



The unshaped refractory materials produced by Dengfeng Smelting Materials are composed of refractory aggregates, powders, binders, and additives. They are cast into shape after being uniformly mixed with a suitable liquid, such as water. Here are some detailed insights about these unshaped refractory materials:

#### Main Components

- 1. Refractory Aggregates:** Act as the structural framework. Common types include bauxite, mullite, corundum, and sillimanite.
- 2. Refractory Powder:** Fills the spaces between aggregates to improve material density. Common types include high-alumina powder, corundum powder, and silica fume.
- 3. Binders:** Provide strength at room temperature, typically including calcium aluminate cement, phosphate, and silica sol.
- 4. Additives:** Improve workability and performance, including water reducers, setting agents, and anti-explosion agents.

#### Types

- 1. Ordinary Refractory Castables:** For lower-temperature areas, like industrial furnace walls and floors.
- 2. High-Alumina Castables:** Contain high alumina ( $Al_2O_3$ ) content, suitable for high-temperature environments.
- 3. Low-Cement Castables:** With low binder content, offering high strength, density, and slag resistance.
- 4. Ultra-Low Cement Castables:** Even lower binder content, providing excellent high-temperature strength and corrosion resistance.
- 5. Self-Flow Castables:** Good flowability, requiring no vibration, ideal for complex shapes.
- 6. Lightweight Castables:** Low density, offering good insulation, typically used for thermal insulation layers.

#### Performance Characteristics

- 1. Ease of Installation:** Cast on-site, no need for high-temperature firing.
- 2. High Strength:** Provides significant strength after curing and drying, at both room and high temperatures.
- 3. Corrosion Resistance:** Resists chemical corrosion from slag and gases.
- 4. Thermal Stability:** Resists cracking and spalling at high temperatures.
- 5. Versatility:** Formulations can be adjusted to meet various high-temperature requirements.

#### Application Fields

- 1. Metallurgical Industry:** Used in lining blast furnaces, converters, electric furnaces, ladles, and torpedo ladles.
- 2. Building Materials Industry:** Applied to cement rotary kilns, glass kilns, and lime kilns.
- 3. Chemical Industry:** Lining for high-temperature equipment like fertilizer furnaces and cracking furnaces.
- 4. Power Industry:** Used as internal linings for boilers and gas turbines.

Due to their excellent properties and adaptability, unshaped refractory materials are widely used in high-temperature applications across modern industries.

# Unshaped refractory material series

## **DFC-13 Conventional Refractory Castables**

●DFC-13 is suitable for boiler and other general industrial kiln linings.

## **DFC-145 Low Cement Refractory Castable**

●DFC-145 is suitable for linings of aluminum industry alumina fluidized calcination furnaces, heating furnaces, homogenizing furnaces, tunnel kiln cars, cement kiln preheaters, etc.

## **DFC-15 Low Cement Refractory Castable**

●It is a low-cement refractory castable with a maximum service temperature of 1500°C, suitable for fluidized bed boiler linings, cement kiln preheaters, kiln hoods, cooler linings, alumina fluidized roasting furnace linings, heating furnaces, tunnel kiln cars, homogenizing furnace linings, etc.

## **DFC-16、DFC-18 Low Cement Refractory Castable**

●It is a high-strength, low-cement refractory castable with pure calcium aluminate cement as a binder, suitable for making parts subject to wear such as tundish spray gun for hot metal pretreatment, electric furnace roofs, rotary kiln mouth, cooler and other areas, as well as the wear-prone parts of heating furnaces or homogenizing furnaces, etc.

## **DFC-11L、DFC-13L Lightweight refractory castable**

●Its characteristics include low bulk density and low thermal conductivity, thus providing good thermal insulation performance.

## **DF-961 Anti-seepage Barrier Layer Materials For Aluminum Electrolytic Cells**

●The use of seepage isolation layer materials in aluminum electrolysis cells can not only extend the life of the electrolysis cells, reduce the loss of cryolite, but more importantly, save electricity and reduce the specific energy consumption of aluminum metal. Moreover, this material is easy, labor-saving, and time-saving to construct, offering significant economic and technical advantages, and has been listed by many aluminum factories as the material of choice for major repairs of cells.

## **DF-001 Anti-seepage Refractory Castable For Aluminum Electrolysis Cells**

●Anti-seepage refractory castables are indispensable materials for constructing aluminum electrolysis cells. The DF-001 type anti-seepage refractory castable, developed by our company, possesses high strength, low apparent porosity, smaller average pore size, and less water consumption. During use, it reacts with the electrolyte to form a vitreous covering layer, providing excellent anti-seepage performance.

**The cement production process at Dengfeng Smelting Materials is designed to achieve maximum consistency. Through precise and stringent control, we can accurately ensure the refractory quality and performance of the cement. This approach significantly reduces response times and enhances production flexibility, allowing us to deliver superior service.**

#### **Cement Testing and Quality Control**

Dengfeng Smelting Materials' aluminate cement is engineered to actively meet customer requirements. Key qualities of high-performance cement include setting consistency, flowability, strength, particle size distribution, and precise chemical composition. Our quality control system is meticulously designed to ensure consistent product quality, enhancing the reliability and performance of customers' applications.

Our cement undergoes rigorous testing to meet standards, including flowability, setting time, and strength assessments based on the Chinese GB201/T2015 standard with standardized sand. Tests include specific surface area, initial and final setting times, flexural and compressive strength. Chemical composition is verified through X-ray fluorescence spectroscopy (XRF).

#### **Packaging Options**

- Bulk bags
- Small bags

#### **Shelf Life and Storage**

To ensure longevity, all Dengfeng Smelting aluminate cements should be stored in original, sealed packaging under dry conditions. Experience shows that even after prolonged storage, performance remains unaffected if the product is kept in optimal conditions. However, direct sunlight may degrade plastic packaging over time, necessitating additional protection to avoid UV exposure. Shrink-wrap should remain intact until use, as removing it may reduce the cement's shelf life.



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