MADHYA BHARAT CERAMICS

One Stop Solution for Ceramic Tower Packing

About Us

Founded in the year 1962, we cater to Fertilizer industries, Chemical, Petrochemicals, Drugs, Pharmaceuticals, and environmental industry.

MBC in fact is pioneers in the field of Ceramic Tower Packing. Our factories at MANDSAUR (Madhya Pradesh) situated 85 kilometers from Ratlam (Madhya Pradesh), which is center of Bombay and Delhi Western Railway route.

The nearest airports are UDAIPUR & INDORE, which are 160 & 220 kilometers respectively away from Mandsaur.

We are making all types and sizes of Ceramic Tower Packing like Ceramic Saddles, Mini Rings, Berl Saddles, HoneyComb, Ceramic Ball, Gridblock etc. MBC’s high quality precision and compositional perfection are made possible because of our continuous research and development at every stage. Our Packing conforms to International Standards and Customer's specification.

Made from 7500M3/Annum production capacity of Ceramic packing increased to 100003/Annum owing to support from our regular buyers.

Ceramic packing is manufactured, in various grades according, to the needs of the industries such as fertilizers, chemicals, petrochemicals, oil refineries, regenerative thermal oxidizing and allied industries. Supplying Ceramic packing for Sulphuric acid industries of capacity 7500 TPD. is a landmark in the history of MBC.

The Introduction

Tower Packings play an important role in any Chemical plant and these are used in Distillation Towers, Absorption Towers, Stripping Towers etc. With fast changing environment of Chemical Industry, Tower Packings have also changed drastically over years. New forms of packings have been gradually developed to improve efficiency of mass transfer in column.

In early stages Towers were packed by random Packings like broken Chinaware etc. First regular Packing developed was Raschig Ring. This provided a predictable and scientifically designed Tower Packings. Over years these have been replaced by newer forms such as Pall Rings and intalox Saddles. With each new form of Packing bodies developed, through put in Tower would go up 10 to 20%. Till now Intalox Saddles were considered to be most efficient Packings having about 30% more efficiency as compared to Raschig Rings. Moreover latest development in Tower Packings are 20% more efficient compared to 50MM intalox Saddles. These Packings are larger sized specially designed intalox Saddles and Mini Rings. These packings have been replaced in number of Towers to increase the through put of existing Towers and get higher efficiency and less energy consumption.

We at Madhya Bharat Ceramics have kept pace with developments in Tower Packings and can give you latest designs of Tower Packings. We maintain strict quality control to meet specifications as laid by IS. We can also supply tailor made Tower Packings as per any design specified by customers. We can also guide you regarding bottlenecking of Towers.

Developments in Ceramic Packings

Developments in this area are directed mainly towards efficient packing bodies, having good mechanical strength, for large irrigated surface area with minimum resistance to gas flow, uniform acid distribution system, packing support plates offering less pressure drop and finally compact, high efficiency absorbers.

Packing bodies: Raschig Rings offer larger pressure drops because of free flow of gas and liquid along the axis and these are replaced with Intalox Saddles in modern designs. The non symmetrical nature of saddle shape minimizes 'pattern' packing and combines randomness with packing homogeneity. Further improvement of Intalox Saddles by introducing perforations or internal structure is not possible because of difficulties in working with ceramics.

Ceramic Mini Rings developed have a ring structure with a number of slots on the periphery and cross stiffening bars. High gas phase velocities without excessive liquid hold up increase the capacity of tower. Effective turbulent interaction between the phases while allowing free passage of gas gives low pressure drop and higher efficiencies as greater portion of surface is wetted presenting uniform liquid film in contact with turbulent gas stream. These packing bodies have 20% higher capacity than Intalox Saddles per unit transfer efficiency and higher efficiency per unit surface area.

Tower Packings

GRADES : Tower Packings are made either in white porcelain (acid & alkali resistant) or in chemical stoneware bodies which is resistant to acid

GLAZING : Tower Packings if required can be glazed.

RANGE : Special shapes and sizes can be developed as per customers requirements.

