wall, high temperature resistance, high flux, low pressure drop and high filtering efficiency. It is ideal for vacuum distillation and dealing materials of easy carbonization, easy polymerization and easy decomposition materials. In petroleum, chemical, fertilizer and environmental protection fields.



## Feature

- 33% higher loading capacity.
- 67% pressure drop.
- 12% improved separating efficiency.

## Application

Petroleum, chemical, chlorine-alkali, gas, environmental protection fields.

## Material

- Carbon steel.
- Aluminum alloy steel.
- Stainless steel 201, 301, 304, 321, 316 and 316L.

**Table 20: Technical Parameters of Super Raschig Ring**

Item	Specs	Bulk Quantity (pcs/m3)	Surface Area (m2/m3)	Void Fraction
<b>SRR-01</b>	50 × 45 × 0.6	9800	86	95%
<b>SRR-02</b>	76 × 70 × 0.6	2480	81	96%

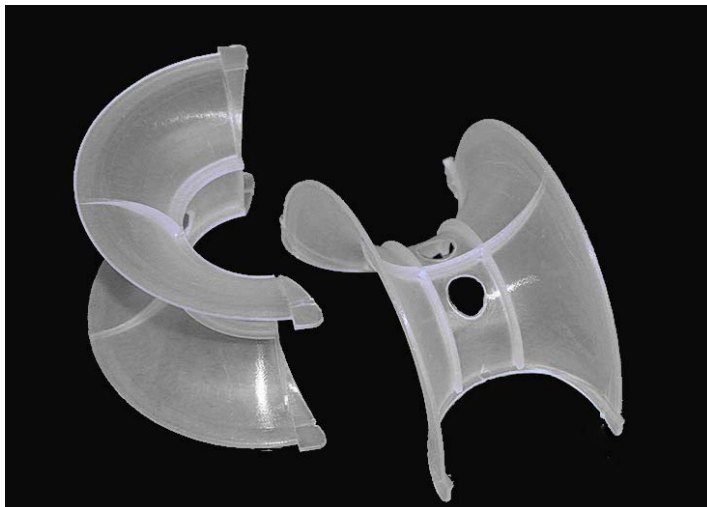
## RANDOM PACKING

**Intalox saddle ring** available in metal, plastic and ceramic materials, is one of the most widely used random packing in various fields. It is produced through continuously extrude process. Compared with Raschig ring, it has high flux, low pressure drop and high efficiency performance. It has high strength and stiffness than the pall ring. Intalox saddle ring packing bed has larger void fraction and the most of the flowing channel is circular arc, which can reduce the resistance and diffusivity ratio.

Ceramic pall ring takes good advantages of annular ring and saddle ring, which can improve the gas and liquid distribution and has excellent acid and temperature resistance. It can be used in the organic acid, organic solvent and inorganic acid except for the hydrofluoric acid.



Metal intalox saddle ring



Plastic intalox saddle ring



Ceramic intalox saddle ring

## Feature

- Low resistance and diffusivity ratio.
- High density.
- Inorganic and organic acid and other organic solvent resistance.
- High temperature resistance.

## Application

Drying tower, absorption tower, cooling tower, washing tower and regeneration towers in chemical, metallurgy, coal gas and environment protection industries.

## Material

- **Metal.**Stainless steel 304, 304 L, 316, 316 L and others.
- **Plastic.**PE, PP, PVC, PVDF, CPVC, RPP.
- **Ceramic.**

**Table 21: Technical Parameters of Metal Intalox Saddle Ring**

Item	Diameter× Height × Thickness (mm)	Surface Area (m <sup>2</sup> /m <sup>3</sup> )	Void Fraction	Bulk Density (kg/m <sup>3</sup> )	Bulk Quantity (pcs/m <sup>3</sup> )	Packing Factor (m <sup>-1</sup> )
<b>MTSR-01</b>	25 × 20 × 0.6	185	96%	409	101160	209
<b>MTSR-02</b>	38 × 30 × 0.8	112	96%	365	24680	137
<b>MTSR-03</b>	50 × 40 × 1.0	75	96%	291	10400	85
<b>MTSR-04</b>	76 × 60 × 1.2	58	97%	245	3320	63

