1. Product and Company Identification

Product Name: BAYFERROX 663 PIGMENT
Material Number: 2462501
Chemical Family: Inorganic Metal Oxide Mixture
Color Index Name: Pigment Red 101 with Black 11
Color Index-No.: 77491:77499
Chemical Name: Mixed Iron Oxides
Synonyms: Mixture of Unhydrated Iron Oxides
Formula: Mixture of Fe2O3 and Fe3O4

2. Hazards Identification

Emergency Overview
Product poses little or no hazard if spilled. May cause mechanical irritation (abrasion).

Potential Health Effects
Primary Routes of Entry: Inhalation, Skin Contact, Eye Contact, Ingestion
Medical Conditions Aggravated by Exposure: Respiratory disorders

HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE

Inhalation
Acute Inhalation
For Component: Iron (III) Oxide
May cause mechanical irritation.

For Component: Amorphous Silica
May cause mechanical irritation.
Chronic Inhalation
For Component: Amorphous Silica
Prolonged inhalation of amorphous silica may produce x-ray changes in the lungs without disability.

Skin
Acute Skin
For Component: Iron (III) Oxide
May cause mechanical irritation.

Eye
Acute Eye
For Component: Iron (III) Oxide
May cause mechanical irritation.

For Component: Amorphous Silica
May cause mechanical irritation.

Other Effects of Exposure
For Component: Iron (III) Oxide
Prolonged inhalation (6 to 10 years) of iron oxide fume has been reported to produce changes in lung x-rays of exposed individuals. This condition, siderosis, is considered to be a benign pneumoconiosis that exhibits no adverse health effects. Siderosis has been observed among occupations such as arc-welders where iron oxide fumes are present. To the best of our knowledge, this condition has not been observed after prolonged exposure to iron oxide pigments.

Carcinogenicity:
No Carcinogenic substances as defined by IARC, NTP and/or OSHA

3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Weight %</th>
<th>Components</th>
<th>CAS-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 - 50%</td>
<td>Iron (III) Oxide</td>
<td>1309-37-1</td>
</tr>
<tr>
<td>1 - 5%</td>
<td>Amorphous Silica</td>
<td>7631-86-9</td>
</tr>
</tbody>
</table>

4. First Aid Measures

Eye Contact
In case of contact, flush eyes with plenty of lukewarm water. Get medical attention if irritation develops.

Skin Contact
In case of skin contact, wash affected areas with soap and water.

Inhalation
If inhaled, remove to fresh air. Get medical attention if irritation develops.

Ingestion
If ingested, do not induce vomiting unless directed to do so by medical personnel. Get medical attention.
5. Fire-Fighting Measures

**Suitable Extinguishing Media:** Material is not combustible. Use extinguishing media suitable for other combustible materials in the area.

**Special Fire Fighting Procedures**
Firefighters should be equipped with self-contained breathing apparatus to protect against potentially toxic and irritating fumes.

6. Accidental release measures

**Spill and Leak Procedures**
Spills should be swept up and placed in appropriate containers for disposal. Clean up promptly by scoop or vacuum. Avoid creating dusty conditions.

7. Handling and Storage

**Storage Period**
Unlimited in tightly closed containers.

**Handling/Storage Precautions**
Handle in accordance with good industrial hygiene and safety practices. Wash thoroughly after handling. Keep container closed when not in use. Avoid breathing dust.

**Further Info on Storage Conditions**
Material can be stored safely at ambient temperatures.

8. Exposure Controls / Personal Protection

**Iron (III) Oxide (1309-37-1)**
- US. ACGIH Threshold Limit Values
  - Time Weighted Average (TWA): 5 mg/m³ as Fe (Dust and fume.)
- US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)
  - PEL: 10 mg/m³ (Fume.)
- US. ACGIH Threshold Limit Values
  - Hazard Designation: Group A4 Not classifiable as a human carcinogen.

**Amorphous Silica (7631-86-9)**
- US. OSHA Table Z-2 (29 CFR 1910.1000)
  - Time Weighted Average (TWA): 80 mg/m³ (Divide 80 mg/m³ by % SiO₂ determined from air sample analysis to obtain the PEL.)
- US. ACGIH Threshold Limit Values
  - Time Weighted Average (TWA): 10 mg/m³

**Industrial Hygiene/Ventilation Measures**
Under normal conditions of use, special ventilation is not required.

**Respiratory Protection**
The following respirator is recommended if airborne concentrations exceed the appropriate standard/guideline. NIOSH approved, air-purifying particulate respirator with N-95 filters.

