广西徽铖环保材料有限公司
GuangXi Microsilica Co., Ltd
ADVANCED BUILDING RESOURCES

THE NEW STANDARD

IN CEMENTITIOUS & CONSTRUCTION MATERIALS

Which offers you all kinds of services you are looking for under Cementitious and Construction Materials.
With a comprehensive product range and high customer satisfaction! We have several Cementitious and Construction Materials & Products.

- We are proud of the sales of customized building materials and different products to more than 15 countries. As GMC, we aim to add value by prioritizing customer satisfaction with our pre-sales and after-sales services!
- "We invite you to explore our comprehensive product portfolio. Discover GMC quality solutions designed to meet your project needs globally, providing both economic and operational advantages for your workforce."

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Company Profile:

GuangXi Microsilica Co., Ltd (GMC) is an established force in the Chinese cementitious and construction materials market. As a sister company of **Shanghai Silicon Fume Co., Ltd**, a trusted brand for over 15 years, GMC has been successfully operating under its current structure. It is now preparing to launch into the global market with its highly sought-after, premium-quality products.

With a robust product portfolio, GMC aims to unify all requirements of the construction market under a single brand. The company provides its customers with a wide array of unique and innovative offerings, ranging from basic cementitious and construction materials to customised products and comprehensive system solutions across various product groups.

GMC's primary business focus is defined by its motto, “The New Standard in Cementitious and Construction Materials.” The company is dedicated to providing top-quality service to over 45 customers in more than 15 countries by:

Responding quickly and effectively to customer demands.

Our Vision:

To become a globally eminent and highly valued brand, recognized for providing the most efficient industrial solutions.

Our Mission:

To understand and anticipate customer needs, deliver quick, reliable, high-quality, and environmentally friendly service, and establish the

Microsilica

Also known as silica fume, is a fine powder consisting of amorphous silicon dioxide (SiO_2) that is a by-product of silicon and ferrosilicon alloy production. It is widely used as a mineral admixture in concrete, where its sub-micron, spherical particles fill voids, enhance packing density, and react with calcium hydroxide to form additional calcium silicate hydrate (CSH) phases. This pozzolanic reaction significantly increases concrete's strength, durability, and resistance to chemical attack.

Composition and Function in Concrete:

Composition:

- Primary Constituent: Silicon Dioxide (SiO_2).
- Content: Typically ranges from 85% to 98% by mass.
- Physical Characteristics: The particles are spherical 6and extremely fine, with an average diameter of about 0.15 micrometers (150 nm), making them about 100 times smaller than average cement particles. This gives it a very high specific surface area, which contributes to its high reactivity.

Function:

Microsilica improves concrete performance through two main mechanisms:

- Pozzolanic Reaction: As a powerful pozzolanic material, Microsilica reacts chemically with calcium hydroxide, a by-product of cement hydration.
This reaction forms additional Calcium Silicate Hydrate (C-S-H) gel, significantly enhancing the concrete's strength and density.
- Filler Effect (Micro-Filler): Due to its microscopic size, Microsilica fills tiny voids between cement particles and the aggregate interface, resulting in a denser, more compact, and less porous cement paste. This action also improves the bond by eliminating the weak Interfacial Transition Zone (ITZ).

Applications and Benefits:

Microsilica is critical for producing High-Performance Concrete (HPC), and has various industrial uses.

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Construction & Cementitious Materials

Application & Benefits:

- High-Performance Concrete (HPC): Very low permeability to water and chloride intrusion 18, extremely high electrical resistivity (mitigating corrosion), and superior resistance to chemical attack
- High-Strength Concrete: Achieves compressive strengths up to 20,000 psi (140 MPa), high modulus of elasticity, and high early strengths for fast-track construction.
- Shotcrete: Reduces rebound loss, increases bonding strength, and realizes material cost savings.
- Cementitious Repair: Used as a component in pre-packaged bagged products for concrete, mortar, or grout repair.
- Wallboard: Used in commercial gypsum and concrete wallboard products for increased performance and durability.

Specialized Industrial Uses:

Application & Benefits:

- Oil & Gas Well Grouting: Improves flow characteristics, dramatically decreases permeability (controlling gas migration), and contributes to lightweight grout systems.
- Refractory & Ceramics: Improves particle packing, enhances strength at high temperatures, and reduces permeability to avoid penetration by gas, slag, and metal.
- Fiber Cement: Increases bonding strength, decreases permeability to water intrusion, and increases compressive strength.
- Elastomers/Polymers: Used as a highly effective reinforcing filler in rubber or plastic.
- Agriculture: Used in the defluorination process for dicalcium phosphate production (used in animal feed).

