SAFETY DATA SHEET

1. IDENTIFICATION OF SUBSTANCE / PREPARATION AND OF THE COMPANY

Product Name	**Certified by Technical Association of Refractories, Japan Standard Reference Materials for Carbon Analysis Free carbon and total carbon Series (Class I) JRRM1000 Series(1001,1002,1003,1004,1005,1006,1007,1008,1009) 9 piece/set**
Manufacturer	**The Technical Association of Refractories, Japan**
Address	**New Ginza Bldg.,7-3-13,Ginza,Chuo-ku,Tokyo 104-0061, Japan**
Phone number	**+81-3-3572-0705**
Fax number	**+81-3-3572-0175**
Distributer	**SEISHIN TRADING CO., LTD.**
Address	**1-4-4, Minatojima-MInamimachi, Chuo-ku, Kobe 650-0047, Japan**
Phone number	**+81-78-303-3810**
Fax number	**+81-78-303-3822**
Emergency phone number	**+81-3-3572-0705**
E-mail	**taigikyou@tarj.org**
Recommended use of the chemical and restriction on use	**This reference material series was prepared for calibration of carbon and silicon carbide-containing refractories and carbon analyzers for free carbon and total carbon determination in their raw materials. Please use as a calibration standard for carbon analyzer in free carbon and total carbon analysis. When using this product for other purposes or under special conditions, please be evaluated and take the best safety measures under your own responsibility.**

2. HAZARDS IDENTIFICATION

GHS classification

Physical Hazards	**Flammable solids**	**Not classified**
	Pyrophoric solids	**Not classified**
	Self-heating substances and mixtures	**Not classified**
	Substances and mixtures, which in contact with water, emit flammable gases	**Not classified**
	Oxidizing solids	**Not classified**
Health Hazards	**Acute toxicity (oral)**	**Not classified**
	Acute toxicity (dermal)	**Not classified**
	Acute toxicity (inhalation: dust, mist)	**Not classified**
	Skin corrosion/irritation	**Not classified**
	Serious eye damage/eye irritation	**Not classified**
	Skin/Respiratory sensitizer	**Not classified**
	Germ cell mutagenicity	**Not classified**
	Carcinogenicity	**Category 1B**

2. HAZARDS IDENTIFICATION

	Specific target organ systemic toxicity (single exposure)	Category 1(respiratory system) Category 3(respiratory tract irritation)
	Specific target organ systemic toxicity (repeated exposure)	Category 1(lung)
Environmental Hazards	Acute hazards to the aquatic environment	Not classified
	Chronic hazards to the aquatic environment	Not classified

*** Unstated information is either 'classification not possible or 'not applicable'**

Pictogram or Symbol

Signal word	**Danger**
Hazard Statement	**H335: May cause respiratory irritation**
	H350: May cause cancer
	H370: Causes damage to respiratory system
	H372: Causes damage to lung through prolonged or repeated exposure
<Prevention>	**P201: Obtain special instructions before use.**
	P202: Do not handle until all safety precautions have been read and understood.
	P260: Do not breathe dust/fume/gas/mist/vapours/spray.
	P264: Wash hands thoroughly after handling.
	P270: Do not eat, drink or smoke when using this product.
	P271: Use only outdoors or in a well-ventilated area.
	P280: Wear protective gloves/protective clothing/eye protection/face protection.
<Response>	**P304+P340: IF INHALED: Remove person to fresh air and comfortable for breathing.**
	P308+P313: IF exposed or concerned: Get medical advice/attention.
	P314: Get Medical advice/attention if you feel unwell.
<Storage>	**P403+P233: Store in a well ventilated place. Keep container tightly closed.**
	P405: Store locked up.
<Disposal>	**P501: Dispose of contents/container to in accordance with local regulations and statutory provisions.**

3. COMPOSITION / INFORMATION ON INGREDIENTS

3. COMPOSITION / INFORMATION ON INGREDIENTS

Substance/Mixture	Mixture			
Chemical identity	CAS-No	Concentration (%)	EC-No	Hazard statement Codes
Silicon carbide	409-21-2	0 - 99.6	206-991-8	H350, H370, H372
Graphite	7782-42-5	0 - 50	231-955-3	-
Silica, vitreous	60676-86-0	0 - 95	262-373-8	-
Aluminium oxide	1344-28-1	0 - 65	215-691-6	H335, H372

The type (chemical formula) of the crystal in the standard substance (9 species) was identified by X-ray diffraction method. Silicon carbide exists in JRRM 1001, 1007 to 1009. Graphite is present in JRRM 1002-1006. Amorphous fused silica (high purity products are used, X-ray diffraction method does not detect crystalline silica) exists in JRRM 1002-1006. Aluminum oxide is present in JRRM 1008 and 1009.

