MATERIAL SAFETY DATA SHEET

PRODUCT NAME: Ilmenite

Section 1 - GENERAL DESCRIPTION

INGREDIENTS: Natural mineral ilmenite (approximately 63.5% TiO2): 100%
SYNONYMS: None known.
DESCRIPTION: Generally black as a sand. Opaque under microscope. Odorless and tasteless.
USES: Raw material for paints, dyes and plastics, chloride and sulphate titanium dioxide pigment manufacture, a welding rod flux, and a sandblasting medium.
MANUFACTURER: RGC (USA) Mineral Sands Inc.

Section 2 - HEALTH HAZARD INFORMATION

EYE: Solid or dust is a moderate eye irritant due to its abrasive action.
INHALATION: May be regarded as a nuisance dust but can be irritating if inhaled at high concentrations and may cause symptoms such as coughing or sneezing.
SKIN: Low hazard.
INGESTION: Non toxic, so there are no known hazards caused by accidental ingestion of small amounts such as might occur during normal handling.
RADIATION: In common with many naturally occurring mineral products, ilmenite contains very low levels of naturally occurring radioactive elements - principally uranium and thorium. The principal radiation hazard is due to inhalation of any dust, whilst a secondary lesser external hazard exists through low gamma radiation from bulk or bagged stockpiles. Ilmenite typically exhibits a total specific activity of 60 - 80 pCi/gm.
SUMMARY: There are no reported acute or chronic effects of exposure other than the possible radiation hazard as mentioned. However prolonged exposure in a confined space can cause respiratory irritation.

ISSUED: May 1995

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Section 3 - PRECAUTIONS FOR USE

<table>
<thead>
<tr>
<th>FLAMMABILITY:</th>
<th>Non-flammable.</th>
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<tbody>
<tr>
<td>OTHER HAZARDS:</td>
<td>None known.</td>
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<tr>
<td>VENTILATION:</td>
<td>Extraction or make-up air may be required to minimize dust levels.</td>
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<tr>
<td>PROTECTIVE:</td>
<td>Safety glasses or goggles. A dust type respirator may be required if ventilation is insufficient to minimize airborne dust.</td>
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Section 4 - FIRST AID PROCEDURES

<table>
<thead>
<tr>
<th>EYE:</th>
<th>Hold eyelids open and rinse the eye continuously with a gentle stream of clean running water for at least 15 minutes. Seek medical attention if any irritation or soreness of the eye persists.</th>
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<tbody>
<tr>
<td>INHALATION:</td>
<td>Remove from exposure and seek fresh air; seek medical attention if any symptoms persist.</td>
</tr>
<tr>
<td>SKIN:</td>
<td>Remove clothing and wash off thoroughly with soap and water. Seek medical attention if any irritation or soreness persists.</td>
</tr>
<tr>
<td>INGESTION:</td>
<td>First aid is unlikely to be required but if necessary, rinse mouth out with water ensuring that mouthwash is not swallowed. Seek medical attention as a precautionary measure if large quantities have been ingested.</td>
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</table>
Section 5 - SAFE HANDLING PROCEDURES

TRANSPORT: Transport may be regulated in some countries although the material is generally not considered to be a transport hazard. Trucks should be sheeted however, to prevent dispersal of dust when travelling. Bulk transporters should be cleaned by washing rather than by sweeping. Drivers/cleaners should wear respiratory protection when cleaning. Local exhaust ventilation or filtration plant will minimize dust hazards.

STORAGE: No specific storage requirements, but storage should be dry to ensure quality.

SPILLAGE: Protective equipment as per section 3. Clean up spillages by sweeping or vacuuming taking care to avoid generating dusts. Dampening with water may be appropriate if spillage is to be disposed.

WASTE DISPOSAL: Dispose to landfill, preferable damp to avoid dust generation, and then cover with 1 metre of earth.

FIRE EXPLOSION: Non-combustible.

EXTINGUISHING: Use whatever protective equipment and extinguishing agents that are appropriate for the primary cause of the fire.

ECOLOGICAL: The material is unlikely to cause environmental damage if handled, used, and disposed in the approved manner. It is insoluble, and thus unlikely to contaminate water or enter the food chains.

Section 6 - PHYSICAL AND TECHNICAL SAFETY DATA

MELTING POINT: 1,050°C
BOILING POINT: not applicable

SPECIFIC GRAVITY: 4.20 - 4.30
BULK DENSITY: 2400 - 2700 Kg/m³

ANGLE OF REPose: 30° when coned.
TRANSPORTABLE MOISTURE LIMIT: 8 - 10%

VAPOR PRESSURE: none
VAPOR DENSITY: not applicable

FLAMMABILITY: non-flammable
FLASHPOINT: non-flammable

SOLUBILITY: insoluble at 20°C
LOI: can be up to 3%

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### LABELLING:
May be required in the USA if free silica exceeds 0.10%.

### RADIOLOGICAL PROTECTION:
The regulations pertaining to radiological protection vary from country to country. It is the responsibility of the buyer to ensure that those regulations are met in accordance with the relevant legislation. Some of the regulating bodies are:

**Australia:** Federal Dept of the Arts, Sports, Environment, Tourism and Territories  
State Environmental Protection Authorities  
State Departments of Mines  
State Departments of Health and Safety

**USA:** Federal Nuclear Regulatory Commission  
Federal Environmental Protection Authority (ORIA)  
State Departments of Radiological protection

**Japan:** Ministry of International Trade and Industry  
Science and Technology Agency  
Ministry of Health and Welfare  
Ministry of Labor

**UK:** Health and Safety Executive

Further information can be obtained from:  
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Fax: (904) 284-4034

Note: The information contained herein is to describe the product in terms of occupational health and safety requirements only, and should not therefore be construed as guaranteeing specific properties or as a specification. It is expressly understood that all advice is given and accepted at buyer's risk, and that no warranty or guarantee is made as to its accuracy, reliability or completeness.