Packing:

- Densified & packed in jumbo bags each of 1000 – 1500 kg.
- Bulk in silo trucks.

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GGBFS

Ground-granulated blast-furnace slag (GGBFS):

is produced by quenching molten iron slag—a byproduct of iron and steel manufacturing from a blast furnace in water to create a granular material. This product is then dried and ground into a fine powder.
Reduces embodied CO2 in concrete without compromising strength performance and reducing landfill waste. Improves early age strength and drying shrinkage.

Characteristics:

When added to concrete, GGBFS enhances several performance characteristics, including:

- Reducing heat of hydration in mass concrete pours.
- Lowering concrete permeability.
- Improving durability and resistance to aggressive environments.
- Resistant to sulfate attacks, chloride-related corrosion, and alkali-silica reaction
- One of the greenest construction materials that does not produce any waste
- Water demand lower by 3-5% compared to OPC

GGBS is mainly used as a partial replacement for cement in concrete. When added as an admixture, it acts as a stabilizing agent and improves the quality of the concrete. In the production of ready-mixed concrete, GGBS replaces a substantial portion of the Portland cement component, generally about 50% to 70%.

GGBFS conforms to the mandatory requirements of the relevant standards:
ASTM C989 / BSEN 15167-1 / UNI EN 197-1

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High Performance Slag:

Cement High Performance (HP) Slag is a supplementary cementitious material (SCM) that enables reduced CO2 in concrete through increased replacement of GP Cement, without compromising strength performance.

Slag is a premium GGBFS (Ground Granulated Blast Furnace Slag) that fully complies with the requirements for GGBFS Supplementary cementitious materials for use with General Purpose and blended cement.

In addition to the benefits of GGBS, such as reduced heat of hydration, reduced concrete permeability, and enhanced durability, Slag also provides low drying shrinkage and high early age strength. Slag is suitable for premixed and pre-cast concrete applications.

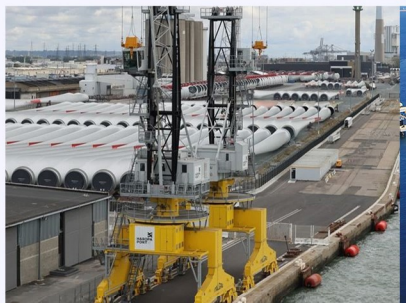
- Enables a significant reduction of embodied CO2 in concrete through increased replacement of Cement
- Reduces waste going to landfill
- High early strength development compared with standard slag
- Potential efflorescence reduction
- Lower drying shrinkage
- Enhanced durability and workability.

Applications:

GGBS is used to create durable concrete structures in combination with Ordinary Portland Cement (OPC) and other pozzolanic materials. While widely adopted in Europe, GGBS is increasingly used in the United States and Asia due to its superior durability, which can extend the lifespan of buildings from fifty to one hundred years. It is primarily utilized in high-performance concrete production, marine and wastewater infrastructure, and mass concrete pours. Design and development of high-quality cement paste/mortar and concrete. Durable concrete structures constructed in combination with OPC and/or other pozzolanic materials.

Packing:

- Packed in big bags each of 1000 – 1500 kg.
- Bulk in silo trucks.



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MICROSILICA ANALYSIS REPORT

COA SSF-97U / Standard: ASTM C 1240

Items	Unit	Test Results	Explain
SiO2	%	98.34	ASTM 1240-15
H2O (Moisture)	%	0.30	ASTM 1240-15
Loss on Ignition (L.O.I)	%	0.50	ASTM 1240-15
Accelerated Pozzolanic Strength Activity Index (7 days)	%	125	ASTM 1240-15
Specific Surface Area m2/g		2.2	ASTM 1240-15
Percent Retained On 45μm %	%	3	ASTM 1240-15
Bulk Density kg/m3		320	ASTM 1240-15
PH Value		8.2	ASTM 1240-15
Conclusion		Complies with the requirements of **ASTM C 1240** standard	

