

# MATERIAL SAFETY DATA SHEET

## 1. SUBSTANCE AND SOURCE IDENTIFICATION

National Institute of Standards and Technology  
Standard Reference Materials Program  
100 Bureau Drive, Stop 2300  
Gaithersburg, Maryland 20899-2300

SRM Number: 1633b  
MSDS Number: 1633b  
SRM Name: Constituent Elements in Coal  
Fly Ash

Date of Issue: 13 May 2011

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**Description:** This Standard Reference Material (SRM) is intended for use in the evaluation of analytical methods for the determination of constituent elements in coal fly ash or materials with a similar matrix. SRM 1633b is a bituminous coal fly ash that was sieved through a nominal sieve opening of 90  $\mu\text{m}$  (170 mesh) and then blended to assure homogeneity. A unit of SRM 1633b consists of 75 g of powdered material.

**Substance:** Coal Powder

**Other Designations:** Coal Powder (bituminous coal; ground bituminous coal).

## 2. HAZARDS IDENTIFICATION

NFPA Ratings (Scale 0–4): Health = 1 Fire = 1 Reactivity = 0

**Major Health Hazards:** Cancer (in humans)<sup>(a)</sup>

**Physical Hazards:** Dust/air mixtures may ignite or explode.

**Potential Health Effects (Acute and Chronic):**

**Inhalation:** Acute: irritation; chronic: chest pain, difficulty breathing, lung damage.

**Skin Contact:** No information available.

**Eye Contact:** No information available.

**Ingestion:** No information available.

**Listed as a Carcinogen/Potential Carcinogen**

	Yes	No
National Toxicology Program (NTP) Report on Carcinogens	X <sup>(a)</sup>	
International Agency for Research on Cancer (IARC) Monographs	X <sup>(a)</sup>	
Occupational Safety and Health Administration (OSHA)	X <sup>(a)</sup>	

<sup>(a)</sup> Silica (quartz and amorphous) is included in coal fly ash. NTP lists silica, crystalline, as a known carcinogen; IARC lists silica (quartz) as a Group 1 (carcinogenic to humans); silica (respirable) size is listed by OSHA.

## 3. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

Component	CAS Number	EC Number (EINECS)	Nominal Concentration (%)
Coal Fly Ash	68131-74-8	268-627-4	77
Quartz	14808-60-7	238-878-4	23

**NOTE:** The material's maximum particle size is below the inhalation size limits (100  $\mu\text{m}$  or 100 microns, inhalation) established by the ACGIH, Appendix D. The concentrations listed above apply to this SRM. This material contains various other elements (see Certificate of Analysis), which have been reported to have toxic, mutagenic, and/or carcinogenic properties, and should be handled with care. The concentration of the ones not listed above are below the reportable limit: hazardous components (1 %); carcinogens (0.1 %), required by OSHA, 29 CFR 1910.1200 (g)(2)(i)(C)(1), for MSDS information.

**EC Classification:** Quartz is not classified; Coal fly ash is not classified.

**EC Risk (R No.):** Not assigned.

**EC Safety (S No.):** Not assigned.

**EC Risk/Safety Phrases:** See Section 15, "Regulatory Information".

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#### 4. FIRST AID MEASURES

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**Inhalation:** If adverse effects occur, remove to uncontaminated area. If not breathing, give artificial respiration by qualified personnel. Seek immediate medical attention.

**Skin Contact:** Rinse affected area with soap and water for at least 15 minutes. Seek medical assistance if necessary.

**Eye Contact:** Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Seek immediate medical attention.

**Ingestion:** If a large amount is swallowed, seek medical attention.

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#### 5. FIRE FIGHTING MEASURES

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**Fire and Explosion Hazards:** Slight fire hazard. Dust/air mixtures may ignite or explode.

**Extinguishing Media:** Regular dry chemical, carbon dioxide, water, regular foam.

**Fire Fighting:** Avoid inhalation of combustion by-products.

**Flash Point (°C):** Not applicable.

**Autoignition Temp. (°C):** Not applicable.

**Flammability Limits in Air**

**UPPER (Volume %):** Not applicable.

**LOWER (Volume %):** Not applicable.

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#### 6. ACCIDENTAL RELEASE MEASURES

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**Occupational Release:** Collect spilled material in appropriate container for proper disposal.

**Disposal:** Refer to Section 13, "Disposal Considerations".

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#### 7. HANDLING AND STORAGE

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**Storage:** Store and handle in accordance with all current regulations and standards.

