



STAREX

Grinding Aids and Quality Improvers for Cement

STAREX Products – Overview

STAREX 300

STAREX NTR 10

STAREX Grinding Aids – General Method Of Operation

Improved Grinding

- Reduced electrostatic attraction between broken particles in the mill system.
- Reduced agglomeration within the mill; in turn, makes available more energy for actual milling of particles
- Increased mill output translates to reduced operating costs

Increased Cement Performance

- Interruption in the normal retardation reaction between gypsum and tri-calcium aluminate (C3A) phase
- Allowance for tri-calcium silicate (C3S) reaction to begin sooner than normal
- No effect on setting time

Improved Concrete Quality

- Improved durability of concrete due to reduced water porosity and oxygen permeability
- Improved workability of concrete mix

STAREX Grinding Aids – Key Benefits

Increased Mill Throughput

- Increased cement mill output by 5-10%
- Higher sales realizations
- Reduced overheads such as power and grinding media per ton of cement

Reduced Power Consumption

- Increased flowability and mill throughput lead to reduced power consumption per ton of cement grinding by 2-3 KWh

Higher Cement Strength

- 1-day strength increases by 10-30%
- 3-day strength increases by around 10%
- 7-day strength increases around 7-10 %
- 28-day strength increases by 5-10%

Higher Fly Ash and Slag Content

- Higher fly ash or slag content in blended cements, and
- Reduced clinker content without impact on cement performance

STAREX – Flagship Products

STAREX 300

- Added in powder form
- Acts as a performance enhancer cum grinding aid
- Dosage: 0.02-0.03%
- Dosed using highly accurate belt-feeder based dispensers, with PLC controls and integration with CCR

STAREX NTR 10

- Added in liquid form
- Acts as a performance enhancer cum grinding aid
- Dosage: 0.05-0.1%
- Supplied to the plant in solid form and dissolved in water at the plant site before addition to the grinding mill; dosing is executed using pumps

STAREX Products – Overview

STAREX 300

STAREX NTR 10

STAREX 300 – Powder Form Additive

Powder form grinding aid and quality improver

- Added directly to the cement mill inlet in powder form
- Acts as a performance enhancer cum grinding aid
- Dosage: 0.02-0.03%
- Dosed using highly accurate belt-feeder based dispensers, with PLC controls and integration with CCR

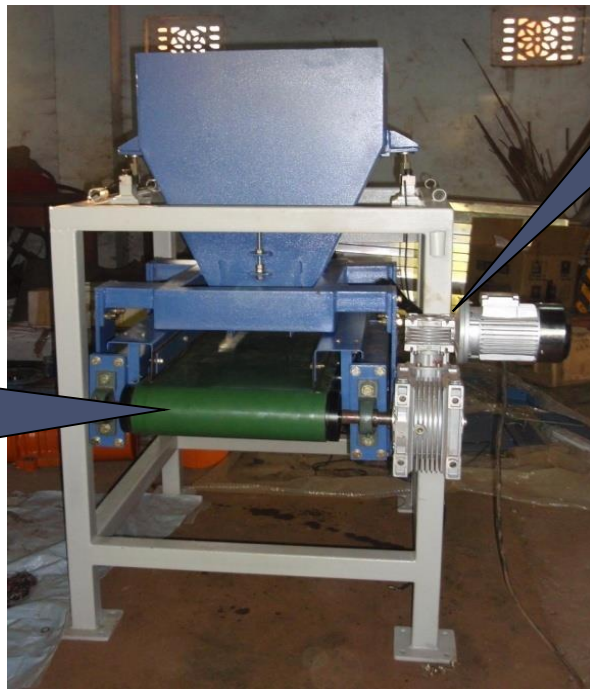
STAREX 300 – Physical Characteristics

- Appearance: Grey powder which varies from 2 mm particles to dust.
- Flashpoint: The product is non-flammable.
- Storage: Product should be stored in a dry ventilated area.
- Odour: May have a faint odour of ammonia when packaging is initially opened.
- Dispensing: Product should only be dispensed using Unisol supplied/recommended dispensers.
- Toxicity: The product is non-toxic under normal exposure conditions. It should not be handled extensively without rubber gloves. In the event of ingestion patient should be referred to a doctor.
- Delivery: Product is delivered in 25KG Polypropylene bags with plastic inner liner or in 1 ton bulk bags.



STAREX 300 – Recommended Dosing System

- Loss-in-weight dispensers are highly accurate and ensure exact dosage of STAREX. This in turn maximizes returns for the customer by removing wastage of additive and optimizing cement performance.
- Loss-in-weight dispenser includes a supply hopper, a feeder mechanism (such as screw conveyor or belt feeder), a supporting scale system and a microprocessor based controller.



Belt Feeder

Loss-in-weight system



Control Panel

STAREX Products – Overview

STAREX 300

STAREX NTR 10

STAREX NTR 10 – Innovation in Grinding Aid Delivery Mechanism

On-Site Dilution of Grinding Aid for Optimum Value Delivery

- STAREX NTR 10 is a soluble powder additive, which is:
 - Delivered to cement producers in concentrated inert powder form
 - Diluted by UNISOL staff at client site to form a 12.5% NTR solution (1 part of NTR 10 in 7 parts of water)
 - Added to Cement Mill Inlet in liquid form using dosing pumps
 - Recommended dosage: 0.05% – 0.1% of Cement Mill Feed
- STAREX NTR 10 has been developed to reduce delivery costs while enhancing ease of handling.

NTR 10: Advantages of On-Site Dilution

Reduced Freight Cost

- Transportation and handling of bulky liquid grinding aids is expensive
- Shipping NTR 10 in highly concentrated form ensures minimum possible freight costs.

Reduced Storage Issues

- Client is able to store sufficient additive for requirements in powder without having to manage liquid chemicals.
- When liquid dosing tank reaches reorder level client can mix the chemicals in the mixing tank and transfer to the storage tank.

Increased Ease of Operation

- Feeding into the cement mill inlet with dosing pumps ensures smooth and accurate dosing.
- Handling of concentrate powder in 25 KG PP bags is easier than bulky liquid drums

NTR 10: Value Delivery through High Level of Involvement

Mixing Tank and Feeding System

- UNISOL will set up a dedicated mixing and feeding plant at the customer's site.
- The plant will comprise of a mixing tank mounted with agitator, a storage tank and dosing pump.
- Sufficient storage capacity will be provided on-site

Active Involvement of UNISOL in Mixing and Dosing

- UNISOL will deploy a team on a regular basis at the customer's site to ensure smooth handling, dilution and dosing processes.

Higher Leverage with the Customer

- Both the concentration as well as the dosage of the solution can be optimized by the cement producer through an optimization exercise with the assistance of UNISOL team.

NTR 10: Process Flow of On-site Dilution and Dosing

Delivered in Soluble Powder Form



Product is delivered to site in soluble powder form in 25 Kg polypropylene bags

Added to Mixing Tank



1 part of NTR is added to 7 parts of water to form a solution of 12.5% NTR concentration

Mixed Using Agitator



NTR is homogeneously dissolved in water using agitator mounted on top of a mixing tank

Transferred to Storage Tank



The solution is pumped to a storage tank

Dosed Using Pump



NTR solution is fed to the cement grinding mill at a dosage rate of 0.05-0.1 % of mill feed using a dosing pump.

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