Grade: 92D

Chemical Component:			
Item	**Unit**	**Specification**	**Typical Value**
SiO_2	%	92min	93.6
Cl	%	0.1max	0.010
Al_2O_3	%	1.0max	0.41
Fe_2O_3	%	1.0max	0.32
K_2O	%	1.0max	0.68
MaO	%	1.0max	0.41
C	%	3.0max	1.86
H_2O	%	3.0max	0.96
Physical Data:			
Loss on Ignition	%	6max	2.4
Coarse particles > 45um	%	10.0max	2.8
PH- Value	%	6-8	7
Bulk Density: kg/m^3	%	500-700	680

MICROSILICA ANALYSIS REPORT

COA SSF-95U / Standard: ASTM C 1240

Items	Unit	Test Results	Explain
SiO2	%	96.65	ASTM 1240-15
H2O (Moisture)	%	0.20	ASTM 1240-15
Loss on Ignition (L.O.I)	%	0.97	ASTM 1240-15
Fe2O3		0.058	ASTM 1240-15
CaO		0.72	ASTM 1240-15
MgO		0.35	ASTM 1240-15
K2O		0.38	ASTM 1240-15
Na2O		0.33	ASTM 1240-15
TiO2		0.008	ASTM 1240-15
Conclusion		Complies with the requirements of **ASTM C 1240** standard	

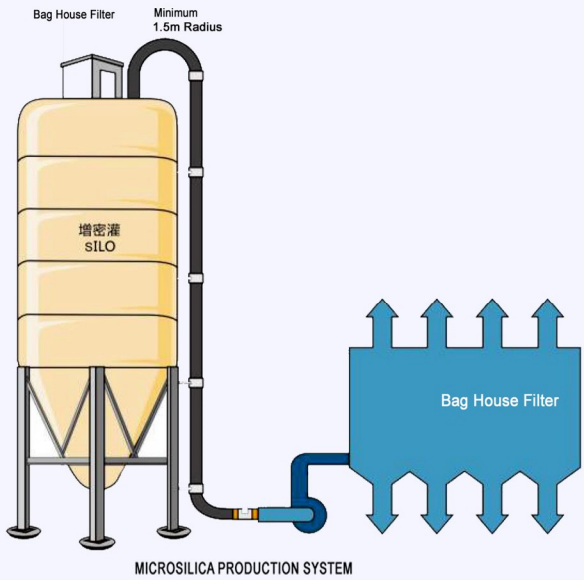
How is Micro Silica Produced?:

Microsilica is a mineral composed of ultrafine, amorphous glassy spheres of Silicon Dioxide (SiO2), which is a byproduct of producing Silicon metal or Ferrosilicon alloys. The individual particles are extremely small, approximately 1/100th the size of an average cement grain.

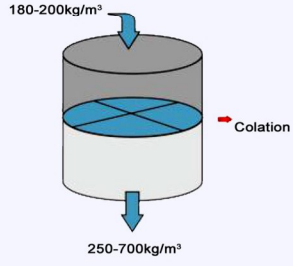
Silicon metal and alloys are produced in electric furnaces. The raw materials are quartz, coal, and woodchips. The Microsilica is formed when SiO2 gas, given off as the quartz reduces, mixes with oxygen in the upper parts of the furnace. Here, the SiO2 is oxidised to SiO2, condensing into the pure spherical particles of microsilica that form the major part of the smoke or fume from the furnace.

The fumes from the furnace are drawn through cooling pipes, through a pre-collector and cyclone, to remove coarse particles that may have been carried over from the furnace-and then blown into specially designed baghouse filters where they are collected.

The quality of the raw materials and the operation of the furnaces determine the purity of the microsilica. Although the material is collected as a very fine powder with a bulk density in the region of 200kg/m3, it can be processed to densify it, making the B/D around 250-700kg/m3.