S.No.	Type	Size
1	Raschig Rings Plain	15 mm – 200 mm
2	Raschig Rings with partition	25 mm – 350 mm
3	Intalox Saddles / Berl Saddles	12 mm – 200 mm
4	Honey comb	25 mm & 40 mm
5	Triangular Shapes	50 mm
6	Porcelain Balls	6 mm – 100 mm
7	Ceramic Mini Rings	No.2 – 5A

Standards : *Generally, we manufacture ceramic packings conforming to IS : 7087:1979 & according to buyers specifications.*

Technical Specifications

GRADE	Sio2	Al203	Fe203	TiO2	Na2O	K2O	CaO	MgO	LOI
MB-S	70-75%	17-22%	2% MAX	<1%	1.5% MAX	2.5-3.5%	<1%	<1.0%	<0.5%
MB-SP	65-74%	18-24%	1.5% MAX	<1%	1.0-1.5%	2.0-4.0%	<1%	<1.0%	<0.5%
MB-P	60-65%	27-32%	1% MAX	<1%	1.0-2%	2.5-4.5%	<1%	<1.0%	<0.5%

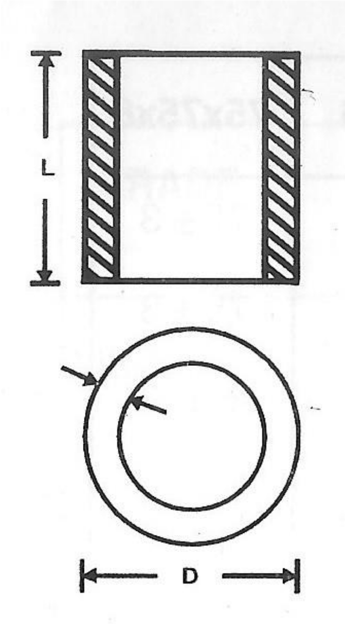
Physical Characteristics

GRADE	TYPES AVAILABLE	COLOUR	% WATER ABSORPTION	RESISTANCE TO ACID	SPECIFIC GRAVITY	CRUSHING STRENGTH	RECOMMENDATION
MB-S (Stoneware)	Rings, Saddles Triangles Honeycomb Mini Rings	Light Grey	1% MAX	>99.5%	2.2 to 2.4	As per IS:7087:79	Acid Resistance
MB-SP (Porcelain)	- do -	White	1% MAX	99.5-99.75%	2.2 to 2.4	As per IS:7087:79	Acid Resistance
MB-P (Porcelain)	Rings upto 80 mm dia intalox & berl saddles, Mini Rings and Specials	White	1% MAX	99.5-99.75%	2.2 to 2.5	As per IS:7087:79	Alkali & Acid Resistance

Raschig Rings Plain

Size(Nominal)	-	15 x 15 x 3	19 x 19 x 3	25 x 25 x 4	35 x 35 x 4	50 x 50 x 6	75 x 75 x 8
Diameter D mm	-	15 ± 1	19 ± 1	25 ± 2	35 ± 2	50 ± 3	75 ± 3
Height H mm	-	15 ± 1	19 ± 1	25 ± 2	35 ± 2	50 ± 3	75 ± 3
Thickness T mm	-	3 ± 1	3 ± 1	4 ± 1	4 ± 1	6 ± 2/td>	6 ± 2
Quantity(Aprx ±10%) Nos. per cubic meter	Dumped Stacked	190000 -	112000 -	44000 -	16250 -	5700 7000	- 2200
Weight (Aprx ± 10%) Kg per cubic meter	Dumped Stacked	825 -	840 -	650 -	600 -	570 700	- 560
%Free space (Aprx)	Dumped Stacked	62 -	68 -	72 -	74 -	76 74	- 72
Contact surface M^2/M^3 (Aprx)	Dumped Stacked	293 -	257 -	193 -	133 -	92 113	- 79
Relative efficiency M^2/M^3 of free space	Dumped Stacked	473 -	378 -	268 -	180 -	121 153	110 -
Relative scrubbing capacity M^2/M^3X Free space	Dumped Stacked	181 -	175 -	191 -	98 -	70 84	- 57

