Indian Standard IS 17441 Part 2: Your Guide to Metallurgical Grade Calcined Alumina

Calcined alumina is aluminium oxide that has been heated at temperature in excess of 1050° C to drive off nearly all chemically combined water. In this form, alumina has higher chemical purity, extreme hardness (9 on the Mohs hardness scale, on which diamond is 10), high density and a high melting point (slightly above 2050° C). However, by controlling the calcinations temperature and time, properties of alumina can be controlled. With increasing the temperature during calcinations, alumina transforms to α-alumina which is chemically stable with high melting temperature

Calcined alumina is a critical material used in the metallurgical industry, especially in the production of aluminum through the electrolytic smelting process. To ensure consistent quality and performance, the Bureau of Indian Standards (BIS) has developed **IS 17441 Part 2**, which specifies the requirements for **metallurgical-grade calcined alumina**.

This standard outlines key parameters such as chemical composition, physical properties, and particle size distribution that calcined alumina must meet to be suitable for use in aluminum production. High-quality calcined alumina ensures optimal efficiency in smelting processes and helps maintain the desired purity and strength of the final aluminum product.

Key Features of IS 17441 Part 2:

1. **Chemical Composition:**
   The standard specifies permissible limits for impurities such as sodium oxide, iron oxide, silica, and others to ensure the calcined alumina is of high purity and suitable for metallurgical applications.
2. **Particle Size Distribution:**
   Proper control of particle size ensures uniform feeding in smelters, enhancing process efficiency and reducing operational challenges.
3. **Bulk Density and Flowability:**
   Calcined alumina must exhibit consistent **bulk density** and excellent **flowability** to ensure smooth handling, storage, and transport during industrial operations.
4. **Moisture Content:**
   The standard limits moisture content in calcined alumina to prevent clumping and ensure efficient smelting.
5. **Testing and Quality Assurance:**
   The standard mandates rigorous testing of calcined alumina for compliance with the specifications, ensuring reliability in industrial applications.

Calcined alumina is primarily used in various industrial applications due to its unique properties such as aluminium production, refractories, ceramics, abrasives, electronics. These diverse applications highlight the importance calcined alumina in various sectors.

DPIIT Quality Control Order:

The **DPIIT Quality Control Order** requires that all calcined alumina sold, manufactured, or imported in India comply with **IS 17441 Part 2** and display the BIS Standard Mark. This ensures high-quality material for use in the metallurgical sector, boosting operational efficiency and product quality.

Why IS 17441 Matters:

Compliance with IS 17441 Part 2 ensures that the calcined alumina you use meets stringent quality and performance standards. This not only enhances the efficiency of your metallurgical processes but also contributes to the production of superior-grade aluminum.

In Summary: When purchasing metallurgical-grade calcined alumina, always look for the BIS Standard Mark. By ensuring compliance with **IS 17441 Part 2**, you guarantee that the material meets high standards for quality, consistency, and performance, enabling safer and more efficient operations in the aluminum industry.