

MICROSILICA®

Amorphous Silica Fume for Concrete



MICROSILICA® is a fine amorphous silicon dioxide material originating from electric-arc-furnace operations. It is used as a highly reactive pozzolanic addition to improve selected fresh and hardened properties of concrete.

Applications

- High-strength and ultra-high-performance concrete
- Dams, bridges, canals, tanks and low-permeability structures
- Airport floors and concrete exposed to heavy traffic
- Concrete in aggressive service environments
- Cementitious mixtures requiring improved cohesion and reduced bleeding

Reference Standard

ASTM C1240 is an industry specification for silica fume used in cementitious mixtures. Request current test documentation where compliance is specified.

Advantages / Benefits

- Supports low permeability and dense concrete
- Supports durability against corrosion and sulfate exposure
- Improves cohesion and matrix bond
- Can improve abrasion and impact resistance
- Helps reduce bleeding and segregation
- May reduce slump and change setting behaviour

Guideline for Use

Disperse thoroughly using adequate mixing energy. Pre-mixing with part of the concrete water is preferred where practical because it improves distribution, reduces agglomeration and limits airborne dust. Account for all dispersion water in total mixing water.

Dosage

Recommended range: 3-15% by weight of cement, used as an equal-mass replacement. Select the final level by mix design, exposure requirements and trials.

Addition Methods

- Blend with dry constituents using sufficient mixing energy
- Add to a production or truck mixer and extend mixing for full dispersion
- Pre-disperse in part of the mixing water for improved distribution

Compatibility

The increased surface area can raise water demand and change admixture response. Rebalance water reducer, total water and mixing time using the actual materials.

Trial Requirements

- Workability, air content, bleeding and finishing
- Compressive strength and required durability indicators
- Permeability, shrinkage and curing under project conditions
- Uniform dispersion with no agglomerates

Limitations

Supplied form, bulk density and chemical composition can vary by grade. Confirm the ordered form and obtain current SiO₂, moisture, loss-on-ignition and activity data before a project submittal.

Product Information

Chemical Base	Predominantly amorphous silicon dioxide
Physical State	Fine powder; confirm ordered supply form
Function	Reactive pozzolan and microfiller for cementitious systems
Available Forms	Undensified, densified, pelletized or slurry; confirm order
Packaging / Supply	Bag, big bag or bulk
Storage Condition	Closed, dry, under cover and protected from wind and moisture
Recommended Dosage	3-15% by weight of cement as equal-mass replacement
SiO ₂ / Density / Fineness	Refer to the current grade specification and batch CoA

Storage

Store dry and under cover in closed, undamaged packaging. Protect from moisture, contamination and wind. Use controlled transfer and dust collection for bulk handling. Keep each delivery identifiable for inspection and quality control.

Basis of Data

Technical information in this sheet is based on ALPAKA product information and general industry references. Values described as approximate are not release specifications. Actual performance may vary with raw materials, formulation, temperature, process and site conditions. Verify critical properties on the current batch documentation.

Precautions

Avoid generating and breathing airborne dust. Use local exhaust ventilation, enclosed transfer, safety glasses, gloves and suitable respiratory protection in accordance with the risk assessment and current SDS. Do not assume crystalline-silica content without a current test report.

Fire / Cleaning and Disposal

Follow the current SDS and use an extinguishing medium suitable for the surrounding fire. Avoid creating dust clouds. Recover spilled powder with dust-controlled equipment and dispose or reuse only after confirming it is clean and suitable.

Additional Information

For current specifications, application support and trial guidance, contact ALPAKA Chemical Group:
info@alpakagroup.com | +98 933 202 3003 |
www.alpakagroup.com.

Important Notes

The information and recommendations in this Product Data Sheet are given in good faith and reflect ALPAKA's current knowledge of the product when correctly stored, handled and used under normal conditions. Materials, formulations, substrates, production methods and site conditions vary; therefore no warranty of merchantability or fitness for a particular purpose can be inferred from this document. The user is responsible for confirming suitability through representative trials and for complying with applicable laws, standards, approvals and third-party rights. The current commercial specification, batch Certificate of Analysis and product-specific Safety Data Sheet take precedence over this document. Refer to the most recent issue for the product concerned.