**Table 22: Technical Parameters of Plastic Intalox Saddle Ring**

Item	Diameter× Height × Thickness (mm)	Surface Area (m <sup>2</sup> /m <sup>3</sup> )	Void Fraction	Bulk Density (kg/m <sup>3</sup> )	Bulk Quantity (pcs/m <sup>3</sup> )	Packing Factor (m <sup>-1</sup> )
<b>PISR-01</b>	25 × 13 × 1.2	288	85%	102	97680	467
<b>PISR-02</b>	38 × 19 × 1.2	264	95%	91	25200	309
<b>PISR-03</b>	50 × 25 × 1.5	250	96%	75	9400	282
<b>PISR-04</b>	76 × 38 × 3.0	200	97%	59	3700	220



**Table 23: Technical Parameters of Ceramic Intalox Saddle Ring**

Item	Diameter× Height × Thickness (mm)	Surface Area (m <sup>2</sup> /m <sup>3</sup> )	Void Fraction	Bulk Density (kg/m <sup>3</sup> )	Bulk Quantity (pcs/m <sup>3</sup> )	Packing Factor (m <sup>-1</sup> )
CISR-01	16 × 12 × 2	450	70%	710	382000	1311
CISR-02	25 × 19 × 3	250	74%	610	84000	617
CISR-03	38 × 30 × 4	164	75%	590	25000	389
CISR-04	50 × 40 × 5	142	76%	560	9300	323
CISR-05	76 × 57 × 9	91	78%	520	1800	194

**Super intalox saddle ring** available for plastic and ceramic materials, is an advanced products of intalox saddle ring, which changes the arc edges into serrations and penetrate holes on the back of saddle ring. This design supplies more fluent flowing channel and improved liquid distribution properties, low gas resistance and high mass transfer efficiency.



Plastic super intalox saddle ring



Ceramic super intalox saddle ring

## Feature

- Uniform liquid and gas distribution.
- Low pressure drop and high flux.
- High void fraction, high flooding velocity and high operating flexibility.

## Application

Dewaxing oil refined extraction, demethanation, phthalic anhydride refining processes in chemical, petroleum, chlor-alkali, coal gas and environment protection fields.

## Material

- **Plastic.** PP, PE, PVC, CPVC and RPP.
- **Ceramic.**

**Table 24: Technical Parameters of Ceramic Super Intalox Saddle Ring**

Item	Diameter× Height × Thickness (mm)	Surface Area (m <sup>2</sup> /m <sup>3</sup> )	Void Fraction	Bulk Quantity (pcs/m <sup>3</sup> )	Bulk Density (kg/m <sup>3</sup> )	Packing Factor (m <sup>-1</sup> )
CSSR-01	25 × 20 × 3	190	78%	76600	510	340
CSSR-02	38 × 30 × 4	131	84%	24600	463	190
CSSR-03	50 × 42 × 6	88.4	81%	7344	454	166
CSSR-04	76 × 53 × 9	58.5	77%	1976	489	127

**Table 25: Technical Parameters of Plastic Super Intalox Saddle Ring**

Item	Diameter× Height × Thickness (mm)	Surface Area (m <sup>2</sup> /m <sup>3</sup> )	Void Fraction	Bulk Quantity (pcs/m <sup>3</sup> )	Packing Factor (m <sup>-1</sup> )
PSSR-01	76 × 38 × 3.0	130	52%	3700	138
PSSR-02	50 × 25 × 1.5	168	68%	9400	184
PSSR-03	38 × 19 × 1.2	178	75%	25200	201
PSSR-04	25 × 20 × 1.2	238	85%	56000	340

**HY-pak ring** also called advanced pall ring, is an advanced products of pall ring. The ribs are added onto the ring wall for higher mass transfer efficiency. It can improve the liquid and gas distribution and broaden operating elasticity and increase the mechanical strength.

## Feature

- 30% increased mass transfer point.
- Higher mechanical strength.
- Low pressure drop and high flux.

## Application

Petroleum, chemical, chlorine-alkali, gas, environmental protection fields.

## Material

- Stainless steel 304, 304L, 316, 316L.
- Carbon steel.



