PGM catalyst and catchment gauzes
K.A. Rasmussen is the leading Nordic supplier of products based on precious metals. Silver, gold and platinum based products are supplied to industry, silverware, silver- and gold-smiths, dental technicians (dental alloys, attachment and 3000 depot articles) and laboratories. As early as 1932 the company participated in the pioneering development of the first catalyst gauze for nitric acid in Norway. Catchment gauzes have also been produced for decades. Continuous development has contributed to our comprehensive skills in this field today.

K.A. Rasmussen is certified according to ISO 9001:2000 and ISO 13485 (medical devices).

K.A. Rasmussen supply woven and knitted gauzes in PGM - alloys, i.e platinum-, palladium- and rhodium – alloys. Gold, silver, nickel, steel, copper may also be supplied as gauzes. Alloy, wire thickness, weaving- and knitting configuration are produced on customers specifications.

Applications

Nitric acid production by oxidation of ammonia

- A gauze package with catalyst gauzes in e.g. Pt-5%Rh and catchment gauzes of Pd-5%Ni.
- Most important factors regarding a gauze pack are: I. combustion yield, II. life time / campaign length, III. metal loss , IV. metal binding
- Reactor types might be with atmospheric pressure , low, medium or high pressure.

HCN – production by oxidation of ammonia and methane

- Gauzes in e.g. Pt-10% Rh are used as catalyst for HCN – production.
Dimensions and mesh

- **Wire thickness**: Typical 60 – 120 micron. Gauze diameter up to 5 meters.
- **Woven gauzes**: Mesh: 16 – 32 wires pr. cm in warp and inlay, i.e. 256 – 1024 mesh pr. cm².
- **Knitted gauzes**: Gauzes are knitted with one or two sets of wires / warps. Weight of knitted will be approx. the same as woven depending on the pattern. The number of possible patterns are 9 in warp 1 combined with 13 different patterns in warp 2, i.e. a large number of possible patterns. Knitted gauzes are more elastic than woven.

### Mesh, light openings and weights with 75 micron wire

<table>
<thead>
<tr>
<th>Woven or knitted</th>
<th>Wires pr. cm</th>
<th>Mesh / cm²</th>
<th>Light opening, mm²</th>
<th>Weight, g / m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woven</td>
<td>16 x 16</td>
<td>256</td>
<td>0.3</td>
<td>312</td>
</tr>
<tr>
<td>Woven</td>
<td>32 x 32</td>
<td>1024</td>
<td>0.06</td>
<td>625</td>
</tr>
<tr>
<td>Warp knitted</td>
<td>1 or 2 warps</td>
<td>Ca. 1000</td>
<td>&lt; 0.2</td>
<td>400 - 1000</td>
</tr>
</tbody>
</table>

Knitted gauzes from K.A. Rasmussen are developed to give a large number of small light openings and no light openings > 0.2 mm².

### Light openings woven and knitted

![Light openings woven and knitted](image)

**Processes and equipment at K.A. Rasmussen**

- Refining of used gauzes to pure Pt, Rh and Pd.
- Alloying, melting, casting
- Mechanical fabrication by forging, rolling and wire drawing down to 60 micron.
- Weaving looms up to 2.7 m width, warp knitting machine 3.3 m width, pilot circular knitting machine, pilot weaving machine
- Cutting and welding of gauzes up to 5 m diameter, rolled on aluminium tubes and packed in wooden boxes.
- Analytic / chemical and physical metallurgical laboratorium
- R&D department
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