**Eye Protection**
safety glasses.

**Skin and body protection**
No special skin protection requirements during normal handling and use.

**Additional Protective Measures**
Employees should wash their hands and face before eating, drinking, or using tobacco products. Educate and train employees in the safe use and handling of this product.

### 9. Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Form:</strong></td>
<td>solid</td>
</tr>
<tr>
<td><strong>Appearance:</strong></td>
<td>Powder</td>
</tr>
<tr>
<td><strong>Color:</strong></td>
<td>Brown</td>
</tr>
<tr>
<td><strong>Odor:</strong></td>
<td>Odorless</td>
</tr>
<tr>
<td><strong>pH:</strong></td>
<td>4 - 8 @ 50 g/l</td>
</tr>
<tr>
<td><strong>Melting Point:</strong></td>
<td>Begins at 1,000 °C (1,832 °F)</td>
</tr>
<tr>
<td><strong>Flash Point:</strong></td>
<td>not applicable</td>
</tr>
<tr>
<td><strong>Lower Explosion Limit:</strong></td>
<td>Not Established</td>
</tr>
<tr>
<td><strong>Upper Explosion Limit:</strong></td>
<td>Not Established</td>
</tr>
<tr>
<td><strong>Vapor Pressure:</strong></td>
<td>not applicable</td>
</tr>
<tr>
<td><strong>Specific Gravity:</strong></td>
<td>4 - 5 @ 20 °C (68 °F)</td>
</tr>
<tr>
<td><strong>Solubility in Water:</strong></td>
<td>Insoluble</td>
</tr>
<tr>
<td><strong>Autoignition Temperature:</strong></td>
<td>Not Applicable</td>
</tr>
<tr>
<td><strong>Viscosity, Dynamic:</strong></td>
<td>not applicable</td>
</tr>
<tr>
<td><strong>Bulk Density:</strong></td>
<td>300 - 1,000 kg/m3</td>
</tr>
</tbody>
</table>

### 10. Stability and Reactivity

**Hazardous Reactions**
Hazardous polymerization does not occur.

**Stability**
Stable

**Materials to avoid**
None known.

**Hazardous decomposition products**
None known.

### 11. Toxicological Information

**Toxicity Data for C.I. Pigment Black 11**

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acute Oral Toxicity</strong></td>
<td></td>
</tr>
<tr>
<td>LD50:</td>
<td>&gt; 5,000 mg/kg (Rat)</td>
</tr>
</tbody>
</table>

**Skin Irritation**
rabbit, Acute Dermal Irritation, Non-irritating

**Eye Irritation**
rabbit, Acute Eye Irritation Study, Non-irritating

**Sensitization**
dermal: non-sensitizer (Guinea pig)

**Mutagenicity**
Genetic Toxicity in Vitro:
Ames: negative (Salmonella typhimurium, Metabolic Activation: with/without)

**Toxicity Data for Iron (III) Oxide**

**Acute Oral Toxicity**
LD50: > 5,000 mg/kg (Rat)

**Acute dermal toxicity**
LD50: 5,500 mg/kg (Rat)

**Skin Irritation**
rabbit, Acute Dermal Irritation, Exposure Time: 24 hrs, Non-irritating

**Eye Irritation**
rabbit, Acute Eye Irritation Study, Non-irritating

**Toxicity Data for Amorphous Silica**

**Acute Oral Toxicity**
LD50: > 5,000 mg/kg (Rat)

**Acute Inhalation Toxicity**
LC50: > 2.2 mg/l, 1 hrs (Rat)

**Acute dermal toxicity**
LD50: > 5,000 mg/kg (rabbit)

**Skin Irritation**
rabbit, Non-irritating

**Eye Irritation**
rabbit, Non-irritating

**Sensitization**
dermal: non-sensitizer (Guinea pig, Magnusson/Kligmann (Maximization Test))

**Repeated Dose Toxicity**
90 Days, inhalation: NOAEL: < 0.001 mg/l, (Rat)

**Mutagenicity**
Genetic Toxicity in Vitro:
Ames: negative (Salmonella typhimurium, Metabolic Activation: with/without)
Genetic Toxicity in Vivo:
Cytogenetic assay: negative (Rat)