**Table 26: Technical Parameters of HY-Pak Ring**

Item	Diameter (mm)	Bulk Quantity (pcs/m <sup>3</sup> )	Bulk Density (kg/m <sup>3</sup> )	Void Fraction	Packing Factor (m <sup>-1</sup> )
HYP-01	76	1100	208	97.7%	49
HYP-02	50	3670	224	97.4%	59
HYP-03	38	9390	280	97%	85
HYP-04	25	29900	312	96.5%	141

**VSP ring** also called inner arc ring, very special packing, is commonly made of stainless steel 304, 321 and 316 materials. Metallic VSP rings has reasonable geometric symmetry, which the inner arc are folded evenly along the axial direction and replaced alternated arranged. This design contributes a continuous surface for extremely high void fraction and evenly distribution. Compared with pall ring, the fluxes are increased 15% – 30% and the pressure drop is reduced 20% – 30%.



## Feature

- Reasonable geometric symmetry.
- 15%–30% Increased flux.
- 20%–30% Reduced pressure drop.
- Evenly gas and liquid distribution.
- High mass transfer performance.

## Application

Petrochemical, fertilizer, environment protection, sugar refinery and other industries. It is widely used in the synthesis ammonia desulfuration, decarburization and other large devices.

**Table 27: Technical Parameters of VSP Ring**

Item	Diameter× Height × Thickness (mm)	Surface Area (m <sup>2</sup> /m <sup>3</sup> )	Bulk Density (kg/m <sup>3</sup> )	Bulk Quantity (pcs/m <sup>3</sup> )	Void Fraction	Packing Factor (m <sup>-1</sup> )
VSR-01	25 × 25 × 0.6	250	420	59200	93%	310
VSR-02	38 × 38 × 0.6	138	396	14000	94.7%	163
VSR-03	50 × 50 × 0.8	121	350	7000	95%	144
VSR-04	76 × 76 × 1.0	75	280	1950	95%	86

# RANDOM PACKING

**Plastic polyhedral hollow ball** also called multi-aspect hollow ball or polyhedral hollow ball packing, is a new type of high efficient random packing. It is made from heat resistant and chemical stable plastic material, such as PP, PE, PVC, CPVC and RPP. It is composed of two hemispheres to form a whole ball shape. Each hemisphere surface has several half fan-shape leaves, the upper and lower leaves are staggered arranged. This design makes the polyhedral hollow ball lighter weight, smaller wind and flowing resistance and good hydrophilic surface.



## Feature

- High gas velocity and low resistance.
- Large surface area for fully contact of gas and liquid.
- Large operating elasticity.

## Application

It is widely used in the sewage treatment, vacuum distillation and desulfuration of CO<sub>2</sub> in power plant and other applications.

## Material

PP, PE, PVC, CPVC and RPP.

**Table 28: Technical Parameters of Plastic Polyhedral Hollow Ball**

Item	Outer Diameter (mm)	Surface Area (m <sup>2</sup> /m <sup>3</sup> )	Void Fraction	Bulk Quantity (pcs/m <sup>3</sup> )	Bulk Density (kg/m <sup>3</sup> )
PPHB-01	25	60	84%	45	85000
PPHB-02	38	320	88%	114	28500
PPHB-03	50	236	90%	81	11500
PPHB-04	76	206	90%	80	3000
PPHB-05	100	193	80%	80	3000

# RANDOM PACKING

**Plastic hollow floatation ball** also called plastic hollow floatation ball packing, has high void ratio, good filtration capacity and good chemical corrosion resistance. It can minimize acid mist and heat loss. Plastic hollow floatation ball packing is characterized by stable gravity, low mass transfer unit height and good coverage effect.



## Feature

- Large void fraction and uniform liquid and gas distribution.
- High temperature and chemical corrosive resistance.
- Low cost but high mass transfer performance.

## Application

Plastic hollow floatation ball is suitable for particle control, waste gas recovery, exhaust gas purification and acid mist purification. It can be used as check-valve balls in various flow, mist and odor control applications.

## Material

PE, PP, RPP, PVC, CPVC and PVDF.

**Table 29: Technical Parameters of Plastic Hollow Float Ball**

Type	Size (mm)	Bulk Quantity (pcs/m <sup>3</sup> )	Bulk Density (kg/m <sup>3</sup> )	Surface Area (m <sup>2</sup> /m <sup>3</sup> )	Void Fraction
PHF-01	25 × 1.0	41500	125	200	40%
PHF-02	38 × 1.2	22000	121	150	40%
PHF-03	50 × 1.5	10480	73	120	40%

**Plastic heilex ring** also named plastic crown-type raschig ring, is a newly popular tower packing. Plastic heilex ring adopts injection molding technique, which greatly enlarges its surface area and increases its void fraction. Its unique geometric structure improves the gas and liquid distribution in the packing layer.





