CCEWOOL Thermomax Inc.
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CCEWOOL® Monolithic Spray-Applied Insulation System

Temperature Grades: 1200°C (2192°F), 1400°C (2550°F), 1600°C (2912°F)

CCEWOOL® Fabrication-Grade Monolithic Spray-Applied Insulation System is a high-performance wet spray-applied insulation material developed for high-temperature furnace lining protection, surface reinforcement, and localized repair applications. The product is mainly composed of in-house produced high-purity high-temperature insulation fibers and selected refractory fillers, combined with an inorganic bonding system. It can be applied by mechanical spraying or manual troweling onto the surfaces of brick linings, castable linings, fiber module linings, and other refractory insulation linings.

In industries such as petrochemical, metallurgy, ceramics, and non-ferrous metals, some furnaces operate for long periods under combined conditions of high temperature, high gas velocity, frequent thermal shock, and localized chemical attack. Conventional hot-face materials such as refractory bricks, ceramic fiber boards, and fiber modules may develop cracking, spalling, erosion damage, or localized flame penetration after long-term service. These issues can shorten lining service life, increase shutdown frequency, and raise maintenance costs.

CCEWOOL® Fabrication-Grade Monolithic Spray-Applied Insulation System is developed specifically for these demanding service conditions. After application, the material forms a continuous and dense protective layer on the hot-face surface of the lining. After drying, it forms a hard and tough surface layer. When the service temperature reaches above 1100°C (2012°F), a stronger bond forms between the fibers and fillers, further improving the surface strength, integrity, and high-temperature stability of the lining, while providing effective protection for the backup materials underneath.

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This system is suitable for both large-area spray application and localized repair work, including crack filling, local damage repair, hot-face protection enhancement, and energy-saving retrofit projects. It provides an integrated high-temperature insulation solution combining protection, repair, and hot-face reinforcement.

Characteristics:

Excellent Resistance to High-Velocity Gas Erosion;

Good High-Temperature Stability;

Outstanding Crack Resistance and Thermal Shock Resistance;

Good Resistance to Erosion and Chemical Attack;

High Surface Hardness and Wear Resistance;

Strong Application Flexibility;

Hot Repair Capability.

Applications:

CCEWOOL® Fabrication-Grade Monolithic Spray-Applied Insulation System is mainly used for hot-face protection, lining surface reinforcement, localized damage repair, and monolithic spray-applied insulation in complex structural areas of high-temperature equipment. It is especially suitable for irregular shapes, curved surfaces, and high-gas-velocity conditions where conventional preformed materials are difficult to fully cover.

Hot-Face Lining Protection and Surface Reinforcement

Suitable for hot-face surface protection of brick linings, castable linings, fiber module linings, and composite lining systems. It helps improve lining surface integrity and enhances resistance to gas erosion, surface burn-off, and cracking.

Typical equipment includes:

- Reheating furnaces
- Heating furnaces
- Cracking furnaces / pyrolysis furnaces
- Reformers

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- Hydrogen reformers
- Coke oven doors
- Forging furnaces
- Pelletizing furnaces
- Roller kilns
- Tunnel kilns
- Intermittent kilns

Spray-Applied Insulation for Irregular and Complex Areas

Suitable for monolithic spray application in air ducts, flues, chimneys, vessel linings, reactors, and other irregular spaces. It forms a continuous insulation layer and reduces heat loss through joints.

Typical applications include:

- Reaction vessels
- Ducts and chimneys
- Hot air generators
- Process heaters
- High-temperature areas related to boilers

Protection for High-Gas-Velocity and Flame-Impingement Areas

Suitable for hot-face areas exposed to long-term high-velocity hot gas flow, flame impingement, or localized surface burn-off. It helps extend lining service life and reduce the risk of localized failure.

Typical equipment includes:

- Regenerative thermal oxidizers
- Flare systems
- Incinerators
- Cremators
- High-flow areas in boilers
- Aluminum melting furnace doors

Localized Repair and Hot Maintenance

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Suitable for rapid repair of lining surface damage, cracks, hot spots, and localized erosion areas. It is also suitable for online hot spray repair and refractory layer restoration, helping reduce furnace shutdown time.

Typical applications include:

- Hot spot repair
- Hot spray repair
- Furnace lining maintenance and patching
- Restoration of cracks and localized spalling areas

Backup and Composite Insulation Systems

Can be used as a backup layer behind high-density sprayed refractories or as a functional layer in composite lining systems. It is also suitable for low-heat-storage and energy-saving lining structures.

Typical applications include:

- Backup insulation behind brick linings, plastic refractories, and castables
- Backup layer for high-density sprayed refractories
- Low-mass kiln car decks
- Heat treatment furnaces and kiln car platforms
- Annealing furnace bases
- Molten metal transfer ladles and preheating stands
- Tundish covers

Ceramic, Glass, and Foundry Thermal Processing Equipment

Suitable for thermal processing equipment requiring temperature uniformity, lining integrity, and surface protection. It can be used for monolithic insulation and protection in high-temperature zones.

Typical equipment includes:

- Technical substrate kilns
- Refractory production kilns
- Kiln cars
- Foundry furnaces

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CCEWOOL® Monolithic Spray-Applied Insulation System				
Property	**Unit / Condition**	**Grade 1200**	**Grade 1400**	**Grade 1600**
Al_2O_3 + SiO_2	%	≥ 95	≥ 98	≥ 99
Permanent Linear Shrinkage After Heating	%	1100°C×24 h≤1	1250°C×24 h≤1	1400°C×24 h≤1
Long-Term Service Temperature	°C	≤ 1100	≤ 1250	≤ 1400
Density (Wet)	kg/m³	1300	1300	1300
Density (Dry)	kg/m³	650	650	650
Color	—	Green	Blue	Pink
Maximum Gas Velocity Resistance	m/s	≤ 80	≤ 80	≤ 80
Thermal Conductivity at Hot Face 600°C	W/m·K	0.13	0.13	0.14
Thermal Conductivity at Hot Face 800°C	W/m·K	0.15	0.15	0.16
Thermal Conductivity at Hot Face 1000°C	W/m·K	0.17	0.17	0.18
3-10 mm Coating Layer	Room Temperature	No Cracking	No Cracking	No Cracking
	Dried at 110°C	No Cracking	No Cracking	No Cracking
	Fired at Service Temperature	No Cracking	No Cracking	No Cracking