

Performance Catalysts

„Combining Competences for Process Excellence in ammonia conversion“

Product Specification

MKS Modulares Katalysator System™: PLATINIT® & MULTINIT® gauzes

1. Scope

This product specification applies to knitted Platinum alloy catalyst gauzes manufactured at umicore's business unit Platinum Engineered Materials.

2. Marking

Trademark:

PLATINIT®	= knitted single-layer gauze
MULTINIT®	= knitted gauze with three dimensional spatial structure
MKS	= catalyst configuration Modulares Katalysator System™ on basis of PLATINIT® and MULTINIT®

The various types of PLATINIT®, MULTINIT® catalyst gauzes are characterized by the following marking:

PLATINIT®	AA - BB - CC - DD
MULTINIT®	AA - BB - CC - DD

AA	alloying elements Rh or Rh/Pd in weight percent
BB	wire diameter in µm
CC	reference number for knitting structure
DD	specific weight in g/m ²

Example: PLATINIT® 10-76-03-600:

- ✓ knitted PLATINIT® catalyst gauze
- ✓ alloy Pt/Rh 90:10
- ✓ wire diameter 76 µm
- ✓ knitting structure 03
- ✓ specific weight 600 g/m²

3. Product attributes

3.1 Standard alloy compositions (in weight percent)

	Pt	Rh	Pd
Pt/Rh 90/10	90	10	--
Pt/Rh 92/8	92	8	--
Pt/Rh 95/5	95	5	--
Pt/Rh/Pd 90/5/5	90	5	5

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Permitted deviations for standard alloying elements:

Pd	± 0,500 %
Rh	± 0,250 %

3.2 Permitted content of non-alloying elements

Total content of non-PGM elements	≤ 500 ppm
Total content of non-alloying PGM elements	≤ 500 ppm
Total content of non-alloying elements	≤ 1000 ppm

Permitted fine contents and tolerance limits in accordance with defined internal guidelines.

3.3 Gauze weight

PLATINIT[®] and MULTINIT[®]

The nominal gauze weight results from the product of nominal specific weight and nominal gauze area.

The permitted deviation of the gauze weight with respect to the nominal weight in the as delivered condition (cut to size and thermal treated) is ± 5,0 wt.-%.

For gauze packs, so-called PAD's, where two or several gauzes are connected to one pack, the permitted deviation from the total of the nominal single gauze weights in the as delivered condition (cut to size and thermal treated) is ± 5,0 wt.-%.

MKS Modulares Katalysator System[™]

The permitted deviation from the total of the nominal gauze weights of all gauzes of the catalyst system in the as delivered condition (cut to size and thermal treated) is ± 5,0 wt.-%.

3.4 Dimensions

The permitted deviation for the external dimensions (diameter for circular gauzes, width across flats for hexagonal gauzes) for single gauzes or single gauzes connected to packs, so-called PAD's, amounts to ± 1,0% with reference to the nominal value.

3.5 Performance of the rim structure

PLATINIT[®] and MULTINIT[®]

Standard performance

As standard performance the gauze has a welded rim with a width of 10,0 mm ± 5,0 mm.

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Alternative performance on customer request:

- ✓ cut rim
- ✓ welded rim (width on customer request)
- ✓ welded bead (width on customer request)

In gauze packs, so-called PAD's, two or several gauzes are connected together to one pack. The connection is carried out by welding of the rims with a width of 10,0 mm \pm 5,0 mm.

3.6 Seams

PLATINIT[®]

PLATINIT[®] gauzes with a diameter of > 4.300mm have one seam (carried out by welding).

MULTINIT[®]

MULTINIT[®] gauzes with a diameter of > 2.200mm and < 4.300mm have one seam (carried out by sewing). MULTINIT[®] gauzes with a diameter of > 4.300mm have two seams (carried out by sewing). For sewing a wire of diameter 92 μ m and Pt/Rh alloy of 95/5 is used.

3.7 Gauze structures

Deviations from the continuous knitting structure and corrections of the knitting are limited to max. 5,0 ‰ of the whole gauze area.

PLATINIT[®]

PLATINIT[®] gauzes up to a diameter of 4.300 mm are knitted as folded parts. For this case the knitting process runs continuously from the one to the other part thus forming a folded line without interruption of the knitted structure. The folded line, resulting from the normal PLATINIT[®] knitting process, as well as welded seams remain unconsidered in the 5,0 ‰ tolerance limit.

Corrections:

Deviations or defects in the gauze structure resulting from wire tears, which can extend over the whole gauze diameter, will be corrected by folding and slight welding of the fold. The formed fold is limited to a width of min. 5,0 mm and max. 10,0 mm.

MULTINIT[®]

The sewed seams remain unconsidered in the 5,0 ‰ tolerance limit. Deviations from the continuous knitting structures are permitted only if a reduction in mechanical stability can be excluded.

Corrections:

A welding of defects is not permitted.

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3.8 Surface condition

The surface is free of dust, oil, fat and other impurities by thermal treatment.

4. Gauze identification

On the outer rim of each gauze one marking in case of a gauze diameter up to 3.000 mm or two markings in case of a gauze diameter from 3.000 mm are welded on. In case of two markings the markings are fastened at opposite sides.

The markings reveal following data:

AA - BB - CC

AA Rh-content or Rh/Pd content in weight percent
BB SDS (for PLATINIT[®]), MDS (for MULTINIT[®]), MKS (for catalyst system)
CC Consecutive order number - or according to customer request

PAD

Catalyst-PAD's are gauze packs consisting of two or several PLATINIT[®] and / or MULTINIT[®] gauzes which are connected together. PAD's will have only one marking, fastened on the top side. On the marking the word "PAD" is placed at first position. Instead of the consecutive number the lowest and highest numbers are listed separated by a hyphen. As standard the gauzes are placed on top of each other, the gauze with the highest number at the bottom, the gauze with the lowest number at the top of the pack.

Example:

PAD consisting of three PLATINIT[®] gauzes:

5 SDS 100 (top gauze),
5 SDS 101 (middle gauze), and
5 SDS 102 (bottom gauze)

Marking: PAD 5 SDS 100 - 102

5. Instruction for installation

For gauze configurations consisting of non identical catalyst gauzes an instruction for installation has to be enclosed with the delivery.

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6. Certificates

Certificates according to DIN EN 10 204-2.2 or DIN EN 10 204-3.1B are prepared on request certifying the following characteristics:

- ✓ Identification of gauze type
- ✓ Number of gauzes
- ✓ Gauze markings
- ✓ Alloy composition
- ✓ Content of alloying elements
- ✓ total content of PGM elements which are not alloying components
- ✓ total content of non-PGM elements which are not alloying components
- ✓ total content of not alloying elements
- ✓ weight
- ✓ dimension
- ✓ condition of rims and seams
- ✓ confirmation of thermal treatment after manufacturing process

7. Packing

Gauzes are rolled and properly packed in strong cardboard tubes. In case of necessity the tubes are additionally packed in wooden boxes (according to defined internal procedures). For installations with big diameters a transport rod (stainless steel) is helpful for installation procedure.

Different packaging can be provided upon request.

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