## Feature

- Impact resistance and chemical stability.
- Low wall flow effect and uniform liquid and gas distribution.
- Large flux and low pressure drop.
- High flooding velocity and high mass transfer efficiency.

## Application

It is suitable for gas absorption, cooling and purification. Plastic heilex ring is widely used in scrubbing tower, cooling tower and other reaction towers.

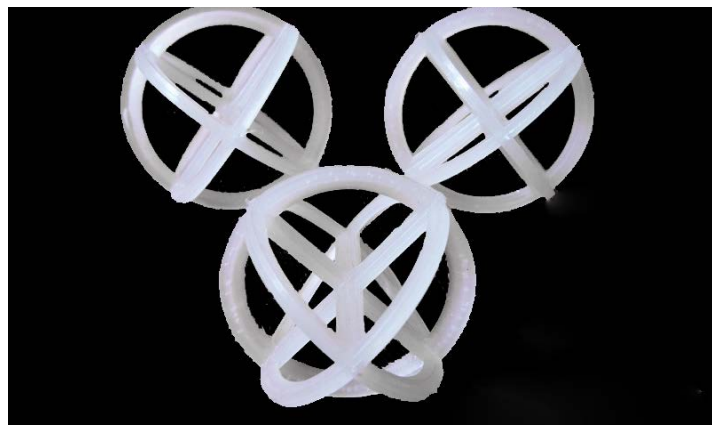
## Material

PE, PP, RPP, PVC, CPVC and PVDF.

**Table 30: Technical Parameters of Plastic Heilex Ring**

Item	Diameter× Height × Thickness (mm)	Bulk Quantity (pcs/m <sup>3</sup> )	Bulk Density (kg/m <sup>3</sup> )	Surface Area (m <sup>2</sup> /m <sup>3</sup> )	Void Fraction
PHR-01	50 × 50	8000	65	101	93%
PHR-02	76 × 76	3420	56	55	94%
PHR-03	100 × 100	1850	48	75	95%

**Cross spherical ring** available in plastic and ceramic materials, has larger void fraction and surface area than the traditional random packing. Besides, the low pressure drop, high mass transfer efficiency make it be widely used in the chemical, fertilizer, coal gas, pharmacy, oxygen production and metallurgy fields.



Plastic cross spherical ring



Ceramic cross spherical ring

## Feature

- Large void fraction and surface area.
- Low pressure drop and high flux.
- High temperature resistance.
- High mass transfer efficiency.

## Application

Chemical, fertilizer, coal gas, pharmacy, oxygen production and metallurgy fields.

## Material

- **Plastic:**PE, PP, RPP, PVC, CPVC and PVDF.
- **Ceramic.**

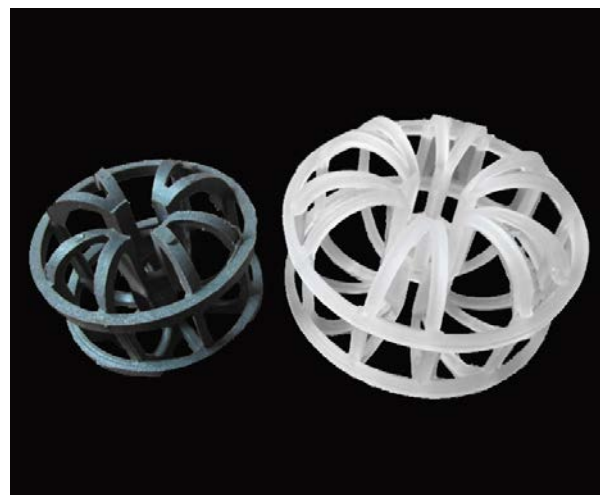
**Table 31: Technical Parameters of Plastic Cross Spherical Ring**

Item	Diameter× Height × Thickness (mm)	Bulk Quantity (pcs/m <sup>3</sup> )	Surface Area (m <sup>2</sup> /m <sup>3</sup> )	Void Fraction	Bulk Density (kg/m <sup>3</sup> )
PCSR-01	50 × 2	9200	145	92%	63
PCSR-02	90 × 3	1320	130	95%	58

