

#### **K.A. RASMUSSEN AS**

K.A. Rasmussen AS is the leading Nordic supplier of precious metals. Products based on silver, gold and platinum group metals are supplied to silver- and goldsmiths, dental technicians and laboratories as well as to industry.

K.A. Rasmussen AS is a well renowned producer of silver catalyst since early 1970's. Our product is being exported to most parts of the world.

We enjoy a long-lasting relationship with our customers. Our technical department is prepared to assist our customers to select optimum applied silver catalysts necessary in the process.

K.A. Rasmussen AS is certified according to ISO 9001:2015 and ISO 14001:2015

### **FACTS ON SILVER**

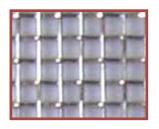
Silver - Ag - is a brilliant precious metal which has always been much valued due to its special properties. Historically it has been used as money since ancient times.

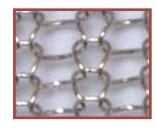
Chemical sign: Ag	Electronic Structure: Kr 14 <sup>10</sup> 5s <sup>1</sup>	28	29	30
Atomic number: 47	Specific Electrical Resistivity: 1.60.μΩ.cm	Ni Nickel	Cu Copper	Zn Zinc
Atomic weight: 108	Thermal Conductivity: 429W m <sup>-1</sup> K <sup>-1</sup>	46	47	48
Density: 10.5 g/cm³	Specific heat at 25°C: 237 J K¹ kg-1	Pd Palladium	Ag Silver	Cd Cadmium
Melting point: 962°C	Linear Expansion Coefficient: 19.1 • 10 <sup>-6</sup> K <sup>-1</sup>	rallaululli	Silvei	Caulilluli
Boiling point: 2212°C	Hardness HV: 25 Soft, 90 Hard	78 Pt	79 Au	80 Hg
Crystal structure: FCC	Tensile Strength MPa: 170 Soft, 330 Hard	Platinum	Gold	Mercury

#### **SILVER CATALYST - WHAT WE CAN OFFER**

### **Processes - silver catalyst**

- Incoming inspection used catalyst
- Melting of used catalyst
- Refining on used catalyst
- Chemical analysis with certificate on used catalyst
- Production of new catalyst
- Sieving into fractions
- Diagnostics of customer processes





 ${\sf K.A. Rasmussen\,AS\,can\,also\,supply\,woven\,or\,knitted\,silver\,gauze.}$ 

#### SPECIFICATION ON SILVER CATALYST

# Crystal size and bulk density

Fraction	Sieve (mm)	Bulk density (g/cm³)
K1	0,15 - 0,30	1,3 - 2,2
K2	0,25 - 0,50	1,3 - 2,0
K3	0,30 - 0,70	1,2 - 1,8
K4	0,50 - 1,00	1,2 - 1,8
K5	0,70 - 1,50	1,2 - 1,8
K6	1,00 - 1,50	1,2 - 1,8
K7	1,50 - 2,00	1,2 - 1,8

All fractions are available from stock with short time of delivery.



- High chemical purity
- High specific surface area
- Low bulk density which allow lower amount of silver installed
- Wide spectre of fractions, allowing an optimal catalyst bed
- Low pressure drop
- High yield
- Long life time of catalyst bed
- Optimal economy
- Simple and safe handling



Notice how the rugged surface are of KAR silver crystals on the left side are larger than competitor and vendor E on the right side. (Red line is 0,5mm.)

Using KAR silver crystals will save substantial reduction in installed weight of silver or reactor and still achieve larger catalytic surface area.

For the client this means saving money.

## Silver in Ø 1500 reactor w 20 mm bed height

Kg silver	Area m2					
53,5	548					
118,4	159					
90,1	265					
80,3	389					
72,6	424					
116,6	141					
	53,5 118,4 90,1 80,3 72,6					

Comparison of KAR silver crystals and some competitors.

Typical analysis on new silver crystals							
Silver	Ag	>99,99%	Zinc	Zn	< 5 ppm		
Gold	Au	< 5 ppm	Iron	Fe	< 5 ppm		
Palladium	Pd	< 5 ppm	Manganese	Mn	< 1 ppm		
Platinum	Pt	< 5 ppm	Molybdenum	Мо	< 5 ppm		
Copper	Cu	< 50 ppm	Aluminium	Al	< 5 ppm		
Nickel	Ni	< 5 ppm	Cadmium	Cd	< 10 ppm		
Chrome	Cr	< 10 ppm	Silicon	Si	< 5 ppm		
Lead	Pd	< 5 ppm	Sum trace metals		< 100 ppm		

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