Raschig Rings Plain



Size(Nominal)	-	80 x 80 x 8	100 x 100 x 10	120 x 120 x 12	150 x 150 x 15	150 x 150 x 25
Diameter D mm	-	15 ± 1	19 ± 1	25 ± 2	35 ± 2	50 ± 3
Height H mm	-	15 ± 1	19 ± 1	25 ± 2	35 ± 2	50 ± 3
Thickness T mm	-	3 ± 1	3 ± 1	4 ± 1	4 ± 1	6 ± 2/td>
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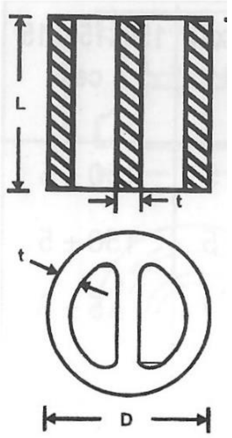
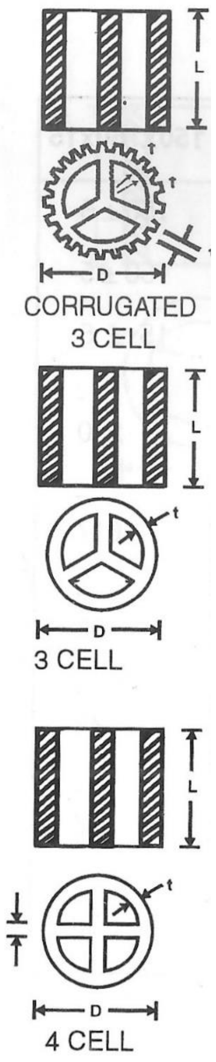
Raschig Rings With Partition



2 CELL

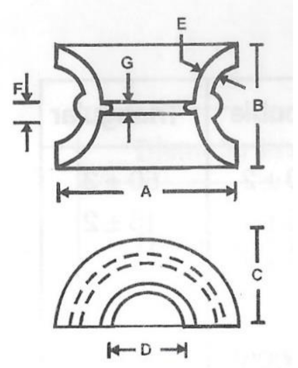
Size(Nominal)		25 x 25 x 3	35 x 35 x 3	50 x 50 x 6	80 x 80 x 8	100 x 100 x 10	150 x 150 x 15
Diameter D mm	-	25 ± 2	35 ± 2	50 ± 3	80 ± 4	100 ± 5	150 ± 5
Length L mm	-	25 ± 2	35 ± 2	50 ± 3	80 ± 4	100 ± 5	150 ± 5
Thickness T mm	-	3 ± 1	4 ± 1	6 ± 2	8 ± 2	10 ± 2	15 ± 5
Quantity(Aprx ±10%) Nos. per cubic meter	Dumped Stacked	440000 -	16250 -	5700 7000	- 1720	- 730	- 280
Weight (Aprx ± 10%) Kg per cubic meter	Dumped Stacked	713 -	650 -	655 804	- 774	- 694	- 617
% Free space (Aprx)	Dumped Stacked	67 -	71 -	72 63	- 68	- 76	- 62
Contact surface M^2/M^3 (Aprx)	Dumped Stacked	232 -	165 -	112 138	- 89	- 64	- 48
Relative efficiency M^2/M^3 of free space	Dumped Stacked	346 -	232 -	156 219	- 131	- 84	- 77
Relative scrubbing capacity M^2/M^3 Free space	Dumped Stacked	155 -	117 -	81 87	- 61	- 49	- 30

