Product information

DENKA CSA#20

Expansive additive
for reduced shrinkage of cement based products.

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 prestress concrete. In Europe the shrinkage compensation of DENKA CSA#20 is used mainly in the formulation of different mortars.

Chemical composition (M.-%)

SiO_2	1 – 2 %	CaO	50 – 54 %	SO_3	27 – 31 %
Al_2O_3	12 – 15 %	MgO	0.4 – 2.3 %	Cl	< 0.05 %
Fe_2O_3	0.3 – 0.8 %	Na_2O-equi.	< 0.75 %	LOI	< 3 %

Physical properties

Appearance		off-white, easy handling and flowing powder	
Specific density		ca. 2.86	g/cm^3
Specific surface (Blaine)		ca. 3700	cm^2/g
Apparent density	loose	0.8 – 0.9	g/cm^3
	tapped	ca. 1.5	g/cm^3

Function

The mineral parts of DENKA CSA#20 react with water producing fine needles of ettringite. Together with the hardening phase of the cement these will grow together to larger crystals, 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 reduced shrinkage.

Advantages

Depending on the addition level:

- reduced shrinkage
- increased impermeability to water
- increased mechanical strength
- chemical pre-stressing
- good adhesion to substrates and reinforcement

and 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
- flooring
- high density mortars and concrete

Addition level

Typical addition levels are 8 – 15 % 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 is very sensitive to moisture and should be stored in cool, dry conditions.

Packaging

Packed in 25 kg paper bags – with 3 layers and inner PE liner - 40 bags per pallet
= 1000 kg on a one-way pallet, size 90x100x15 cm.
Or packed in big bags of 1000kg (on request)

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