



## Product information

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### Denka CSA#20

#### Expansive additive for reduced shrinkage of hydraulic binders

#### Description

Denka CSA#20 is a Calcium-Sulfo-Aluminate (CSA) cement produced from a special clinker and milled to the particle size of cement. It was developed to reduce and compensate the hydraulic shrinkage of cement-based construction products.

In Japan this technology has been used successfully for over 40 years to chemically pre-stress concrete. In Europe the shrinkage compensation of Denka CSA#20 is used mainly in the formulation of different mortars.

#### Chemical composition (M.-%, approx.)

CaO	50 – 54
Al <sub>2</sub> O <sub>3</sub>	12 – 15
SO <sub>3</sub>	27 – 31
Cl	< 0,05

#### Physical properties (approx.)

Appearance	off-white, easy handling and flowing powder
Specific density	ca. 2,86 g/cm <sup>3</sup>
Bulk density	0,8 – 0,9 g/cm <sup>3</sup>
Specific surface (Blaine)	ca. 3700 cm <sup>2</sup> /g

#### Function

The mineral parts of Denka CSA#20 react with water producing fine needles of ettringite, giving a volume increase (expansion). This structure contains a pre-stress that will counteract the shrinkage by chemical hydration and the shrinkage due to the drying of the mortar, resulting in a controlled shrinkage.

#### Advantages

Depending on the addition level:

- reduced shrinkage
- increased impermeability to water
- increased mechanical strength
- chemical pre-stressing
- ease of handling



## Applications

Denka CSA#20 can be used in a variety of applications, such as:

- repair mortars
- bedding mortars and self-levelling compounds
- surface coating mortars for concrete
- industrial flooring
- high density mortars and concrete

## Addition level

Typical addition levels are 3 - 5 % on the cement weight. Expansion and reduced shrinkage are proportional to the addition level. It is highly recommended that laboratory trials should first be carried out to determine the correct addition level of Denka CSA#20.

Too high an addition level of Denka CSA#20 will result in extremely strong expansion, with reduced strength, high porosity and reduced frost resistance.

## Compatibility

Denka CSA#20 is compatible with Portland cement and hydraulic binders, including ground blast furnace slag, fly ash and hydrated lime.

## Health & Safety

Denka CSA#20 is alkaline and should be handled like other cements. Avoid contact with skin or eyes and wear protective gloves and goggles. In case of contact with eye flush immediately with plenty of water. Refer to Material Safety Data Sheet for full details.

## Storage

Denka CSA#20 is very sensitive to moisture and should be stored in cool, dry conditions.

## Packaging

Packed in bags of 25 kg or in big bags of 1000kg.

The above information and recommendations are based upon our experience and are offered merely for advice. They do not absolve the consumer from making his own tests. Responsibility for damage arising from the use of our products cannot be derived from the recommendations given. The observance of any intellectual property rights of third parties is the responsibility of the consumer in each case.

MDS Denka CSA#20 2019