**Table 32: Technical Parameters of Ceramic Cross Spherical Ring**

Item	Diameter× Height × Thickness (mm)	Surface Area (m <sup>2</sup> /m <sup>3</sup> )	Void Fraction	Bulk Density (kg/m <sup>3</sup> )
PCSR-01	50 × 5	135	91%	350
PCSR-02	76 × 7	127	93%	270

**Lantern ring** available for PP, RPP, PVC and CPVC materials, is composed of several rings. The rings are sintered together in radial direction and then sintered with two ribs for higher compressive strength. It has excellent resistance to thermokalite in 60–90 °C, chlorine, hypochlorous acid and sodium hypochlorite. Additional, the high liquid holdup enlarge the leaving time of liquid and extend the gas and liquid contacting time for higher mass transfer efficiency.



## Feature

- High liquid holdup and high mass transfer efficiency.
- Chlorine and other solvent resistance for stable performance.
- High mechanical strength and high temperature resistance.
- High flux and low pressure drop.

## Application

It is widely used in the caustic soda and chlor-alkali industries.

## Material

PP, RPP, PVC, VC.

**Table 33: Technical Parameters of Lantern Ring**

Item	Diameter × Height × Thickness (mm)	Bulk Quantity (pcs/m <sup>3</sup> )	Bulk Density (kg/m <sup>3</sup> )			Surface Area (m <sup>2</sup> /m <sup>3</sup> )	Void Fraction	Packing Factor (m <sup>-1</sup> )
			PP	PVC	CPVC			
PLR-01	30 × 20 × 2.8	49800	108	148	163	182	92%	194
PLR-02	50 × 37 × 3.8	9650	104	139	153	168	92%	192
PLR-03	73 × 50 × 4.3	2380	101	131	158	123	90%	158
PLR-04	95 × 70 × 5	1410	85	123	150	95	90%	146

**Snowflake ring** is a high-efficient tower packing. It has a low specific gravity, high flooding point, large porosity, high mass transfer unit height. Besides, this random packing has lower pressure drop, which reduces the back-pressure phenomenon and minimizes the energy consumption of the stripping process. Plastic snowflake ring is very economical. It can be applied in the chlorine and bromine production, air separation and water cooling process.



## Feature

- Large porosity.
- High capacity.
- Low pressure drop.
- High flooding point.
- Uniform glass-liquid distribution.
- Good corrosion resistance.

## Application

- Acid storage tank in petroleum, chemical, chlor-alkali, metallurgical, environmental protection and power plant.
- Seawater desulfurization, HCL (hydrogen chloride) absorption and gas-liquid separation.
- Chlorine and bromine production factory and air separation plants.

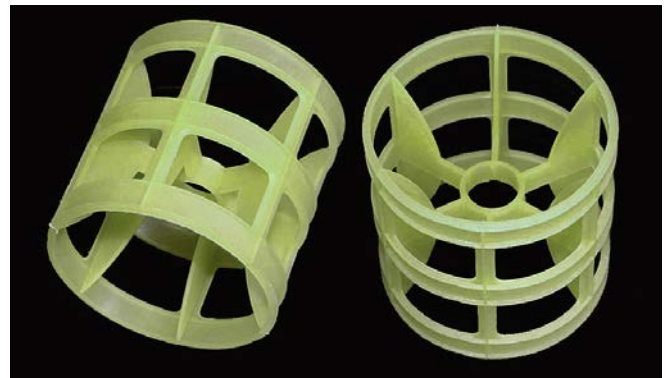
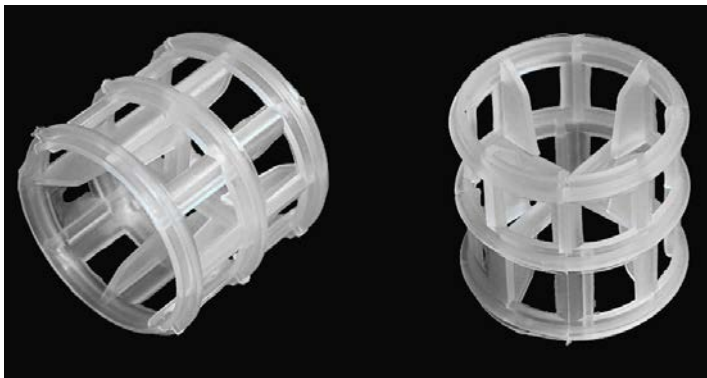
## Material

PE, PP, RPP, PVC, CPVC and PVDF.

