

## URALGRIT Corp.

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\_\_\_\_\_ 2005

### **GRANULATED SLAG FOR BLAST-CLEANING TECHNICAL SPECIFICATION TU U 14.5-33310770.001:2005**

Validity period: unlimited.

Developed:  
Director for UKRGRIT  
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The present Technical Specification covers the granulated slag for blast-cleaning made of granulated slag of ferronickel refinery, produced (getting) by means of quenching moulded highmagnesia furnace slag by water and used for metal surface cleaning by blasting units. The grit can be used inside the country and exported to other countries. Blast-cleaning of the surface of any materials enables to comply with SA-2, SA-2½, SA-3 according to ISO 8501-1-1988.

Granulated slag for blast-cleaning is produced by riddling and further screening for getting required size of the granules. Description of the goods in the purchase order - Granulated Slag For blast-cleaning TU U 14.5-33310770.001:2005”.

Mandatory requirements to the products' quality (providing its safety for the public life and health and for the environment) are presented in the part 3.

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#### **1. Reference**

GOST 12.1.005-88	SSBT. General Hygiene and Sanitary Requirements of the working area air.
GOST 12.1.007-76	SSBT. Harmful Substances . Classification and General Safety Requirements
GOST 12.4.034-85	SSBT. Individual respiratory protection units. Classification and Marking
GOST 12.4.028-76	SSBT. Respirator SHB -1 “Petal”. Technical Specification.
GOST 8735-88	Sand for Construction Work. Testing Methods.

GOST 14180-80	Ores and Concentrates of Nonferrous Metals. The Methods of Sample preparation and sampling for the Chemical Analysis and Determination of Moisture Content.
GOST 17811-78	Polyethylene Sacks for the Chemical Products. Technical Specification.
GOST 19668-74	Special-purpose Group Container with the Gross Weight 5 (7) t for the Bulk Cargo.
GOST 5382-91	Cement and Cement Products. Methods of Chemical Analysis.
GOST 12.4.041-89	SSBT. Individual respiratory filter protection units. General Technical Requirements.
GOST 27595-88	Polished Materials. Abrasive Tools. Packing, Marking, Transportation, Storage.
GOST 28924-91	Polished Materials. Methods of Determination Physical and Physical-mechanical Properties.
GOST 3647-80	Polished Materials. Classification. The Size of the Granules. Methods of Control.
GOST 15150-69	Machines, Devices, and other technical Mechanisms. Use for different climatic Regions. Categories, Service Conditions, Storage and Transportation.
DSTU 3562-97	Slag of Metallurgical Production. Methods of Sulfur Determination.
DSTU 3566-97	Slag of Metallurgical Production. Methods of Aluminum Oxide Determination.
ISO 11127	The Preparation of Steel Substrate before Painting. Testing Methods of Nonmetallic Blast Media for Blast-Cleaning.
Part 1.	Sampling.
Part 2.	Determination of Distribution of Granular Size
Part 3.	Determination of Visible Density.
Part 4.	Evaluation of Hardness by Glass-Slip.
Part 5.	Determination of Moisture.
Part 6.	Determination of Water-Soluble Inclusions by Measuring of Conductivity.
Part 7.	Determination of Water-soluble Chlorides.
Part 8.	Determination of Mechanical Abrasive Properties.
ISO 8501-1-1988	Preparation of the Steel Surface.

## 2. Specification

2.1. The granulated slag should meet the requirements of this Technical Specification and is made according to the production regulations properly approved.

2.2. Basic Parameters and Properties:

2.2.1. Chemical composition:

FeO – 7,00-8,10%

SiO<sub>2</sub> – 52,0-54,5%

MgO – 30,0-32,3%

Al<sub>2</sub>O<sub>3</sub> – 1,0-1,10%

Cr<sub>2</sub>O<sub>3</sub> – 0,9-1,08%

CaO – 0,9-1,05%

NiO – 0,10%

Others – less than 1,77%

The grit is made of the granulated slag that complies with Technical Specification TU 5712-041-00290038-99.

2.2.2. Shape – fine angular.

2.2.3. Colour – grey.

2.2.4. Moh's hardness – 6,0-6,5.

2.2.5. Bulk mass of the grit – 1.3-1.8 g/cm<sup>3</sup>.

2.2.6. Abrasive capacity – more than 0,01 g/cm<sup>2</sup>

2.2.7. Water-soluble chlorides – less than 0.0025 %.

2.2.8. Water-soluble salts – less than 250 mksm/sm

2.2.9. Moisture – less than 0.2%.

2.2.10. Grain size must not exceed 0.1-3.0 mm. The quantity of the grains with size 0,16-2,8 mm must be more than 90 % of the total quantity. Grain size may vary on customer's request.

