

### Function

Zinkoxyd aktiv® is an effective vulcanization activator of extremely fine particle size.

### Product description

Composition: fine particles of precipitated zinc oxide

Appearance: white to slightly yellowish powder

Density (at 22 °C) approximately 5.68 g/cm<sup>3</sup>

Specific surface area approximately 45 m<sup>2</sup>/g

Volatile matter (110 °C) approximately 0.4 %

Lead content approximately 3 ppm

Cadmium content approximately 2 ppm

<u>Property</u>	<u>Nominal value</u>	<u>Unit</u>	<u>Test method</u>
Content of zinc oxide	≥ 93.0	%	169
Ignition loss	≤ 4.0	%	178
Sieve residue (0.063 mm)	≤ 0.2	%	DIN ISO 787/18

### Use

Mode of action: Zinkoxyd aktiv® is an effective vulcanization activator of extremely fine particle size, suitable for rubber articles based on natural and synthetic elastomers as well as for latex applications. Zinkoxyd aktiv® is an activator for sulfur cures, thiuram cures and in many cases for peroxide cures also.

The fine particle size and high activity of Zinkoxyd aktiv®, depending on the formulation, permits a reduction in the level of addition compared to regular zinc oxide grades. Moreover, it is useful in applications where only low concentrations of zinc oxide can be tolerated, e.g. transparent and translucent rubber goods. Employed at high levels it provides good fatigue resistance in dynamically stressed articles, such as buffers and rollers.

Zinkoxyd aktiv® is also a crosslinking agent for metal oxide curable elastomers, for example CR and carboxylated polymers.

In adhesive applications it provides improved resistance to sedimentation.

**Processing:** Zinkoxyd aktiv® is easy to incorporate and has good dispersion characteristics in rubber compounds. At high levels of addition, it increases thermal conductivity and has a stiffening effect, improving the dimensional stability of extrusions and open-cured goods.

Even low levels of addition (0.8 - 1.5 phr) achieve a satisfactory activation of vulcanization accelerators. Increasing concentrations of Zinkoxyd aktiv® yield a slightly faster onset of cure as well as a shorter cure time with thiurams and dithiocarbamates, while with thiazoles, especially sulfenamides, a more delayed scorch is obtained, without extending the total curing time. In latex applications compound stability is reduced, as with other zinc oxide grades, which can be counteracted by the addition of stabilizers.

**Vulcanizate Properties:** Zinkoxyd aktiv® does not bloom and has no adverse effect on the color of vulcanizates, due to its exceptional purity. The lead content is extremely low, hence no difficulty with regard to discoloration by black lead sulfide is encountered. In addition to the fact that Zinkoxyd aktiv® is non-discoloring, it is able to reduce the yellowing that occurs in light-colored and white rubber articles on exposure to light. Compared to regular zinc oxide grades Zinkoxyd aktiv® provides improved mechanical properties, especially modulus and tear strength.

At high loading, e.g. 30 phr, Zinkoxyd aktiv® serves as a semi-reinforcing filler. The vulcanizates have very good mechanical properties (tensile strength, tear strength, elastic behavior). In spite of being relatively hard at such loading, the vulcanizates retain their characteristically high resilience. The thermal conductivity and aging resistance of the vulcanizates are improved. It should be pointed out that at heavy zinc oxide loadings the specific gravity of the vulcanizates is considerably higher than when other inorganic fillers are used.

**Dosage:** Typical levels of Zinkoxyd aktiv® addition based on 100 parts by weight of elastomer are:

as vulcanization activator (sulfur and thiuram cure):	3.0 - 5.0
for transparent goods:	0.8 - 1.5
for translucent goods:	1.0 - 3.0
for improving dimensional stability and thermal conductivity:	8 - 10
as crosslinking agent (for CR):	5.0
as reinforcing filler:	20 - 50
as an additive in compounds cured with peroxide:	1 - 3

## Packaging

20 kg paper bag on 700 kg or 1.000 kg skid or 700 kg big bag.

## Storage stability

In original closed containers under cool (approximately 25 °C) and dry conditions 547 days from date of production.

## Handling

For additional handling information on Zinkoxyd aktiv® please consult current safety data sheet.

These raw material properties are typical and, unless specifically indicated otherwise, are not to be considered as delivery specification.

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**LANXESS Deutschland GmbH**  
**BU Rhein Chemie**  
Kennedyplatz 1  
50569 Cologne, Germany  
Phone: +49 (0)221 8885-0  
E-Mail: [rubber.additives@lanxess.com](mailto:rubber.additives@lanxess.com)  
<http://rch.lanxess.com>