

## Catalyst IAC-114

- Platinum catalyst (catalytic gas purification)
- Removes all hydrocarbons, H<sub>2</sub>, 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 (CO<sub>2</sub>) and water (H<sub>2</sub>O) 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<sub>x</sub> from atmospheric nitrogen are practically non-existent.

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

## Technical specifications

Composition:	Pt / Al <sub>2</sub> O <sub>3</sub> ; 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 <sup>2</sup> /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 (CO<sub>2</sub>) and water (H<sub>2</sub>O) 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%
<b>Butane</b>	C <sub>4</sub> H <sub>10</sub>	310	320	370	385	405
<b>Carbon monoxide</b>	CO	180	182	183	185	190
<b>Ethanol</b>	C <sub>2</sub> H <sub>5</sub> OH	160	175	220	240	285
<b>Ethylene</b>	C <sub>2</sub> H <sub>2</sub>	125	126	130	133	150
<b>Formaldehyde</b>	H <sub>2</sub> CO	95	110	200	260	-
<b>Methane</b>	CH <sub>4</sub>	560	585	> 650	-	-
<b>Octane</b>	C <sub>8</sub> H <sub>12</sub>	235	250	300	340	400
<b>Propane</b>	C <sub>3</sub> H <sub>8</sub>	310	320	370	385	405
<b>Xylol</b>	C <sub>6</sub> H <sub>4</sub> (OH) <sub>2</sub>	160	165	170	180	220

The complete removal of traces of oxygen from hydrogen (H<sub>2</sub>) 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.