Raschig Rings With Partition



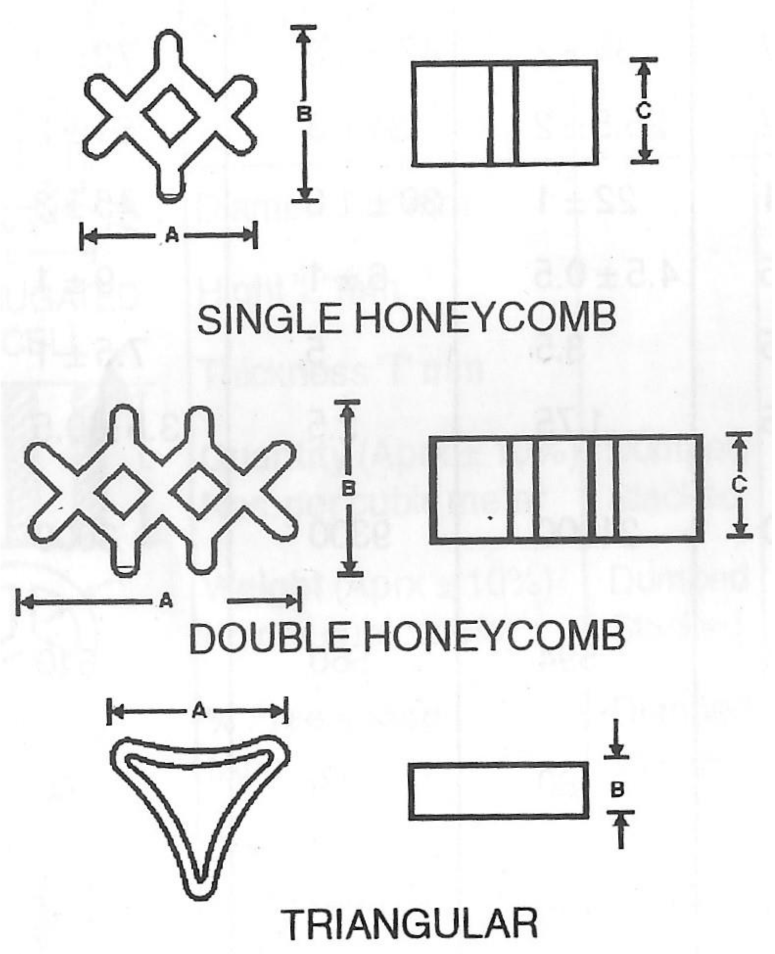
Size(Nominal)		80x80x8 3 cell	80x80x3 Corrugated 3 Cell	120x120x12 3 cell	50x50x5 4cell	80x80x8 4 cell	100x100x10 4 cell	120x120x12 4 cell	150x150x15 4 cell
Diameter D mm	-	80 ± 4	80 ± 4	120 ± 5	50 ± 3	80 ± 4	100 ± 5	120 ± 5	150 ± 5
Length L mm	-	80 ± 4	80 ± 4	120 ± 5	50 ± 3	80 ± 4	100 ± 5	120 ± 5	150 ± 5
Thickness T mm	-	80 ± 2	8 ± 2	12 ± 3	6 ± 2	8 ± 2	10 ± 2	12 ± 3	5 ± 3
Quantity(Aprx ±10%) Nos. per cubic meter	Dumped Stacked	- 1720	- 1720	- 416	5700 7000	- 1720	- 730	- 416	- 280
Weight (Aprx ± 10%) Kg per cubic meter	Dumped Stacked	- 821	- 844	- 770	860 1057	- 1003	- 788	- 707	- 972
% Free space (Aprx)	Dumped Stacked	- 67	- 67	- 66	66 56	- 61	- 75	- 62	- 60
Contact surface M^2/M^3 (Aprx)	Dumped Stacked	- 91	- 98	- 53	131 164	- 95	- 68	- 54	- 55
Relative efficiency M^2/M^3 of free space	Dumped Stacked	- 136	- 146	- 80	198 293	- 156	- 91	- 87	- 92
Relative scrubbing capacity M^2/M^3 Free space	Dumped Stacked	- 61	- 66	- 35	86 92	- 58	- 51	- 33	- 33

Intalox Saddles



Size MM (Nominal)		19 mm	25 mm	38 mm	50 mm	75 mm
A		26 ± 2.6	34 ± 3	51 ± 3	68 ± 4	102 ± 5
B		18 ± 1.8	24 ± 2	35 ± 2	47 ± 2.8	72 ± 3
C		13 ± 1.3	17 ± 2	25.5 ± 2	34 ± 3	51 ± 2
D		10.5 ± 1	14 ± 1	22 ± 1	30 ± 1.8	45 ± 3
E		2.5 ± 0.25	3.5 ± 0.5	4.5 ± 0.5	6 ± 1	9 ± 1
F		1.75	2.5	3.5	5	7.5 ± 1
G		1.75	2.5	1.75	2.5	3.5 ± 0.5
Quantity(Aprx ±10%) Nos. per cubic meter	Dumped	162500	70000	21000	9300	3000
Weight (Aprx ± 10%) Kg per cubic meter	Dumped	593	586	594	560	540
% Free space (Aprx)	Dumped	71	77	80	79	80
Contact surface M^2/M^3 (Aprx)	Dumped	239	199	139	108	96
Relative efficiency M^2/M^3 of free space	Dumped	337	258	174	137	120
Relative scrubbing capacity M^2/M^3 Free space	Dumped	170	153	111	85	77
Packing Factor		110	98	52	40	22