4. FIRST AID MEASURES

If inhaled:	**If inhaled plenty of dust, immediately remove victim to fresh air. If the victim shows breathing abnormality, immediately get medical advice/attention.**
If on skin:	**Wash with soap and water.**
If in eyes:	**If dust contact with eyes, immediately rinse with clean water or eyewash. If abnormality persists, get medical advice/attention.**
If swallowed:	**Rinse mouth with water. Immediately get medical advice/attention.**

5. FIRE FIGHTING MEASURES

Suitable extinguishing media:	**Use extinguishing media appropriate to surrounding fire conditions.**
Unsuitable extinguishing media:	**No information**
Specific hazards arising from the chemical:	**Ignition may occur if it is heated to 500 ~ 600 ℃ or higher in air.**
Special precautions for fire-fighters:	**Nothing particular**
Firefighters equipment:	**Firefighters should wear proper protective equipment.**

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:	**Avoid raising dust during a process and recover it. Wear proper protective equipment and avoid contacting dust with eyes and skin and inhaling dust.**
Environmental precautions:	**Nothing particular**

7. HANDLING & STORAGE

Advice on safe handling:	**Wear a dust respirator, safety glasses and so one, as appropriate. Avoid collapse and dropping of the goods.**

7. HANDLING & STORAGE

Storage conditions: **Store indoors, way from water.**

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits:

ACGIH	**TWA**	**10 mg/m^3 (aluminum oxide)**
	TWA	**2 mg/m^3 (graphite)**
	TWA	**0.1 mg/m^3 (amorphous silica)**
	TWA	**0.1f/cc(F) Fibrous (including whiskers)**
	TWA	**10mg/m3(I,E) (silicon carbide non fibrious)**
	TWA	**3mg/m3(R,E) (silicon carbide non fibrious)**

Appropriate engineering controls: **To keep below exposure limit, make available local exhaust ventilation if necessary.**

Individual protection measures:

Respiratory protection: **When above exposure limit, use a dust respirator, if ventilation is judged to be insufficient.**

Hand protection: **Wear protective gloves.**

Eye protection: **Wear dust goggles, if necessary.**

Skin and body protection: **Wear long sleeve clothes to protect skin.**

Hygiene measures: **Wash hands after handling.**

9. PHYSICAL & CHEMICAL PROPERTIES

Physical form, color etc: **Powder / Light green or Dark gray**

Odor: **No odor**

pH: **No data, insoluble in water**

Melting point: **No data**

Boiling point, Flash point, Auto-ignition point: **Not flammable solids**

Specific gravity: **No data**

Solubility: **Insoluble in organic solvents and water**

10. STABILITY & REACTIVITY

Stability: **Stable under normal conditions.**

10. STABILITY & REACTIVITY

Possibility of hazardous reactions:	**React with strong acids and hydrogen fluoride.** **If it floats above a certain amount in the air, it may cause dust explosion.** **Regarding JRRM 1001 and 1007 to 1009,** **(1) It is decomposed into a viscous liquid and a gelatinous precipitate in concentrated phosphoric acid.** **(2) Reacts gradually with molten alkali to produce carbonate and silicate.** **(3) Molten carbonate, alkali sulfate, boron oxide, lead chromate is also decomposed.** **(4) Reacts explosively when heated with a mixture of potassium dichromate and lead chromate.** **(5) When heated with oxides such as copper, iron, nickel, platinum, manganese etc., silicide of these metals is produced.**
Conditions to avoid:	**Diffusion of dust and mixing with a strong oxidizing agent (above (4)).**
Material to avoid:	**Strong acids and hydrogen fluoride.**
Hazardous decomposition products:	**Nothing**

11. TOXICOLOGICAL INFORMATION

GHS classification was performed by the data of a pure substance, because tested data as a mixture is not available.
As reference, data of each ingredient are shown below.

Carcinogenicity	**It was considered as Category 1B based on that it was classified into A2 in ACGIH (ACGIH (2003)).(silicon carbide)**
Specific target organs/systemic toxicity following single exposure	**Upper respiratory irritation (Category 3, respiratory tract irritation) (aluminum oxide)** **In the rat, by the dosage of guidance value within the limits of Category 1, it was set as Category 1 (respiratory systems) based on the statement (ACGIH (2003)) that pulmonary edemas, pulmonary hemorrhage, interstitial pneumonia, bronchioles collapse, and the alveolar atelectasis were acknowledged,.(silicon carbide)**
Specific target organs/systemic toxicity following repeated exposure	**By occupational exposure of aluminas, pulmonary fibrosis was occurred. (Category 1, lung) (aluminum oxide)** **It was classified into Category 1 (lung) based on a statement that shows pneumoconiosis, change in chest radiography pictures, lung fibrosis, knot, and silicosis were observed in humans (ACGIH (2003), HSDB (2005)).(silicon carbide)**

12. ECOLOGICAL INFORMATION

12. ECOLOGICAL INFORMATION

No information available

13. DISPOSAL CONSIDERATIONS

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Waste must be sent to an approved incinerator or disposed in an approved waste facility.

14. TRANSPORT INFORMATION

National regulations

Ground regulation information:	**Not regulated**
Maritime regulation information:	**Non-hazardous material**

Prevent exposure to water and collapse of cargo in freight transport.

United Nations number:	**-**
UN Proper shipping name:	**-**
Transport Hazard class:	**-**
Packing group, if applicable:	**-**
Marine pollutant (Y/N):	**Not applicable**

15. REGULATORY INFORMATION

International Inventories

EINECS/ELINCS Listed

TSCA Listed

Japanese regulations

ISHA: Chemical Substances requiring Labeling and Deliver of Documents, etc.

Water Pollution Control Law: Designated Substances, Aluminium and its compounds(Article 3-3-44 of Cabinet order)

16. OTHER INFORMATION

This information is based on our present state of knowledge and is intended to describe our products from the point of view of the safety requirements. It should not be construed as guaranteeing specific properties.

End of SDS