T E CH N I C A L D A T A S H E E T

for the product

FeSiMn fume

Rec. No. TL-OFZ-01/19

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1. Introduction

FeSiMn fume is a finely dispersed powder material of brown color collected by the filtration units. FeSiMn fume is generated as a by-product during FeSiMn production. FeSiMn is alloy of iron, manganese, silicon and other admixtures used in the metallurgical industry. FeSiMn fume consists of a very fine spherical particles of amorphous manganese monoxide (and other elements, especially silicon) with a smooth surface and submicroscopic in diameter.

2. Production

FeSiMn fume is generated as a by-product during FeSiMn production in the electric arc furnace (EAF). Fumes of manganese oxides and other compounds are collected by bag house filters in the EAF dedusting units .

3. Technical Properties

3.1 Chemical Composition and Physical Properties

Chemical/Physical Parameter	**Value**
SiO_2	15.0 – 45.0 [% w/w]
CaO	0 – 10.0 [% w/w]
Al_2O_3	0 – 10.0 [% w/w]
Mn	15.0 – 35.0 [% w/w]
MgO	0 – 10.0 [% w/w]
FeO	≤ 5.0 [% w/w]
K_2O	≤ 25.0 [% w/w]
Na_2O	≤ 5.0 [% w/w]
SO_3	≤ 7.0 [% w/w]
Zn	≤ 5.0 [% w/w]
C	≤ 5.0 [% w/w]
Radiologic Parameters - Mass Activity Index	≤ 1.0 [-]
Bulk Density	400.0 – 1,000.0 kg/m^3

3.2 Bulk Density

Bulk density of FeSiMn fume in its undensified form ranges from 400.0 to 600.0 kg/m^3 and in densified form from 600.0 to 1,000.0 kg/m^3.

4. Hygiene and Health Aspects

Hygiene and health aspects are in full detail included in the Product Safety Data Sheet on FeSiMn Fume namely in Chapter 11 Toxicological Effects on health, Chapter 8 Personal Protective Equipment for ensuring health & safety and Chapter 4 First-aid Measures. Avoid generating of dust while handling the product due to its high level of dispersivity. Use suitable PPEs such as overall, gloves, goggles and respirators. With using appropriate PPEs and adhering to intended use, proper handling and storing in accordance with Technical Data Sheet and Product Safety Data Sheet for FeSiMn Fume, the product does not pose a threat to human health.

5. Control

The manufacturer is in charge of a system control. The procedures for analyzing and control of FeSiMn fume are included in the work procedures LAB-05/2007 - XRF Assays of Ferroalloys and Other Materials, LAB-06/2007 - Determining the Carbon and Sulphur Content in Ferroalloys and Other Materials, PVS-08/2010 - Inspection & Control of Shipments and PVS-09/2010 - Determining the Physical Properties of Products and Raw Materials.

5.1 Properties, Testing Methods, and Minimum Testing Frequency under In-house Inspections:

Parameter	Testing Methods	Minimum Testing Frequency
SiO_2	LAB-05/2007	Once a month
CaO	LAB-05/2007	Once a month
Al_2O_3	LAB-05/2007	Once a month
MnO	LAB-05/2007	Once a month
MgO	LAB-05/2007	Once a month
FeO	LAB-05/2007	Once a month
K_2O	LAB-05/2007	Once a month
Na_2O	LAB-05/2007	Once a month
SO_3	LAB-06/2007	Once a month
Zn	LAB-05/2007	Once a month
C	LAB-06/2007	Once a month
Radiologic Parameters - Mass Activity Index	Determined by gamma spectroscopic HPGe detector	Once a year - externally
Bulk Density	PVS-09/2010	Once a year

6. Storing

Store the product in closed warehouses, silos, containers and big bags according with PVP-01/2015 Operating the Dedusting Systems of Furnaces.

7. Packaging & Delivery

FeSiMn fume is delivered in bulk (in the original form or micropelletized) in the covered trucks, railway cars, cisterns, in the big bags in accordance with the work procedure PVP-01/2015 Operating the Dedusting Systems of Furnaces. FeSiMn can also be delivered in the form of briquettes upon customer`s request.

8. Labeling

A delivery shall also include the product labeling according to delivery note or labeling on the cover which shall include the following:

- name of the manufacturer;
- production site;
- sort of material: FeSiMn fume;
- form of material when delivered;
- rec. no.;
- tonnage [kg, t];
- stamp and signature of the final inspection.

9. Intended Use

Among the uses of FeSiMn fume are the following:

- as a secondary raw material for the ferroalloy production (original undensified, micropelletized, briquettes);
- as a secondary raw material for ferrous and non-ferrous metal manufacturing;
- for backfilling and recontruction of a fall zone.