Honeycomb & Traingular Shapes



Size(Nominal)	-	Single	Double	Triangular
A	-	25 ± 2	40 ± 2	50 ± 3
B	-	25 ± 2	25 ± 2	15 ± 2
C	-	15 ± 2	15 ± 2	
Quantity (Aprx ±10%) Nos. per cubic meter	Dumped	94000	50000	25000
Weight (Aprx ± 10%) Kg per cubic meter	Dumped	693	640	700
% Free space (Aprx)	Dumped	63	72	74
Contact surface M^2/M^3 (Aprx)	Dumped	243	238	137
Relative efficiency M^2/M^3 of free space	Dumped	386	331	185
Relative scrubbing capacity M^2/M^3X Free space	Dumped	153	171	101

Porcelain Balls

Diameter in mm	6	10	12	15	25	35	50
Quantity (Aprx ±10%) Nos. per cubic meter	4700000	1100000	575000	332000	71000	25000	9400
Weight (Aprx ± 10%) Kg per cubic meter	1300	1290	1280	1290	1265	1200	1300
Contact surface M^2/M^3 (Aprx)	425	315	240	210	128	85	65
%Free space (Aprx)	45	45	45	46	46	48	45

Ceramic Mini Rings

Ceramic Mini Rings		No. 2	No.3	No.5	No. 5A
Quantity (Aprx ±10%) Nos. per cubic meter	Dumped	4600	1950	1140	610
Weight (Aprx ± 10%) Kg per cubic meter	Dumped	690	660	670	670
%Free space (Aprx)	Dumped	73	78	81	75
Contact surface M^2/M^3 (Aprx)	Dumped	98	79	59	66
Packing Factor		38	24	18	15

Ceramic Mini Rings are dumped packing. The configuration of the individual rings results in a composite array in a tower that maximizes effective turbulent interaction between the phases, while allowing free passage of the gas phase, giving low specific pressure drop per unit efficiency. The structure of the matrix formed by a mass of Mini-Rings ensures that the principal contribution to momentum loss in the gas phase is due to skin friction, while form frag is kept to a minimum. This enables high gas phase velocity to be achieved without excessive liquid hold-up occurring and consequently the capacity of Mini-Ring packings is far greater than Pall type rings and saddles.

Quality Flow / Test Methods

WATER ABSORPTION

Water absorption is of particular interest in the ceramic packing as it indicates the degree of firing and vitreousity of the packing material.

RESISTANCE TO ACID

Acid Resistance indicates the resistance of the solubility of the material subjected to the attack of concentrated acid.

CRUSHING STRENGTH

Crushing strength is the load required to break the packing. In Ceramic rings it is applied diametrically and strength is usually expressed in Kg/linear Cm. While in case of saddles & other items, the total load required in Kg. to break the piece is expressed as crushing strength

CHEMICAL ANALYSIS

In packing materials, the chemical analysis is only indicative since the versatility of the packing depends on the performance than on more chemical analysis

Quality Flow

RAW MATERIAL TEST

- Physical Inspection for colour and texture
- Particle Size
- Chemical analysis.

INPROCESS TEST

- Particle size by sieve analysis
- Density of slip • Filter cake moisture content
- Extruded blank moisture after drying to leather hard condition
- Random tests for dimensions
- Visual Inspections
- Pre Kiln moisture content tests

