

Catalyst IAC-114

- Platinum catalyst (catalytic gas purification)
- Removes all hydrocarbons, H₂, CO, etc.
- High cleaning performance (> 99%)
- High precious metal content
- Lifetime from 2 to over 5 years
- Low start-up temperature
- Highest hydrogen-affinity



Description and usage

The catalyst IAC-114 is a highly active supported precious metal catalyst for catalytic gas purification. It is characterized by high thermal and mechanical stability and high abrasion resistance.

Platinum has a very high adsorption capacity for hydrogen and oxygen and to a lesser extent for helium. This makes it very well suited for use as a total oxidation catalyst.

Aliphatic and aromatic hydrocarbons, olefins, organic oxygen

and nitrogen compounds as well as carbon monoxide (CO) are converted to carbon dioxide (CO₂) and water (H₂O) even at low temperatures.

Even at low excess oxygen, conversion rates of more than 99.9% are still achieved. Secondary emissions such as CO or NO_x from atmospheric nitrogen are practically non-existent.

The platinum content of catalyst IAC-114 is 0.5%.

Technical specifications

| | |
|-----------------------|--|
| Composition: | Pt / Al ₂ O ₃ ; platinum on aluminium oxide; platinum content: 0.5%. |
| Particle Size / Form: | Extruded parts 3mm x 3mm / Sphere |
| Colour: | Grey |
| Bulk volume: | approx. 1000g/l |
| Specific surface: | 1.6m ² /g |
| Dwell time: | > 0.3sec |
| Space velocity: | 5000l/h - 10000l/h |
| Working temperature: | 0°C to 600°C |
| Maximum temperature: | 700°C |
| Humidity: | < 1%. |
| Lifetime: | 2 to 5 years, depending on operating conditions |

Ordering information

| Order information | | Masses | Volumes | Packaging container |
|-------------------|--------------|--------|---------|------------------------|
| Artikel numbers | Type | [g] | [l] | |
| 700086 | IAC-114-100 | 100 | 0.1 | Polyethylene container |
| 700085 | IAC-114-250 | 250 | 0.25 | Polyethylene container |
| 700084 | IAC-114-1000 | 1000 | 1.0 | Polyethylene container |
| 700198 | IAC-114-4000 | 4000 | 4.0 | Polyethylene container |

Characteristics of the catalyst

The platinum catalyst IAC-114 is preferably used in an oxidizing atmosphere. In oxygen-containing gas mixtures, total oxidation of organic compounds to carbon dioxide (CO₂) and water (H₂O) occurs even at low temperatures

(100°C - 500°C).

The reaction temperature, which is necessary to achieve a nearly 100% conversion, is mainly determined by the pollutant to be removed and the space

velocity (GHSV).

The following table shows for selected substances the conversion behavior depending on the reaction temperature (GHSV = 10000 l/h).

| Substances | | Conversion rate @ reaction temperature [°C] | | | | |
|------------------------|---------------------------------|---|-----|-------|-----|-----|
| Name | Chemical formula | 30% | 50% | 90% | 95% | 98% |
| Butane | C ₄ H ₁₀ | 310 | 320 | 370 | 385 | 405 |
| Carbon monoxide | CO | 180 | 182 | 183 | 185 | 190 |
| Ethanol | C ₂ H ₆ O | 160 | 175 | 220 | 240 | 285 |
| Ethylene | C ₂ H ₄ | 125 | 126 | 130 | 133 | 150 |
| Formaldehyde | CH ₂ O | 95 | 110 | 200 | 260 | - |
| Methane | CH ₄ | 560 | 585 | > 650 | - | - |
| Octane | C ₈ H ₁₈ | 235 | 250 | 300 | 340 | 400 |
| Propane | C ₃ H ₈ | 310 | 320 | 370 | 385 | 405 |
| Xylol | C ₈ H ₁₀ | 160 | 165 | 170 | 180 | 220 |

The complete removal of traces of oxygen from hydrogen (H₂) already takes place at room temperature. The resulting water can then be removed from the gas stream by adsorption on silica gel or molecular sieves.

Regeneration, waste disposal

In normal operation as an oxidation catalyst, there is almost no change in catalyst activity at temperatures up to 600°C. Therefore, service lives of two to over five years are not uncommon.

The activity is reduced by the catalyst poisons which are often present in traces. These block the active surface and lead to a reduction in the degree of conversion over time. Regeneration is then no longer possible.

Catalyst-poisons are lead-, arsenic-, sulphur-, silicon-, phosphorus- and mercury-compounds as well as halogens, strong acids and alkalis.

IAC-114 must be disposed of in accordance with the legal regulations.

Storage

Since the catalyst material IAC-114 absorbs moisture from the air, it must be sealed airtight and placed in a cool and dry storage place.

Safety Instructions

The catalyst IAC -114 is non-toxic, non-inflammable, non-corrosive.

Precious metal catalysts ignite hydrogen/oxygen gas mixtures explosively.

IAC-114 is not a hazardous substance or mixture according to REGULATION (EC) No 1272/2008 and does not contain components in concentrations of 0,1% or higher classified as either persistent, bioaccumulative and toxic (PBT) or very persistent and very bioaccumulative (vPvB).

For your attention

This information is based on our current knowledge. They do not exempt the processor from carrying out his own tests and trials.

A legally binding assurance of certain properties or the suitability for a specific application cannot be derived from our information.

Any industrial property rights as well as existing laws and regulations must be observed by the recipient of our products on his own responsibility.