1. DESCRIPTION

Silica fume MICROXIL and Silica fume MICROXIL+ are by-products generated during the production of ferrosilicon alloy and metallurgical silicon in an electric arc furnace (EAF). Fine-grained condensed silicon oxide vapors are captured on fabric filters in the EAF dedusting units and, after shaking the filter fabric, collected in the storage silo of the filtration unit. These are finely dispersed powdery materials of gray color, consisting of very fine spherical particles of amorphous SiO_2 with a smooth surface, with particle sizes smaller than 10^{-6} m. The production process is described in PP-046-SK Production and Storage of By-products.

2. USE

- for the production of refractory and heat-resistant materials,
- as an additive to silicon carbide (SiC) for the manufacture of kiln accessories,
- for surface protection against wear,
- for the production of special types of ceramics,
- as a raw material for clinker production in the cement industry,
- as an additive to putty for filling defects in wood, plaster, and walls, and in glass manufacturing,
- for the production of drilling products for shafts,
- for the manufacture of inorganic pigments,
- for the production of process aids used in the chemical industry,
- as an anti-caking agent in artificial fertilizers,
- for the production of seals, sealing inserts, and gasket materials,
- for the manufacture of elastomeric polymers, thermoplastics, and plastics,
- for the manufacture of putties, glues, and adhesives,
- for the production of thinners, detergents, and cleaning agents,
- for the production of basic metals, including alloys and plated alloys with chemical dyes,
- for own use by the operator – product produced by remelting silica fume MICROXIL and MICROXIL+ as part of the charge in FeSi production.

The product **do not meet the requirements** of standards STN EN 13263-1 + A1:2009 and STN EN 13263-2 + A1:2009. Limit contact with iron elements and structures – risk of their corrosion.

3. CERTIFICATES/APPROVALS

- Integrated operation permit of OFZ, a.s., Široká plant No. 3574/2007/Jur/770010203 dated 5 May 2007 as amended (Consent that the substance is considered a by-product with the trade name "Silica fume MICROXIl and Silica fume MICROXIL+" and not waste).
- Certificate of production management system issued by the inspection certification body QUALIFORM SLOVAKIA, s.r.o., Pasienková 9 D, 82106 Bratislava.
- OFZ, a.s. is certified under quality management systems STN EN ISO 9001:2015 and environmental system STN EN ISO 14 001:2015.

4. PHYSICAL AND CHEMICAL PARAMETERS

Qualitative and quality parameters to be met:

Parameter	Value	
Silicon dioxide (SiO_2)	≤ 80% w/w for MICROXIL	> 80% w/w for MICROXIL+
Elemental silicon (Si)	≤ 1.0% w/w	
Free calcium oxide (CaO)	≤ 3.5% w/w	
Sulfates (as sulfur trioxide, SO_3)	≤ 4.0% w/w	
Total alkali content (as sodium oxide equivalent, Na_2O eq.)	≤ 8.0% w/w	
Chlorides as (Cl^-)	≤ 1.8% w/w	
Loss on Ignition	≤ 4.0% w/w	
Activity concentration index	≤ 1	
Bulk density	0 – 800 kg/m^3	

$Na2Oeq = Na_2O + 0.658 \times K_2O$

Bulk density of the dry original loose form is 150 – 450 kg/m³. Upon customer request, pelletizing is possible, which increases the bulk density value to 450 – 750 kg/m³.

5. QUALITY CONTROL

The qualitative properties of the product are defined by applicable STN and EN standards as well as internal manufacturing specifications. Quality control is carried out in accordance with Guideline OS-004-SK on final inspection and is ensured by the Quality Management Department. Analytical testing of parameters is performed at least once per month during production in the company's in-house operational laboratory (excluding the activity concentration index and bulk density), and once per year in full scope by an accredited laboratory. Records of analytical control are retained for a minimum of five years.

Registration number	Name of the Work Procedure
PP-009-SK	Incoming, In-Process and Dispatch Quality Control
PP-012-SK	Material Analysis by X-ray Fluorescence (XRF) Method
PP-013-SK	Determination of Carbon and Sulfur Content Using ELTRA CS 800 Analyzer
PP-014-SK	Quality Control of By-products
PP-016-SK	Methods for Determining Physical and Chemical Parameters of Materials
PP-017-SK	Material Analysis by Photometric Method and Atomic Absorption Spectrometry (AAS)
PP-088-SK	Material Analysis by Thermogravimetric Analysis (TGA)

During the final quality control, a QUALITY CERTIFICATE is issued, which includes the following information: Company name, Material name, Chemical composition, Batch class, Delivery number Gross and net delivery weight, Purchase contract number, Stamp, Date and signature of final inspection.

The delivery note shall include: Manufacturer´s name, Place of manufacture, Type of material - product name, fraction – particle size, Delivery method, Delivery note number, Quantity [kg, t].

The packaging shall include: Manufacturer´s name, Place of manufacture, Type of material - product name, fraction – particle size, Quantity [kg, t], Date of manufacture.

6. PACKING

Packing: Large-capacity bags (big-bags), tankers, drums
Form: Free-flowing – original loose state, compacted form (micro-pelletized)
Weight: Max. 1200 kg per big-bag; for other containers and transport vehicles, according to permitted load capacities

7. TRANSPORT

.
During regular transport – by rail or road – it may be transported loose in tankers or closed containers. When packed in sealed, impermeable big-bag containers or other sealed and impermeable packaging, it may be transported on open transport vehicles. Contact with water must be avoided during transport.

8. STORAGE

Stored in sealed, impermeable containers – big-bags, bags, drums, containers, or silos. When stored in sealed, impermeable packaging that prevents moisture ingress, no special secured storage facilities are required. However, storage must be on a reinforced surface and not on natural ground (e.g., grass). When stored in packaging other than impermeable containers, storage must be carried out in storage facilities and silos that meet the requirements of covered closed silos or dry open storage areas (industrial feed boxes).

9. SAFETY DATA

Safety information is provided in the Material Safety Data Sheet (MSDS) issued by the manufacturer under registration number KBU-010-EN issued on 10 March 2025.
The current revision of the MSDS is available upon request from the manufacturer or for download at: **www.ofz.sk.**

10. OTHER

Information is available at https://siroka.ofz.company/sk/simat.html

Replaces document: TL-VP-MX-01-00 issued on 1 July 2019

Prepared by: Róbert Zrnčík, Head of Ferroalloy Production - signed

Approved by: Milan Kelbel, Director of Production Services - signed