2.3. Package

2.3.1. The grit is packed into soft containers (capacity – 1t), which are specially designed for the granular products and made of capron cloth according to the State Standard GOST 27595.

2.3.2. While packing, the grit temperature should not exceed 65°C.

2.3.3. The grit is packed into polyethylene bags according to State Standard GOST 17811-78, into special containers according to GOST 19668-74 or into a different package, which does not let the moisture in and has sufficient durability.

2.4. Marking

2.4.1. The marking is applied directly to the packing of slag with the help of die.

2.4.2. The package is marked in the following way:

- Name of the manufacturer, its trademark;
- Description of the goods;
- Technical Specification;
- Net weight;
- Date of manufacture;
- Effective life.

### **3. Safety Requirements**

- 3.1 The slag is referred to the 4<sup>th</sup> Risk Class, according to GOST 12.1.007.
- 3.2 The slag doesn't generate toxic compounds in the atmosphere and in the wastewater.
- 3.3 The slag is fire and exposure safe.
- 3.4 The slag is low toxic and low-risk material; it has low fibrogenic effect on the lungs at continuous dust exposure.
- 3.5. The maximum permissible concentration of the slag dust in the atmosphere of the working area of industrial rooms is 6 mg/m<sup>3</sup>, which provides for maximum permissible concentration of any harmful substances present in the slag, according to GOST 12.1.005, Appendix 12 to List of Maximum Permissible Concentrations No. 4617-88.
- 3.6. While working in the area of granulated slag dust, it is necessary to use individual respiratory protection units (GOST 12.4.034, GOST 12.4.041, GOST 12.4.028).

### **4. Incoming Inspection Rules**

- 4.1. The granulated slag is inspected by batches. The batch should be uniform in granule size range and should be accompanied by the quality document including the following:
  - Name and trademark of the manufacturer;
  - The serial number of the Quality Certificate and date of issue;
  - Reference to the Technical Specification;
  - Serial number of the batch;
  - Delivery date;
  - Net weight;
  - Moisture, grain size
  - ND compliance statement.
- 4.2. The mass of the batch is determined by load-carrying capacity of one transport vehicle.
- 4.3. The manufacturer should determine the grain size range, moisture, bulk mass, marking and packing for each batch.
- 4.4. Chemical composition and the abrasive capacity of the granulated slag should be determined in case of changes in the production technology, but not less than once a quarter.
- 4.5. An accredited hygienic laboratory should perform inspection no less than twice a year. Sample size for testing is 10 kg.
- 4.6. Hardness, ultimate strength, content of chlorides, water-soluble salts of slag should be determined no less than once a month by the Accredited Laboratory. Sample size for testing is 10 kg.
- 4.7. In case of unsatisfactory results of the analysis of the slag basic parameters and properties, the batch is rejected.

### **5. Control Techniques**

- 5.1. Sampling for chemical analysis and moisture determination of the grit should be according to GOST 14180.
- 5.2. Chemical composition should be determined according to DSTU 3562, DSTU 3566, GOST 3582, ISO 11127 or other techniques, which provide for appropriate accuracy of the analysis.
- 5.3. Determining of the grain composition is according to GOST 3647.
- 5.4. Determining of the specific density, abrasive capacity is according to GOST 28924.
- 5.5. Determining of moisture content, form is according to GOST 8735.

- 5.6. Determining of color - visually.
- 5.7. Determining of hardness is according to ISO 11127 part 4.
- 5.8. Determining of chlorides is according to ISO 11127 part 7.
- 5.9. Determining of water-soluble salts is according to ISO 11127 part 6.
- 5.10. Determining of marking and packing - visually.

## **6. Transportation and storage**

- 6.1. Transportation of the slag should be performed according to GOST 27595 - the Rules of Freight Transportation and the Terms of Freight Loading and Fastening approved by the Railway Ministry.
- 6.2. Packed granulated slag is transported in open-cars. Transportation of slag in hoppers and cement tank wagons, in motor transport is permitted
- 6.3. Vehicles should be clean, dry and they should not have bulging parts.
- 6.4. Granulated slag must be stored in closed and dry warehouses according to GOST 27595.
- 6.5. Bags with granulated slag must be stored in stacks on wooden grates or boards.

## **7. Manufacturer's Warranty**

- 7.1. The manufacturer guarantees the compliance of the grit with the Technical Specification in case the transportation and storage requirements are observed.
- 7.2. Consistency of chemical composition and abrasive capacity of the granulated slag is guaranteed by the production technology.
- 7.3. Granulated slag doesn't lose its physical properties and chemical composition except moisture content under the environmental impacts.
- 7.4. The guaranteed period of storage is one (1) year.