

# DENKA Σ80N

Additive for Super High-Strength Concrete

## Description

**DENKA Σ80N** is a special cement additive that allows for the manufacture of high-strength concrete (60~90N/mm<sup>2</sup>) even at low cement quantities.

## Features

- Suitable for precast products used in bridges and high-rise buildings
- Improves abrasion-resistance to concrete (suitable in dam aprons)
- Mitigates cracking caused by heat of hydration
- Increases alkali-resistance (especially where cement volume is high and alkali content exceeds allowable limits)

## Applications

- Standard piles for high-rise buildings
- Tunnel inverters
- Bridge foundation slabs
- Dam aprons
- Wall balustrades

## Packaging

- 15kg paper bags
- 800kg bulk bags

## Shelf Life

- 8 months from production date
- Determine the production date by reference to the lot number. A lot number of "1AXXX" corresponds to production in Jan 2001; "2BXXX" to Feb 2002 and so on.

## Technical Information

- Density: 2.55g/cm<sup>3</sup>
- Alkali content: 1.0%
- Chlorine content: 0.01%

## Typical Mix Proportions

Mix no.	Slump (cm)	Air Content (%)	Water-binder <sup>1</sup> ratio (%)	Mix proportion (kg/m <sup>3</sup> )					Air-entraining water reducer <sup>3</sup> (kg/m <sup>3</sup> )
				Water	Cement	Σ80N <sup>2</sup>	Sand	Agg.	
A	12	4.5	35.6	175	492	-	690	960	4.9
B			32.3	175	492	49	638	960	5.1
C			35.6	145	370	37	790	1000	4.5
D	23		35.6	145	370	37	790	1000	5.3

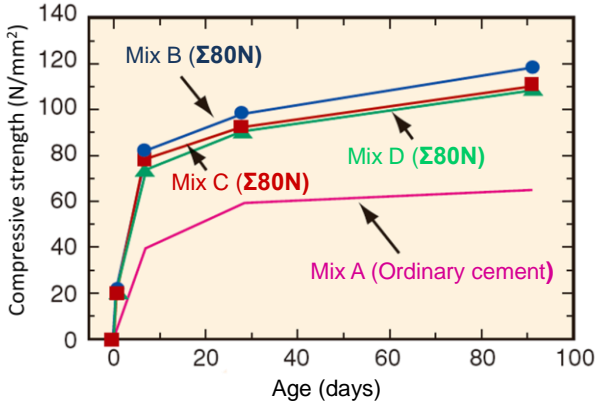
<sup>1</sup>The amount of binder is the sum total amount of cement and DENKA Σ80N.

<sup>2</sup>DENKA Σ80N is used in replacement of sand (10%)

<sup>3</sup>The use of an air-entraining water reducer is necessary.

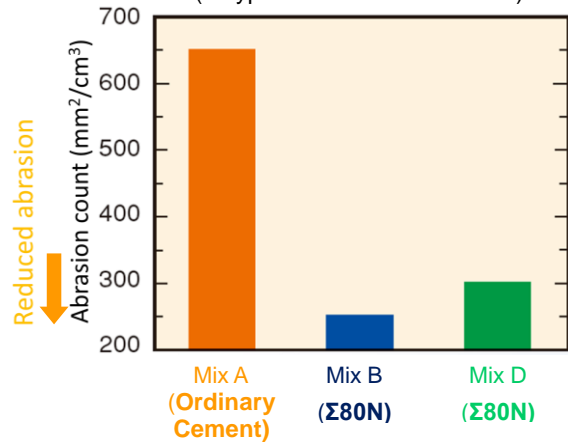
## Physical Properties

Arbitrary compressive strength measurement  
(in accordance to JIS A 1108:200)



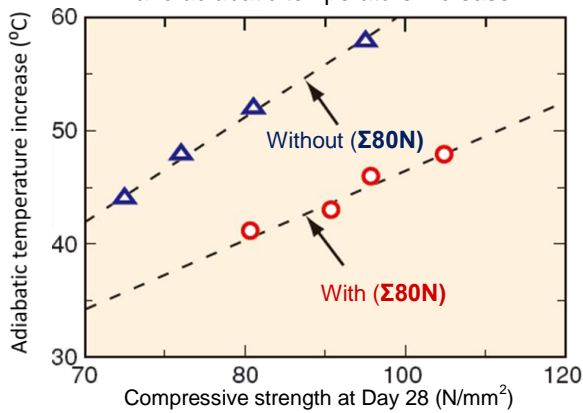
With Denka Σ80N, high strength can be achieved at reduced cement amounts.

Arbitrary abrasion count measurement  
(O-type abrasion test machine)



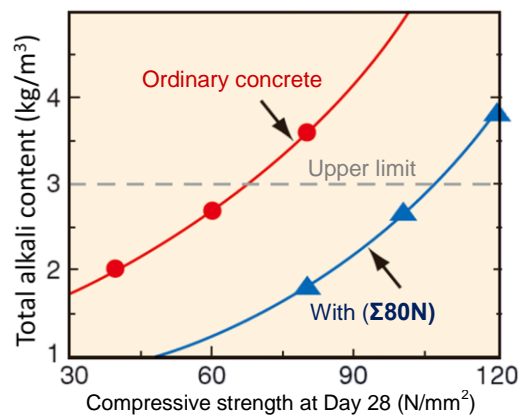
With Denka Σ80N, abrasion resistance can be achieved at reduced cement amounts.

Relationship between compressive strength and adiabatic temperature increase



At the same compressive strength, heat released is reduced by 13°C with Denka Σ80N.

Arbitrary alkali content measurement



Concrete using Denka Σ80N have lowered alkali content at the same compressive strength.

## Handling Precautions

- Refer to the Safety Data Sheet (SDS) before use.
- If the product comes into skin or eye contact, wash copiously with water and seek further medical attention. Product is highly alkaline in nature when in contact with water and may cause irritation or inflammation to the skin, eyes and respiratory system.
- Wear protective gear (goggles, mask, gloves, and rubber boots) while handling the product. Do not dispose of the product in drains.
- Once opened, the product should be used up completely. Otherwise, reseal for storage.
- The product should be stored in a dry area, indoors, and out of direct sunlight.
- For further information, please contact DENKA.

## Limitation of Liability

The information contained in this brochure provides 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 the conditions of use, warnings, and other cautionary instructions. DENKA reserves the right to change the Product Information from time to time at its discretion and without notice.

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