**Safe Handling Precautions:** See Section 8 "Exposure Controls and Personal Protection".

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#### 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

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**Exposure Limits:**

Component Coal Fly Ash:

No regulatory limits established.

Component Quartz:

OSHA PEL (TWA): (30)/(% SiO<sub>2</sub> + 2) mg/m<sup>3</sup> (total dust)

OSHA PEL (TWA): (10)/(% SiO<sub>2</sub> + 2) mg/m<sup>3</sup> (respirable fraction)

ACGIH (TWA): 0.025 mg/m<sup>3</sup> (respirable fraction)

NIOSH (TWA): 0.05 mg/m<sup>3</sup> (respirable dust)

NIOSH (IDLH): 50 mg/m<sup>3</sup> (respirable dust)

**Ventilation:** Local exhaust ventilation system.

**Respirator:** If workplace conditions warrant a respirator, a respiratory protection program that meets OSHA 29 CFR 1910.134 must be followed. Refer to NIOSH 42 CFR 84 for applicable certified respirators.

**Eye Protection:** Wear safety goggles. An eye wash station and drench shower should be readily available near the handling and use areas.

**Personal Protection:** Chemically resistant gloves and clothing are recommended.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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**Appearance and Odor:** Black powder, no odor information available.

**Molecular Formula:** Not applicable.

**Specific Gravity (water = 1):** >1

**Water Solubility:** 0.5 %

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## 10. STABILITY AND REACTIVITY

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**Stability:** ☒ Stable ☐ Unstable

Stable at normal temperature and pressure.

**Conditions to Avoid:** Avoid heat, flames, sparks, and other ignition sources. Avoid generating dust. Avoid contact with incompatible materials.

**Incompatible Materials:** Oxidizing materials.

**Fire/Explosion Information:** See Section 5, "Fire Fighting Measures".

**Hazardous Decomposition:** Miscellaneous decomposition products.

**Hazardous Polymerization:** ☐ Will Occur ☒ Will Not Occur

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## 11. TOXICOLOGICAL INFORMATION

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**Route of Entry:** ☒ Inhalation ☐ Skin ☐ Ingestion

**Fly Ash Toxicity Data:** May cause irritation and a cough.

Rat, Oral LD<sub>50</sub>: >2000 mg/kg

Mouse, Inhalation TDLo: 5 mg/m<sup>3</sup> (7 hour)

**Health Effects:** See Section 2: "Hazards Identification" for potential health effects.

**Target Organs:** Respiratory tract.

**Medical Conditions Generally Aggravated by Exposure:** Any individual with a chronic pulmonary disorder should protect against exposure to coal fly ash.

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## 12. ECOLOGICAL INFORMATION

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**Ecotoxicity Data:** No ecotoxicity data listed.

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## 13. DISPOSAL CONSIDERATIONS

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**Waste Disposal:** Dispose in accordance with federal, state, and local regulations.

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## 14. TRANSPORTATION INFORMATION

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**U.S. DOT and IATA:** Not regulated by DOT or IATA.

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## 15. REGULATORY INFORMATION

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### U.S. REGULATIONS

CERCLA Sections 102a/103 (40 CFR 302.4): Not regulated.

SARA Title III Section 302 (40 CFR 355.30): Not regulated.

SARA Title III Section 304 (40 CFR 355.40): Not regulated.

SARA Title III Section 313 (40 CFR 372.65): Not regulated.

OSHA Process Safety (29 CFR 1910.119): Not regulated.

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370.21):

ACUTE HEALTH: No  
CHRONIC HEALTH: Yes  
FIRE: No  
REACTIVE: No  
PRESSURE: No

**STATE REGULATIONS**

California Proposition 65: Known as cancer causing for silica crystalline particles of respirable size.

**CANADIAN REGULATIONS**

WHMIS Information: Not provided for this information.

**EUROPEAN REGULATIONS**

**EC Classification:** Not classified.

**EC Risk and Safety Phrases:** Not assigned.

**NATIONAL INVENTORY STATUS**

**U.S. Inventory (TSCA):** Not listed.

**TSCA 12(b), Export Notification:** Not listed.

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**16. OTHER INFORMATION**

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**Sources:** ChemAdvisor, MSDS *Fly Ash*, 06 April 2011.

**Disclaimer:** Physical and chemical data contained in this MSDS are provided only for use in assessing the hazardous nature of the material. The MSDS was prepared carefully, using current references; however, NIST does not certify the data in the MSDS. The certified values for this material are given in the NIST Certificate of Analysis.