



MATERIAL SAFETY DATA SHEET

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JSC BOROVICHI REFRACTORIES PLANT

Mezhdunarodnaya St., 1, Borovichi Novgorod reg., 174411 Russia

Tel/fax: ++7(81664)9-21-95, 2-57-96, 9-22-27

EMERGENCY TELEPHONE NUMBER: ++7(81664)9-25-49, 9-22-28

Issued: March, 2008

Revised:

SECTION 1: PRODUCT INFORMATION

Product Name: Resin Coated Super Strength Ceramic Proppant (all mesh sizes)
Chemical Family: Alumina-silicate with polymer coating
Trade Name: BorProp SSP
Application: Hydraulic Fracturing, Oil and Gas Industry

SECTION 2: COMPONENT INFORMATION

INGREDIENTS	% WEIGHT
Corundum	8 - 15%
Mullite	85 - 92%
Coating	2.3 – 4.8%
Coating Type	Phenol-formaldehyde resin with hexamethylenetetramine, precured

SECTION 3: PHYSICAL DATA

BOILING POINT:	N/A	SPECIFIC GRAVITY:	3.08 – 3.14 g/cm ³
MELTING POINT:	1800 °C	BULK DENSITY:	104 - 112 lb/cu.ft.
VAPOR PRESSURE:	N/A	SOLUBILITY IN WATER:	Insoluble
VAPOR DENSITY:	N/A	pH:	N/A

APPEARANCE/ODOR: Odorless dark brown to blackish pellets.
Faint phenolic odor may occur.

VOLATILE ORGANIC COMPOUNDS: 0 kg/l

LOSS ON IGNITION: 2.2 – 4.8%

SECTION 4: FIRE AND EXPLOSION HAZARD DATA

ESTIMATED EXPLOSIVE LIMITS (% by volume in air): N/A

SPECIAL FIRE FIGHTING PROCEDURES: This material does not give a flash point by conventional test methods. Polymerization of coating is completed. However, in presence of fire, dangerous fume may occur. Use extinguishing means suitable for type of surrounding fire. Do not use any special agents.

UNUSUAL HAZARDS: N/A

FLASH POINT: N/A



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SECTION 5: HEALTH HAZARD DATA

INHALATION: Product contains little or no particles of respirable size. However, the amount of fines may increase due to attrition during shipment, use and handling. Dusts may cause respiratory tract irritation. Repeated or prolonged breathing of particles of respirable size may cause severe respiratory disease.

EYE CONTACT: Dust may cause irritation.

SKIN CONTACT: Exposure may cause slight irritation upon prolonged or repeated contact.

SECTION 6: REACTIVITY DATA

Product is stable under normal conditions. Hazardous decomposition products at temperatures from 200⁰C or under exposure of open fire: phenol, formaldehyde, carbon monoxide, nitrogen oxides, ammonia. The most dangerous decomposition occurs at temperatures 400 – 700⁰C.

SECTION 7: EMERGENCY AND FIRST AID PROCEDURES

General Procedure: In all cases of doubt, seek medical attention. Victim must have this MSDS.

INHALATION: Remove affected person from source of exposure to fresh air. Flush nose and throat with water. Get medical attention if irritation persists.

INGESTION: Drink plenty of water immediately. Do not induce vomiting. If vomiting occurs naturally, keep the victim's head low to avoid stomach content in lungs. Seek medical advice if large quantities are ingested. Do not give any liquid to unconscious person.

EYE CONTACT: Immediately flush eyes with large amounts of water for at least 15 minutes. Contact lenses should be removed. Get medical attention if irritation persists.

SKIN CONTACT: Wash the affected area with soap and water. Get medical attention if irritation persists.



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SECTION 8: SPILL OR LEAK PROCEDURES

GENERAL REQUIREMENTS: Put on safety glasses or chemical goggles. Contact lenses must be removed. To avoid abrasion, gloves are recommended. Caution should be exercised regarding personal safety and exposure to the spilled material, the material's nature could cause reduced traction. Persons should take care so as not to slip.

ENVIRONMENT PRECAUTIONS: Though product does not pose significant contamination impact, avoid larger exhaust to the environment. Disposal must be at an approved waste disposal facility. Waste material should be kept in suitable tare (drums).

CLEANING PROCEDURES: No special procedures are required for clean-up of spills or leaks of this material. For large quantities of spilled material use industrial vacuum cleaner. Sweep remaining material. Avoid methods that result in water pollution.

SECTION 9: SPECIAL PROTECTION

RESPIRATORY: The approved respirator should be worn where airborne exposures may exceed permissible air concentration.

EYE PROTECTION: Wear safety glasses or chemical goggles to prevent eye contact. Do not wear contact lenses when working with this substance.

CLOTHING/GLOVES: Gloves are optional to reduce abrasion.

WORK HYGIENE PRACTICES: Handle in accordance with good personal hygiene and safety practices.

VENTILATION: Provide sufficient (general and/or local exhaust) ventilation to maintain exposure below permissible air concentration.

SECTION 10: TOXICITY AND RADIOACTIVITY.

TOXICITY: Product has a low order of acute toxicity. Repeated inhalation of excessive dust may induce lungs diseases. Product contains low levels of hexamethylenetetramine (< 5%). Hexamethylenetetramine is known to produce an allergic reaction in susceptible individuals.

RADIOACTIVITY: <230 Bq/kg (1ST class of radioactive safety). No special protection measures are required.



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SECTION 11: EXPOSURE CONTROL. RUSSIAN STATE STANDARD 12.1.005

EXPOSURE LIMIT FACTORS (ELF), mg/m³

MATERIAL	ELF	HAZARD CLASSIFICATION
Hexamethylenetetramine	9	3
Phenol vapors	0.1	2
Formaldehyde vapors	0.05	2
Ammonia vapors	20	4
Formaldehyde resin dust	6	2

The workplace should meet the requirements of Occupational Exposure Standard. Hazardous decomposition products occur at temperatures from 200 °C or under exposure of open fire only. Provide appropriate local or general exhaust ventilation.

SECTION 12: STORAGE AND HANDLING

HANDLING: Avoid airborne dust generation. Product is not flammable. However, high concentration of organic dust may cause explosion hazard. Precautions should be taken to prevent static electric discharges. Provide appropriate exhaust ventilation. In case of insufficient ventilation, wear suitable respiratory protective equipment.

STORAGE: Ensure abatement of dust produced during the loading of silos. Keep containers closed and store/handle bagged product as to prevent accidental bursting. Storage area should be cool, dry and well ventilated.

SPECIFIC USE: No specific requirements.

TRANSPORTATION: No special precautions are required under regulations relating to the transportation of dangerous goods.



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SECTION 13: REGULATORY INFORMATION

Russian State Sanitary Regulations SP 2.61.798-99

Russian State Norms on Radiation Safety NRB-99 (radioactivity of 1 class materials does not exceed 740 Bq/kg).

Russian State Standard GOST 30108-94 "Construction Materials and Products - Determination of Specific Effective Activity of Radioactive Nuclides"

Russian State Standard GOST 24717-2004 "Refractory Materials and Products - Marking, Package, Storage and Transportation"

Russian State Standard GOST R 51761-2005 "Alumina-Silicate Proppants - Technical Specifications"

Russian State Standard GOST 12.1.005-88 "Work Safety Standard System – General Sanitary Requirements to Workplace Air"

Russian State Standard GOST 12.4.041-2001 "Work Safety System - Personal Safety Measures – Respiratory Protective Equipment – General Requirements"