**Table 34: Technical Parameters of Snowflake Ring**

Type	Diameter× Height × Thickness (mm)	Bulk Quantity (pcs/m <sup>3</sup> )	Bulk Density (kg/m <sup>3</sup> )	Surface Area (m <sup>2</sup> /m <sup>3</sup> )	Void Fraction
PS-1	94 × 34 × 1.5	4900	97	138	97%

**Hi-flow ring** also called high flow ring, is an advanced and new popular random packing on the basis of pall ring. It opens several windows on the packing wall, which the open area is larger than 50%. And the void fraction is far higher than the pall ring. Additional, it has higher flux than pall ring, but the pressure drop is 45% lower than pall ring. Two layers of internal blades are distributed along the packing wall in staggered forms. Reinforced ribs are added on the center of packing wall to supply high stiffness and strength.



## Feature

- High free volume and low pressure drop.
- Low mass-transfer unit height and high flooding point.
- Small specific gravity and high mass transfer.
- Uniform gas-liquid distribution.
- Uniform glass-liquid distribution.

## Application

- Absorption.
- Scrubbing.
- Separation.
- Washing.
- Purification.

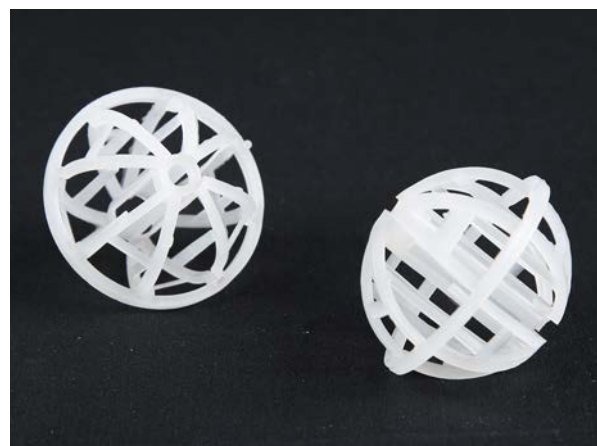
## Material

PP, PVC, CPVC, RPP, PVDF.

**Table 35: Technical Parameters of Hi-Flow Rings**

Items	Diameter× Height × Thickness (mm)	Bulk Quantity (pcs/m <sup>3</sup> )	Surface Area (m <sup>2</sup> /m <sup>3</sup> )	Void Fraction
<b>HFR-01</b>	25 × 25 × 1.0	53500	190	92%
<b>HFR-02</b>	38 × 38 × 1.3	15800	150	94%
<b>HFR-03</b>	50 × 50 × 1.5	6500	110	96%
<b>HFR-04</b>	76 × 76 × 2.5	1930	82	98%

**Plastic tri-pack ring** is a type of random tower packing, which has hollow, spherical structure. Plastic tri-pack has a symmetrical geometry, which is made from a unique network of ribs, struts and drip rods. It is made of injection molded plastic, including PP, PE, PVC, PVDF and other materials. The most widely used diameter of plastic tri-pack is 1", 1-1/4", 3" and 3-1/2".



Different sizes and structure



## Feature

- Low pressure drop and high flux.
- Low tendency of channeling and wall flow.
- Excellent gas and liquid contacting.

## Application

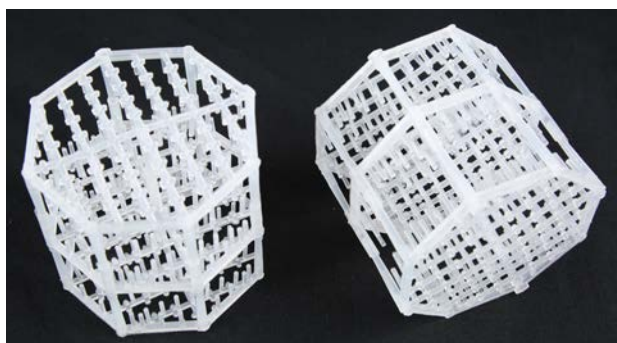
- Gas absorption and purification.
- Gas & liquid separation.
- Liquid extraction.
- Water treatment.
- Biological filtration.

