IS 13164:1991 Ferrosilicomagnesium-Specification

Product Definition:

IS 13164:1991 is a standard for "Ferrosilicomagnesium," a specialized alloy primarily containing iron, silicon (40-60%), and magnesium (2-22%), along with minor amounts of other elements like aluminium and calcium. This alloy is widely used in the production of high-grade cast irons, specifically nodular (SG) iron, which requires enhanced mechanical properties for applications in the ferrous and non-ferrous industries. Ferrosilicomagnesium is essential in modifying the structure of iron to produce durable, flexible, and corrosion-resistant materials.

1. **Quality Expectations:** Consumers have high expectations for the quality of ferrosilicomagnesium, focusing on several critical parameters:
    - **Chemical Composition**: The silicon and magnesium content must be strictly controlled to ensure consistent product performance, with limited permissible variations across batches. Impurities like aluminum and calcium should be minimal to avoid any adverse effects on the final product's quality.
    - **Uniform Particle Size**: The material should be supplied in either lump form or as crushed and screened particles. Standard size ranges are typically 10-15 mm, with limited tolerance for particles that are oversize or undersize. This uniformity is crucial for handling and processing.
    - **Freedom from Contaminants**: Consumers expect the alloy to be free from foreign substances such as slag or non-metallic inclusions that could compromise its effectiveness and purity.
    - **Clear Marking and Identification**: Accurate labeling is essential to indicate the material's grade, batch, and other key specifications, ensuring traceability and reliability for end users.
2. **How This Standard Addresses Expectations**: IS 13164:1991 incorporates several provisions to ensure that ferrosilicomagnesium meets these quality expectations:
    - **Composition Control**: The standard specifies exact ranges for silicon and magnesium content in six grades of ferrosilicomagnesium (detailed in Table 1 of the document). It requires that each batch comply with these chemical specifications, and allows for customized specifications if agreed upon between the purchaser and manufacturer.
    - **Consignment Methods**: The standard describes three methods for forming consignments—tapped lot, graded lot, and blended lot methods. These methods help in maintaining batch consistency and quality control, ensuring that products within a consignment do not vary in composition by more than 3%.
    - **Size Range and Tolerance**: The particle size range is specified as 10-15 mm with tolerances for oversize and undersize material. This ensures that each batch is within an acceptable range, enhancing consistency in industrial applications. Any specific requirements on particle size and tolerance must be communicated by the purchaser.
    - **Contaminant-Free Assurance**: The standard mandates that ferrosilicomagnesium should be reasonably free from extraneous contaminants like slag or non-metallic inclusions. This ensures purity, enhances product integrity, and maintains its effectiveness in modifying iron structures.
    - **Packaging and Labeling Requirements**: The standard prescribes that ferrosilicomagnesium be sealed and packed in steel drums or other suitable containers, typically in 100 kg quantities or as mutually agreed upon. Each container must be clearly marked with the source, grade, batch, and size designation, along with the date of manufacture and quantity, ensuring traceability and product identification.

Overall, IS 13164:1991 establishes comprehensive guidelines to address consumer expectations for a consistent, high-quality product. By defining standards for chemical composition, particle size, purity, packaging, and labeling, it assures that ferrosilicomagnesium meets industry demands for quality, reliability, and effective performance in enhancing iron-based materials.