MICROSILICA PRODUCTION SYSTEM



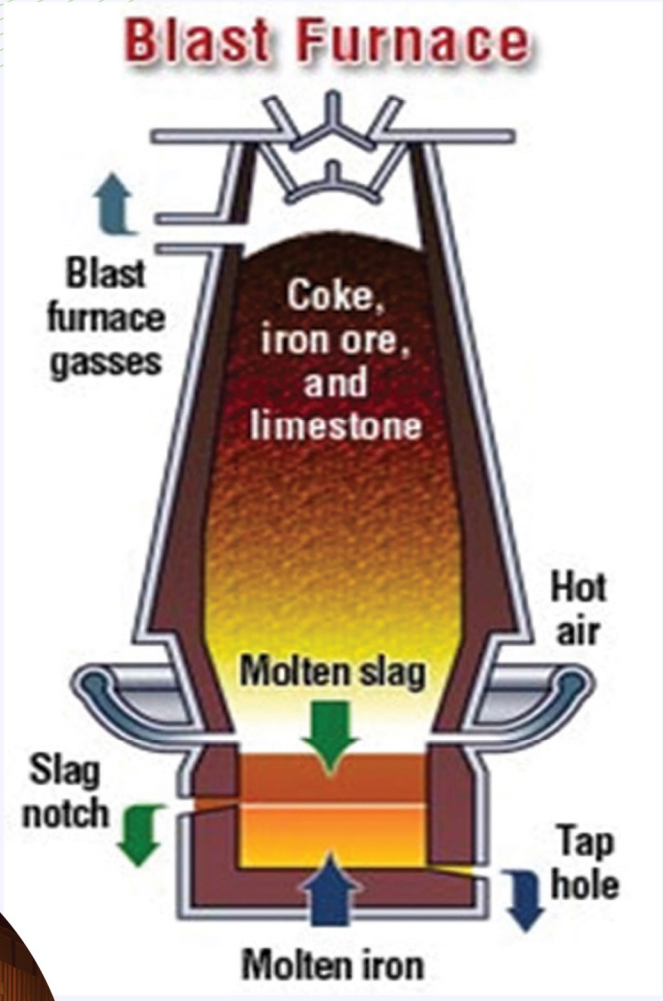
DENSITY PROCESS

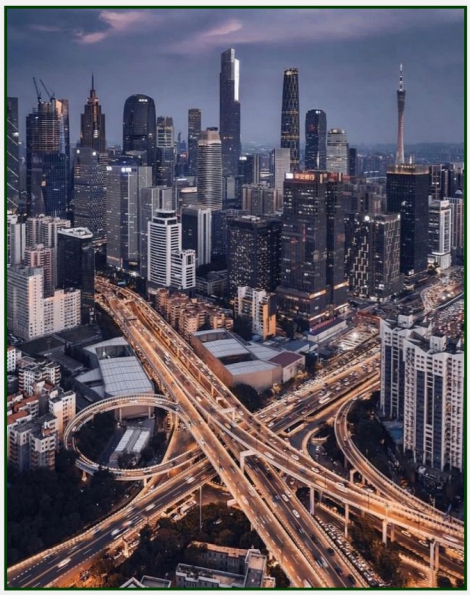
GGBFS Analysis Report

Ground Granulated Blast Furnace Slag [GGBFS] Standard BSEN 15167

Test Items	Unit	Result	Standard No.
CaO	%	44.02	BS EN 196-2:2013(E)
MgO	%	5.66	BS EN 196-2:2013(E)
SiO_2	%	36.55	BS EN 196-2:2013(E)
Al_2O_3	%	11.78	BS EN 196-2:2013(E)
TiO_2	%	0.54	BS EN 196-2:2013(E)
MnO	%	0.23	BS EN 196-2:2013(E)
SO_3	%	0.07	BS EN 196-2:2013(E)
LOI	%	0. 5	BS EN 196-2:2013(E)
Cl	%	0.019	BS EN 196-2:2013(E)
Bulk Density	g/cm3	2.85	BS EN 196-2:2013(E)
Insoluble Residue	%	0.23	BS EN 196-2:2013(E)
H2O	%	0.06	BS EN 15167-1:2006
Specific Surface	cm2/g	4340	BS EN 196-6:2018
Activity Index (28 days)	%	96	BS EN 15167-1:2008
Activity Index (7 days)	%	102	BS EN 15167-1:2008
Initial Setting Time Ratio	%	103	BS EN 15167-1:2008
Flow Ratio	%	108	GB/T 18046-2017
Glass	%	98.7	GB/T 203-2008
Radioactive Specific Activity (K-40)	Bq/Kg	425.7	GB 6566-2010
Radioactive Specific Activity (Ra-226)	Bq/Kg	100.1	GB 6566-2010
Radioactive Specific Activity (Th-323)	Bq/Kg	66.0	GB 6566-2010
Internal exposure index IRa	/	0.5	GB 6566-2010
External exposure index Iy	/	0.6	GB 6566-2010

Ground Granulated Blast Furnace Slag [GGBFS] Standard BSEN 15167





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