

# DENKA BEFORM

Cementitious Quick Hardening Additive

## Description

DENKA BEFORM is a quick-hardening cement admixture that has been developed based with the special cementitious admixture technologies that DENKA has cultivated over the years.

## Advantage

- The product can adjust the handling time between about 20 minutes and 2 hours.  
Its handling time can be adjusted with general setting modifiers such as tartaric acid as well as the dedicated setting modifier DENKA Setter D-300.
- Excellent in obtaining initial strength.  
10 to 30MPa strength can be obtained after 6 hours of agent aging.
- Excellent in crack resistance.  
Due to its expansion characteristics, self-shrinkage and drying shrinkage can be reduced.

## Usage

- Quick-hardening grout
- Self-leveling material
- Quick-hardening repairing material
- Decorative mortar
- Instant demolding of small products, etc.

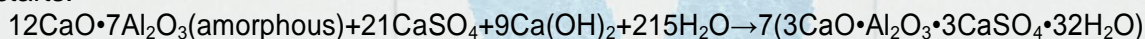


## General Properties

- Packing: 25kg/bag
- Appearance: Greyish white powder
- Specific weight: 2.92
- Blaine specific surface area: 6000cm<sup>2</sup>/g
- Additive amount:

## Theoretical Formula of Chemical Reactions

Initial strength is obtained by void filling with ettringite ( $3\text{CaO}\cdot\text{Al}_2\text{O}_3\cdot3\text{CaSO}_4\cdot32\text{H}_2\text{O}$ ) created from the hydration reaction of amorphous calcium aluminates before the hydration reaction of the cement starts.



# Denka

<http://www.denka.co.jp/eng/>

## Physical Properties of Mortar

General properties - Example data-

- Quick hardening additive (QHA): DENKA BEFORM, other CAC (Calcium aluminate cement)
- Retarding agent: DENKA SETTER D-300 for BEFORM, Tartaric acid for CAC
- Sand: ISO sand
- Water: Tap water
- Base mix proportion; Binder/Sand = 1.0/1.5, Water/Binder = 0.30
- Length change; uniaxial confined method, cured in the water at 20°C after 1 day

OPC	Binder		Retarding agent (QHAX%)	Flow with 25 drops (mm)	Handling time(min)	Compressive strength (MPa)		
	QHA Product	Ratio				3 hours	6 hours	1 day
100	—	—	—	153	300	—	—	32.0
90	BEFORM	10	0.26* <sup>1</sup>	209	55	7.1	15.4	35.9
85		15	0.26* <sup>1</sup>	212	56	11.4	24.4	45.4
75		25	0.28* <sup>1</sup>	215	68	16.3	37.5	73.2
80	CAC	20	0.11* <sup>2</sup>	187	29	6.8	8.3	11.8
20		80	0.27* <sup>2</sup>	162	30	5.1	18.4	55.2
10		90	0.13* <sup>2</sup>	168	30	19.6	43.5	59.5

\*1: DENKA SETTER D-300 \*2: Tartaric acid

## Limitation of liability

- The information contained in this document is general advice for potential customers of DENKA about the basic properties and characteristics of various DENKA products (hereafter referred to as "the Product Information"). DENKA makes no warranty or representation as to the entire accuracy or completeness of the Product Information in this brochure.
- Nothing in this brochure will be deemed to create any express or implied warranty or obligation of DENKA with respect to the Product Information or its use, including, but not limited to, any warranty of merchantability, fitness for a particular purpose, or infringement of any intellectual property rights.
- Each user of the Product Information and DENKA products assumes their own responsibility to properly determine the manner and suitability of use of the Product Information and DENKA products in its own operations. The user should exercise proper care in considering the Material Safety Data Sheet, Product Information and any other technical information provided by DENKA, including descriptions of conditions of use, warnings, and cautionary instructions.
- DENKA reserves the right to change the Product Information from time to time at its discretion and without notice.

**Denka**  
<http://www.denka.co.jp/eng/>

**DENKI KAGAKU KOGYO K.K.**  
 Special Cement Additives Department  
 TEL: +81-3-3507-5465 FAX: +81-3-3507-5085

**-China-**  
**DENKA INFRASTRUCTURE TECHNOLOGIES SHANGHAI**  
 ROOM 2807, NEW HONGQIAO CENTER BLDG  
 NO.83 LOUSHANGUAN RD, CHANG NING AREA, SHANGHAI CHINA  
 TEL: +86-21-6236-5510  
 FAX: +86-21-6236-5505

**-Asia-**  
**DENKA INFRASTRUCTURE TECHNOLOGIES PTE LTD**  
 4 SHENTON WAY #29-02 SGX CENTRE 2 SINGAPORE 068807  
 TEL:+65-6216-0580  
 FAX:+65-6224-3840

**-Europe-**  
**DENKA CHEMICALS GMBH**  
 WEHRHAHN-CENTER, CANTADOR STR.3, DUSSELDORF, GERMANY  
 TEL: +49-211-130990  
 FAX: +49-211-329942