**Carcinogenicity**
Rat, Male/Female, oral, 2 Years, daily
negative
12. Ecological Information

Ecological Data for C.I. Pigment Black 11
Acute and Prolonged Toxicity to Fish
LC0: > 1,000 mg/l (Golden orfe (Leuciscus idus), 48 hrs)

Toxicity to Microorganisms
EC0: > 1,000 mg/l, (Pseudomonas fluorescens, 24 hrs)

Ecological Data for Iron (III) Oxide
Acute and Prolonged Toxicity to Fish
LC0: > 1,000 mg/l (Golden orfe (Leuciscus idus), 48 hrs)

Toxicity to Microorganisms
EC0: > 5,000 mg/l, (Pseudomonas fluorescens, 24 hrs)

Toxicity Other Non-Mammal Terrestrial Species
No Harmful effects

Ecological Data for Amorphous Silica
Biodegradation
The methods for determining the biological degradability are not applicable to inorganic substances.

Bioaccumulation
Not expected to bio-accumulate.

Acute and Prolonged Toxicity to Fish
LC50: 5,000 mg/l (Zebra fish (Brachydanio rerio), 96 hrs)
Calculated value

Acute Toxicity to Aquatic Invertebrates
EC0: 10,000 mg/l (Water flea (Daphnia magna), 24 hrs)
EC50: 7,600 mg/l (Ceriodaphnia sp, 48 hrs)
Calculated value

Toxicity to Aquatic Plants
EC50: 440 mg/l, End Point: growth (Green algae (Selenastrum capricornutum), 72 hrs)

Toxicity to Microorganisms
EC50: 8,700 mg/l, (Photobacterium phosphoreum, 15 min)

13. Disposal considerations

Waste Disposal Method
Waste disposal should be in accordance with existing federal, state and local environmental control laws.

Empty Container Precautions
Recondition or dispose of empty container in accordance with governmental regulations.
14. Transportation information

Land transport (DOT)
Non-Regulated

Sea transport (IMDG)
Non-Regulated

Air transport (ICAO/IATA)
Non-Regulated

15. Regulatory Information

United States Federal Regulations

OSHA Hazcom Standard Rating: Hazardous

US. Toxic Substances Control Act: Listed on the TSCA Inventory.

US. EPA CERCLA Hazardous Substances (40 CFR 302):

Components
None

SARA Section 311/312 Hazard Categories:

Chronic Health Hazard

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 302 Extremely Hazardous Substance (40 CFR 355, Appendix A):

Components
None

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification Required:

Components
None

If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste. (40 CFR 261.20-24)

State Right-To-Know Information
The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of the MSDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

Potential exposure to the California Proposition 65 chemicals in this product have been determined to be below the No Significant Risk Level (NSRL). The concentrations reported below in units of parts per million (ppm) or parts per billion (ppb) are maximum values.
Massachusetts, New Jersey or Pennsylvania Right to Know Substance Lists:

<table>
<thead>
<tr>
<th>Weight %</th>
<th>Components</th>
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<tbody>
<tr>
<td>&gt;=1%</td>
<td>C.I. Pigment Black 11</td>
<td>1317-61-9</td>
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MA Right to Know Extraordinarily Hazardous Substance List:

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<thead>
<tr>
<th>Weight %</th>
<th>Components</th>
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</tr>
</thead>
<tbody>
<tr>
<td>50 ppm</td>
<td>Arsenic</td>
<td>7440-38-2</td>
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<tr>
<td>900 ppm</td>
<td>Chromium</td>
<td>7440-47-3</td>
</tr>
<tr>
<td>300 ppm</td>
<td>Nickel (Ni)</td>
<td>7440-02-0</td>
</tr>
</tbody>
</table>

California Prop. 65:
To the best of our knowledge, this product does not contain any of the listed chemicals, which the state of California has found to cause cancer, birth defects or other reproductive harm.

16. Other Information

NFPA 704M Rating

<table>
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<tr>
<td>Flammability</td>
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<td>Reactivity</td>
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HMIS Rating

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<tr>
<td>Physical Hazard</td>
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LANXESS Corporation's method of hazard communication is comprised of Product Labels and Material Safety Data Sheets. HMIS and NFPA ratings are provided by LANXESS Corporation as a customer service.

Contact Person: Product Safety Department
Telephone: (800) LANXESS
MSDS Number: R304553
Version Date: 11/16/2004
Report Version: 2.0

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