QUALITY NORMS

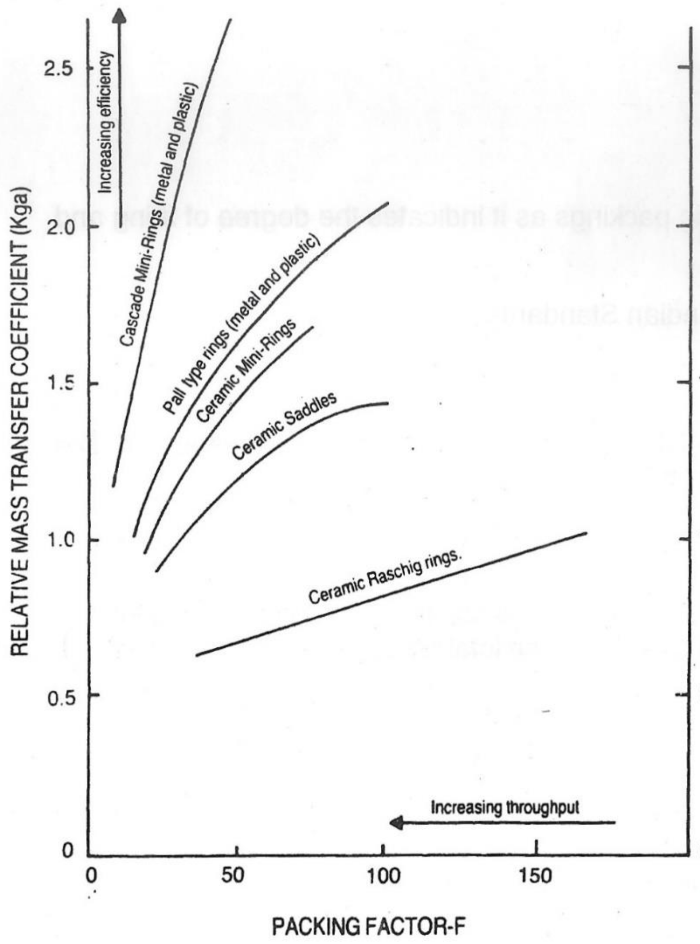
Quality norms are maintained as per ASTM/DIN/As per Customers specifications

FINAL PRODUCT TESTS

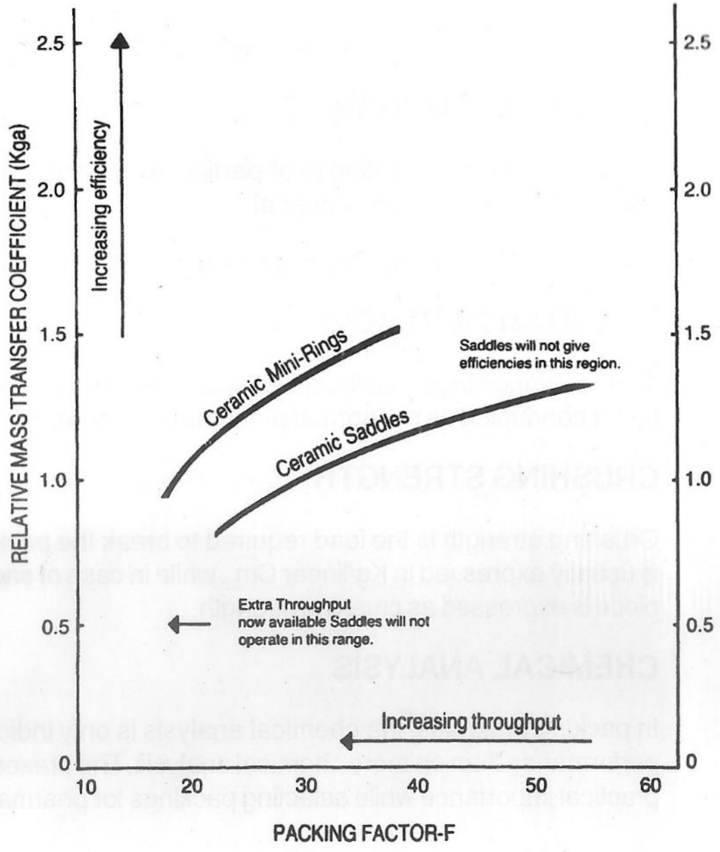
- Dimensional Checks
- Weight
- Water absorption
- Resistance to Acids and Alkalis
- Crushing strengths
- Tests conducted as per ASTM 279C, DIN and Customers specifications

Transfer Coefficients

RELATIVE OVERALL MASS TRANSFER COEFFICIENTS



MASS TRANSFER COEFFICIENTS
(Ceramic Packing)



Both packings are compared at the same approach to flooding over a wide range of operating systems.

Product Images

Contact **Us**

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