

## ADVA<sup>®</sup> Cast 504

### High Early Strength Superplasticiser for Precast Concrete

#### Description

ADVA<sup>®</sup> Cast 504 is a high efficiency polycarboxylate based superplasticiser. It has been designed to impart extremely high workability to concrete, enabling large or difficult pours to be made with little or no vibration and to achieve high compressive early strengths as required by the precast industry. ADVA Cast 504 is an EO/PO polycarboxylate comb-polymer superplasticiser and conforms to

EN 934 - Part 2 and ASTM C494 - Type A, F.

ADVA Cast 504 Superplasticiser can produce concrete with high levels of workability at very low water/cement ratios for high early (12-24 hours) and final compressive strength. As a consequence, ADVA Cast 504 is ideal for use in all precast/pre-stressed structures where ultra-high range water reduction is desired for high early strength development and/or heat energy savings. In addition, ADVA Cast 504 improves the surface texture of precast concrete surfaces.

#### Technical specifications

**Appearance:** mid brown liquid.

**Specific Gravity:** 1.040 ± 0.02 kg/liter at 20°C

**Air entrainment:** 1% approx.

**Chloride content:** nil.

#### Compatibility with cements

ADVA Cast 504 can be used with all type of Portland Cements, including Sulphate Resisting Cements. It is also effective in concretes containing pulverised fuel ash or GGBFS.

For use with special cements we recommend that you consult Grace Construction Products.

#### Compatibility with other admixtures

ADVA Cast 504 is compatible for use in concrete containing other Grace Construction Products admixtures; however, it should not be pre-mixed with other admixtures.

The performance of the material may be affected by the presence of other chemicals and we would recommend that Grace be consulted in such circumstances.

#### Method of use

ADVA Cast 504 is supplied ready for use.

When producing high early strength concrete with reduced water content it is advisable to allow the cement, aggregates and water to mix for 20-30 seconds prior to the addition of the admixture.

After the addition of admixture, a further mixing cycle of at least 2 minutes would be beneficial to enable ADVA Cast 504 to fully disperse the mix components.

#### Addition rates

Range: 300ml-1000ml per 100kg cement (0.3%-1.0% [v/w] by weight of cement).

ADVA Cast 504 is a versatile, high performance product that benefits from a wide variety of applications.

As with most products of this type, the magnitude of the effect obtained with ADVA Cast 504 is governed by the quantity of product used and the specific nature of the concrete and its constituent materials.

It is necessary, therefore, to assess performance under plant conditions using site materials to determine optimum dosage and effect on both plastic and hardened concrete properties, such as cohesiveness, workability retention, set characteristics, early rate of strength gain, ultimate compressive strength and shrinkage when these are of consequence. As a guide to these trials, an addition level of 0.4 - 0.8% ADVA Cast 504 volume/weight of cement is recommended. For advice and assistance with your trials we would recommend that you consult Grace.

#### Advantages

- ADVA Cast 504 can be used to effect high range water reductions, leading to considerable increases in compressive strength. Impermeability and durability are correspondingly improved. In this application, near-neutral setting time is observed.
- Excellent concrete rheology and handling properties are maintained.
- High workability concrete can be obtained by incorporating ADVA Cast 504 into a concrete mix designed with a 50 mm slump.
- ADVA Cast 504 can be used to reduce energy requirements of external heat for accelerated curing.
- Allows use of Ordinary Portland Cement in place of Rapid Hardening Portland Cement.
- ADVA Cast 504 provides superior concrete surface finish characteristics with reduced surface defects.



## Effects of overdosing

The effects of over-dosing ADVA Cast 504 are a function of the degree of over-dose.

When producing high workability concrete, over-dosing will increase the level of workability and may induce the onset of segregation.

Depending on the extent of the over-dose, an increase in the setting time may also occur, especially in low temperatures and/or when employing sulphate resisting cement or cement replacement materials.

In any situation where over-dosing is suspected, a careful inspection of the concrete in its plastic state should be conducted.

Particular attention should be paid to consistency and cohesiveness, prior to a decision on the suitability of the concrete for the particular application in question.

## Dispensing

It is preferable that liquid admixtures for concrete should be introduced into the mixer by means of automatic dispensing equipment.

Such equipment is available from Grace and details will be supplied on request.

## Packaging

ADVA Cast 504 is supplied in 205 litre, non-returnable containers.

Alternatively, bulk deliveries can be arranged.

## Storage

ADVA Cast 504 should preferably be stored protected from frost. If the product does become frozen, it should be carefully mixed after thawing out to restore it to its normal state.

**Storage life:** in manufacturers drums, 12 months from date of manufacture; bulk: 12 months from date of delivery.

## Technical service

The Technical Department of Grace Construction Products is available to assist you in the correct use of our products.

## Health and Safety

ADVA Cast 504 is formulated from chemicals that present no fire or health hazards.

If, however, it is spilt the floor will be made slippery and should be washed down immediately with cold water.

For further information see ADVA Cast 504 Material Safety Data Sheet, or consult Grace Construction Products.

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