



**KUTRILIN**

## **GRINDAL 45**

### **Cement grinder intensifier**

#### **Description and scope**

**GRINDAL 45** is a surfactant which, as a grinder intensifier, greatly improves the grinding process.

#### PHYSICAL - CHEMICAL PROPERTIES

Appearance:	dark brown liquid
Density (20 ° C), kg/m <sup>3</sup> :	1010 - 1030
pH:	6 - 8
Chlorides	does not contain

When the cement particles are ground to a certain fineness, the influence of Van der Waals forces and electrostatic charge results in the formation of agglomerates and adhesion of the particles to the balls and mills. The aggregation of already ground cement reduces the flow of material through the mill, prolongs the grinding time and increases the energy consumption.

Grinding in the presence of an intensifier substantially prevents agglomeration, since the intensifier molecules bind adsorptively to the surface of the shredded cement clinker particles, thereby reducing the attractive forces among the particles.

This effect of the intensifier does not end in the grinding process, but exists in the transportation, storage and packaging of cement. In addition, the use of intensifiers facilitates the breakage of the grain, as primary cracks are faster to spread due to the decrease in clinker surface energy. It is certainly one of the reasons for saving energy in grinding.

Practice has shown that the intensifier significantly shortens the residence time of the cement in the mill and facilitates the flow of material.

The effectiveness of the intensifier can therefore be explained as a joint effect of the three phenomena:

- a / prevention of agglomeration during milling
- b / reduction of clinker resistance to shredding
- c / changes in mill characteristics

#### **Application**

When grinding cement with an intensifier it is possible to achieve:



- increase of mill capacity with equal energy consumption and fineness of final product
- increase of specific cement surface with equal energy consumption and equal mill capacity
- increase in the proportion of clinker additive (crushed stone, ash, etc.) with equal energy consumption, equal mill capacity and unchanged quality of cement

### Dosage

Amount of 0.035 - 0.050% **GRINDAL 45** per mass of cement is most commonly used for grinding cement. In addition to the amount of the intensifier dosed, the grinding efficiency depends significantly on the physical and chemical-mineralogical composition of the cement clinker, the mill conditions, the desired fineness of the final product, and the type of additive with which the clinker is ground.

By using **GRINDAL 45** it is possible to increase the capacity of the mill by up to 25%, ie to reduce the energy consumption for milling more than 20%, and also to achieve higher early strengths of the cement produced.

As a rule, the best results are achieved by grinding the same clinker, ie clinker with the addition of heat.

The intensifier is particularly effective when grinding cement to a fineness of 3000 - 3500 cm<sup>2</sup> / g (Blaina).

The optimal dosage of **GRINDAL 45** for a particular mill should be determined on the basis of the results obtained in the experimental production. The mode and location of intensifier dosage also play an important role.

Under improvised conditions, **GRINDAL 45** is dosed on the clinker bar before entering the mill, or on the clinker scale, with continuous steady dripping.

The best results are achieved by adding a metering device that constantly adds an intensifier to the inside of the mill.

### Packing and storage

**GRINDAL 45** is delivered in PE tank barrels or containers.

Store the product in original, tightly closed container at a temperature below 40 ° C. Do not store, store, feed or other general-purpose items in storage.

**GRINDAL 45** has been stable under normal storage conditions for one year.

Replaces all previous releases for this product.  
November, 2019.