

RALU-FLOW

A modern high effective packing with excellent performance data

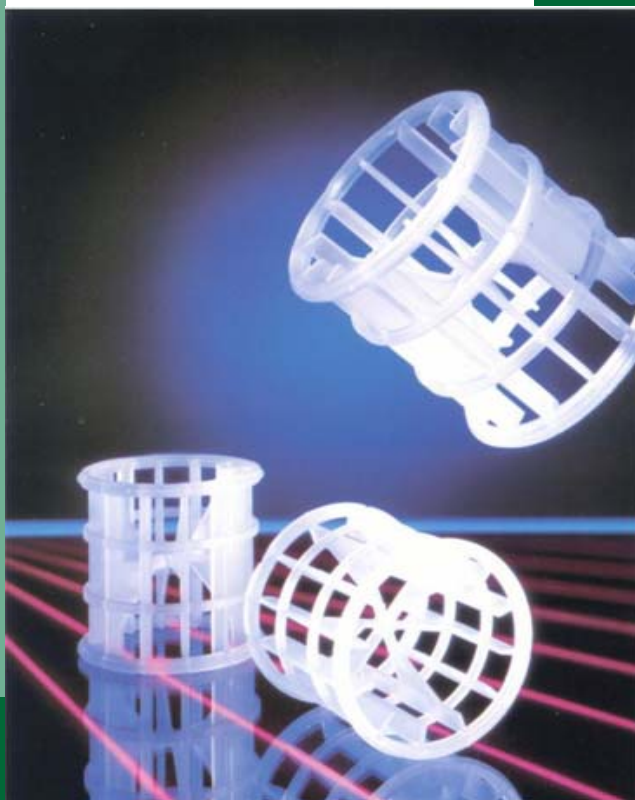
Product Bulletin 550

Nowadays plastic packings are often taken the place of ceramic materials in mass transfer columns. Owing to the good chemical and thermal stability of modern heavy-duty plastics, they are also gaining ground in many other areas of application which would otherwise be dominated by metallic materials.

Superior performance by design™

RASCHIG GMBH

JAEGER PRODUCTS, INC.



A new Alliance in Mass Transfer Business.
Together we are creating more!

RASCHIG GMBH

Dr. Michael Schultes
Mundenheimerstr. 100
D-67061 Ludwigshafen
Tel.: +49 (0)621 56 18 - 648
Fax: +49 (0)621 56 18 - 627
E-Mail: MSchultes@raschig.de
Internet: www.raschig.com

Jaeger Products Inc.

Mr. John P. Halbirt
1611 Peachleaf
USA-Houston, Texas 77039
phone: +1 281 449 9500
fax: +1 281 449 9400
email: jhalbirt@jaeger.com
www.jaeger.com



RALU-FLOW

A modern high effective packing with excellent performance data

For many years now, plastic packings have been an integral part of thermal mass transfer technology. Owing to the large range of possible shapes of injection-molded plastic packings, not only geometries with optimized flow properties can be achieved but also effective shapes for mass transfer can be designed. The Ralu-Flow was designed according to the most recent principles.

With modern packings, the pressure drop for the gas flow in mass transfer columns is minimal, see Fig. 2a and 2b. This is ensured by the Ralu-Flow's extremely open geometry. Its large loading capacities, see Fig. 1, even phase distribution and high flow turbulence enable cost-effective column dimensions and effective mass transfer efficiency. The Ralu-Flow's geometry was optimized with particular consideration for these aspects. Figures 1 and 2 show clearly the decisive advantages of using the size I or II Ralu-Flow in comparison with plastic Pall rings.

In raised process temperatures, a modern packing must possess a high deformation stability despite its low inherent weight, since it is only with these factors that large column loads and high dumped layers can be ensured together with reliable operation. Owing to the Ralu-Flow's excellent stability and its low edge pass ability, it can be used without difficulty to achieve bed heights of over 10 m.

Liquids containing solid particles must flow over modern dumped packings so as to leave as few as possible flow spaces containing static liquid where deposits are formed. Not only does the Ralu-Flow have an extremely low liquid content, the liquid film is very evenly distributed over the packing shape in the form of thin liquid films.



A new Alliance in Mass Transfer Business.
Together we are creating more!

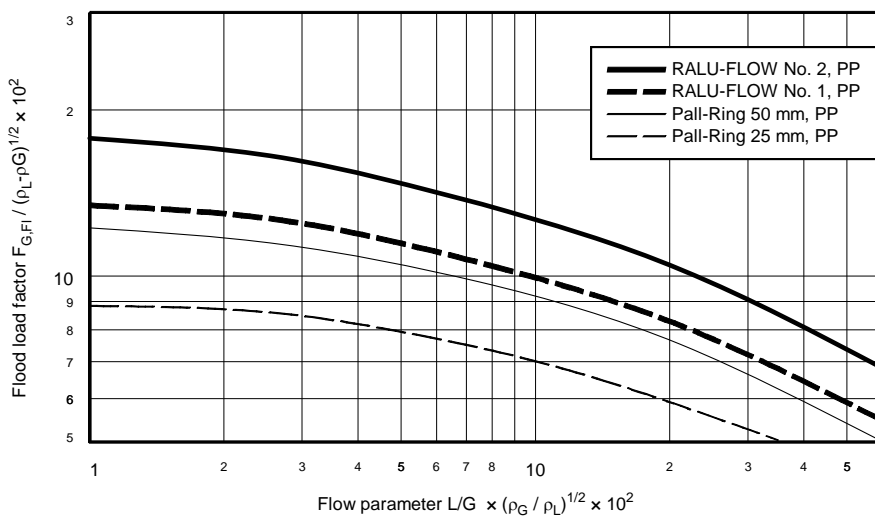
RALU-FLOW

A modern high effective packing with excellent performance data

The advantages of this heavy-duty packing can be summarized as follows:

- very small pressure drop
- large specific surface
- high degree of stability
- small inherent weight
- large void volume
- good mass transfer properties
- high gas- and liquid-side loading capacity
- low edge pass ability
- keeps relatively clean

Fig. 1: Comparison of loading limits for Ralu-Flow No. 1 and No. 2 to 25 and 50 mm Pall Ring





RALU-FLOW

A modern high effective packing with excellent performance data

Column for the absorption of NH₃ from air in water

Operating data:	Air	60.000 kg/h	
	Steam	5.000 kg/h	
	Ammonia	200 kg/h	
	Temperature	20 °C	
	Pressure	1 bar (abs.)	
Design target:	Gas concentration	< 20 mg/m ³	
	Freshwater quantity	70 m ³ /h	
Results:	Packing	RALU-FLOW	PALL RING
	Size	No. 2	50 mm
	Column diameter	2.8 m	3.3 m
	Dumping height	4.7 m	4.7 m
	Gascapacity-factor	2.7 Pa0.5	1.9 Pa0.5
	Irrigation density	11.4 m ³ /m ² h	8.2 m ³ /m ² h
	Pressure drop	8.2 mbar	10.1 mbar
	Necessary quantity of packings	28.9 m ³	40.2 m ³



A new Alliance in Mass Transfer Business.
Together we are creating more!



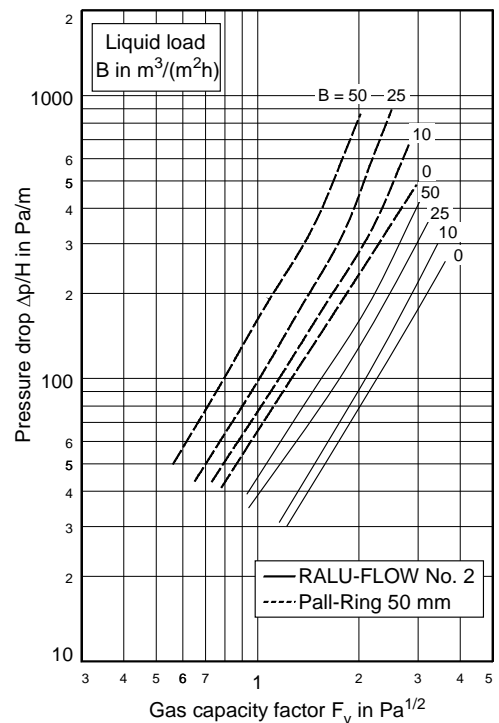
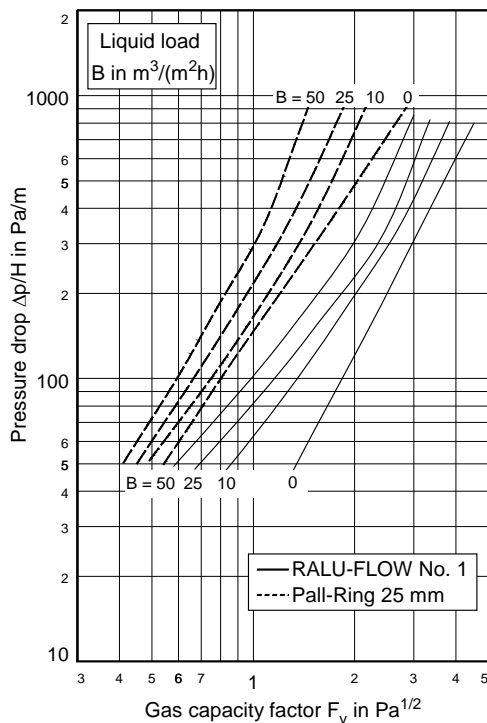
RALU-FLOW

A modern high effective packing with excellent performance data

The above calculation demonstrates impressively that the use of the Ralu-Flow entails considerably less investment for new systems than the Pall ring.

What is more, if greater capacity of an existing system equipped with Pall rings is desired, a decisive increase in the mass throughputs, without a drop in mass transfer efficiency, can be achieved by using the Ralu-Flow.

Fig. 2a and 2b: Comparison of pressure drop for Ralu-Flow No. 1 and Ralu-Flow No. 2 to 25 and 50 mm Pall-Ring





RALU-FLOW

A modern high effective packing with excellent performance data

As numerous studies have already shown, plastic surfaces are generally more difficult to wet than metal or ceramic geometries. Raschig has therefore developed a procedure that greatly improves the poor wettability of commercial plastics. By means of a hydrophilization process the surface of the plastic packing can be coated with a moisture-active layer which guarantees a dependable wettability like that of ceramic materials. Since the mass transfer efficiency of dumped-packing columns is directly proportional to the interface, this brings about a considerable improvement in mass transfer efficiency.

The following table summarizes the characteristic operating data of the plastic Ralu-Flow

Characteristic operating data

RALU-FLOW® 1

Spec. weight: approx. 55 kg/m³
Spec. surface: approx. 165 m²/m³
No. of pieces: approx. 33.000 pc/m³
Void fraction: approx. 95 %

RALU-FLOW® 2

Spec. weight: approx. 50 kg/m³
Spec. surface: approx. 100 m²/m³
No. of pieces: approx. 4.750 pc/m³
Void fraction: approx. 95 %



A new Alliance in Mass Transfer Business.
Together we are creating more!