



**K.A. Rasmussen**  
NORWAY

## **SILVER CATALYST**

K.A.RASMUSSEN AS 2020

## 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.

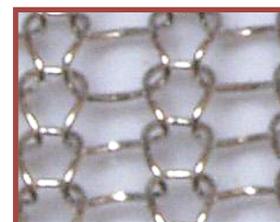
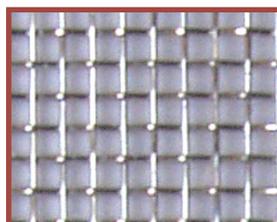
Chemical sign: Ag	Electronic Structure: Kr 14 <sup>10</sup> 5s <sup>1</sup>
Atomic number: 47	Specific Electrical Resistivity: 1.60.μΩ.cm
Atomic weight: 108	Thermal Conductivity: 429W m <sup>-1</sup> K <sup>-1</sup>
Density: 10.5 g/cm <sup>3</sup>	Specific heat at 25°C: 237 J K <sup>-1</sup> kg <sup>-1</sup>
Melting point: 962°C	Linear Expansion Coefficient: 19.1 • 10 <sup>-6</sup> K <sup>-1</sup>
Boiling point: 2212°C	Hardness HV: 25 Soft, 90 Hard
Crystal structure: FCC	Tensile Strength MPa: 170 Soft, 330 Hard

28 Ni Nickel	29 Cu Copper	30 Zn Zink
46 Pd Palladium	47 Ag Silver	48 Cd Cadmium
78 Pt Platinum	79 Au Gold	80 Hg 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



K.A.Rasmussen AS can also supply woven or knitted silver gauze.

## SPECIFICATON ON SILVER CATALYST

### Crystal size and bulk density

Fraction	Sieve (mm)	Bulk density (g/cm <sup>3</sup> )
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.

### Silver catalyst from K.A.Rasmussen AS is characterized by:

- High chemical purity
- High specific surface area
- Low bulk density which allow lower amount of silver installed
- Wide specter 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 m <sup>2</sup>
KAR mix 0,3-1,5	53,5	548
Vendor A	118,4	159
Vendor B	90,1	265
Vendor C	80,3	389
Vendor D	72,6	424
Vendor E	116,6	141

Comparison of KAR silver crystals and some competitors.

### Typical analysis on new silver crystals

Silver	Ag	>99,99%	Zink	Zn	< 5 ppm
Gold	Au	< 5 ppm	Iron	Fe	< 5 ppm
Palladium	Pd	< 5 ppm	Manganese	Mn	< 1 ppm
Platinum	Pt	< 5 ppm	Molybdenum	Mo	< 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	Pb	< 5 ppm	Sum trace metals		< 100 ppm



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