



General Guide to Microsilica

Industrial & Commercial Floors

Chemical Resistant Concrete

High Strength Concrete

Waterproof Concrete

Marine Concrete

Shotcrete

A Natural Pozzolan for High
Performance Concrete

Microsilica 600

MICROSILICA 600—A Natural Pozzolan

Microsilica 600 is a highly reactive pozzolan which is processed from a natural white geosilica deposit found in New Zealand's Rotorua district. Like silica fume it is a very fine amorphous silica from the microsilica family of products. When mixed with Portland cement, Microsilica 600 facilitates high performance concrete by achieving:

- Very low chloride ion diffusion
- Increased compressive strength
- Reduced water permeability
- Improved sulphate resistance
- Improved abrasion resistance
- Improved resistance to chemical attack
- Improved stability in geothermal environments
- Reduced efflorescence

In applications requiring long serviceability in harsh environments or where structural performance beyond current limitations are pre-requisites, Microsilica 600 should be specified by the engineer or used by the contractor to economically satisfy the performance requirements.

However, it is well recognised that International Standards (including New Zealand's Concrete Design Standard NZ3101:1995) do not generally cover aggressive chemicals and marine exposure adequately and that Standards lag behind state of the art design. Microsilica NZ fills the gap by providing the latest design for life durability guidance.

Microsilica 600 Origins

The natural amorphous silica deposits are hosted in hydrothermally altered rhyolitic rocks (Mamaku Ignimbrites and Rotoiti Breccia). The pumice Breccia is about 60,000 years old and the underlying Ignimbrite, 220,000 years old. The deposit has been extensively altered with widespread silicification.



Figure 1. Raw material deposit of amorphous silica. Resource exceeds 1 million tonnes.

Microsilica 600 Compliance with Standards

The NZ Standard NZS 3122:1995 -Specification for Portland and Blended Cements, classifies **Microsilica 600** as "silica fume". Microsilica 600 complies in all respects to this Standard.

Microsilica 600 meets the performance requirements of the Australian Standard AS358.2, silica fume and the Canadian Standard, Can/CSA-A23.5M86 for Type U Silica Fume.

Property	Result	Allowable	Test Method
Sulphuric Anhydride (SO ₃)	0.2%	Max 1.0%	CSA CAN3-AS
Loss on Ignition (LOI)	5.4%	Max 6.0%	ASTM C311.
Silica (SiO ₂)	87.9%	Min 85%	ASTM CI 14
Accelerated pozzolanic activity index	119%	Min 85%	ASTM C31 1
Soundness	<0.1%	Max 0.2%	ASTM C311
Fineness retained on 45 Micron sieve	4.8%	Max 10%	CSA CAN3-A5

Table 1. The Canadian Standard for silica fume is often used in specifications