## Material

PP, RPP, PVC, CPVC and PVDF.

**Table 36: Technical Parameters of Tri-Pack Rings**

Item	Nominal Size		Surface Area	Void Fraction	Bulk Density	Bulk Quantity	Packing Factor
	in.	mm	m <sup>2</sup> /m <sup>3</sup>		kg/m <sup>3</sup>	pcs/m <sup>3</sup>	m <sup>-1</sup>
TPR-01	1	25	85	90%	81	81200	28
TPR-02	1.25	32	70	92%	70	25000	25
TPR-03	2	50	48	93%	62	11500	16
TPR-04	3.5	90	38	95%	45	1800	12



**Q-pack ring** is regarded as the amazing design among all the random packings. It has an octagonal appearance with several horizontal ribs and vertical bars. This structure creates millions of small liquid through dropping point and atmospheric turbulence, which can supply highest mass transfer efficiency and lowest pressure drop.

## Feature

- Highest mass transfer efficiency and lowest pressure drop.
- Vertical bars design makes it excellent self-cleaning, anti-pollution performance and low maintenance.
- High temperature resistance and corrosion resistance.

## Application

- Drinking water treatment or wastewater reclamation.
- Filtration and biological treatment.
- Potable water treatment processes.
- Water purification, petroleum, chemistry, coal gas and environmental protection fields.

## Material

PP.

**Table 37: Technical Parameters of Q-Pack Ring**

Type	Diameter × Height (mm)	Bulk Quantity (pcs/m <sup>3</sup> )	Bulk Density (kg/m <sup>3</sup> )	Void Fraction
QP-1	95 × 82.5	1165	33.7	96.3%

**Plastic pentagon ring** is a type of energy-saving and cost-effective random packing. As its name says, plastic pentagon ring has a pentagon bottom design, which supplies a unique hollow-out structure. This design accelerates the flow rate and improves the gas-liquid separation efficiency. The large openings on its surface can effectively prevent the random packing from plugging and fouling. Therefore, plastic pentagon ring has high separation efficiency and good mass transfer performance.

Plastic pentagon ring has good chemical resistance, high operating efficiency and low investment cost. It is suitable for various absorption, desorption and extraction applications. This plastic random packing is extensively used in the packed columns of petroleum industry, alkali-chloride industry, chemical industry, alkali-chloride industry, coal gas industry and environmental protection industry.



## Feature

- Pentagonal bottom for excellent flow-out performance.
- Large openings for anti-plugging and fouling.
- Large flux and low pressure drop.
- High separation efficiency.
- Heat and corrosion resistance.

## Application

- Gas processing and heat transfer applications.
- Various packed columns for absorption, desorption and extraction.
- Potable water treatment processes.
- Petrochemical industry, metallurgical industries, chlor-alkali industries and chemical industries.

## Material

PE, PP, RPP, PVC, CPVC and PVDF.

**Table 38: Technical Parameters of Plastic Pentagon Ring**

Item	Diameter × Height × Thickness (mm)	Bulk Quantity pcs/m <sup>3</sup>	Bulk Density kg/m <sup>3</sup>	Surface Area m <sup>2</sup> /m <sup>3</sup>	Void Fraction
TPR-01	38 × 12 × 1.2	46000	112	246	95%
TPR-02	50 × 17 × 1.5	21500	107	218	97%
TPR-03	76 × 26 × 2.5	6500	93	198	96%

# RANDOM PACKING

Walcoom Corporation



Raschig Ring



VSP Ring



Pall Ring



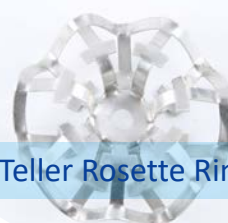
Intalox Saddle Ring



Cascade Mini Ring



Super Mini Ring



Teller Rosette Ring



Super Raschig Ring



Polyhedral Hollow Ball



Tri-pack Ring



Heilex Ring



Q-Pack Ring



Ceramic Raschig Ring



Ceramic Cascade Ring



Ceramic Pall Ring



Ceramic Super Saddle Ring

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