SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier
- Trade name: BARIUM SULFATE PRECIPITATED - BLANC FIXE N
- Chemical name: Barium sulfate
- Molecular formula: BaSO4

1.2 Relevant identified uses of the substance or mixture and uses advised against

   Uses of the Substance / Mixture
   - Manufacture of pigments
   - Manufacture of plastics products
   - Manufacture of paper
   - Manufacture of batteries and accumulators
   - Industrial manufacture of coatings and inks
   - Manufacture of paints and coatings
   - Industrial and professional use of paints and coatings
   - Cosmetics
   - Fillers

   Uses advised against
   - none

1.3 Details of the supplier of the safety data sheet

   Company
   SOLVAY FLUORIDES, LLC
   3737 Buffalo Speedway,
   Suite 800,
   Houston, TX 77098
   USA
   Tel: 800-515-6065

1.4 Emergency telephone

   FOR EMERGENCIES INVOLVING A SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CONTACT CHEMTREC (24-Hour Number): 800-424-9300 within the United States and Canada, or 703-527-3887 for international collect calls.

SECTION 2: Hazards identification

Although OSHA has not adopted the environmental portion of the GHS regulations, this document may include information on environmental effects.

2.1 Classification of the substance or mixture

   HCS 2012 (29 CFR 1910.1200)
   - Not a hazardous product according to the OSHA Globally Harmonized System (GHS).

2.2 Label elements

   HCS 2012 (29 CFR 1910.1200)
   - Not a hazardous product according to the OSHA Globally Harmonized System (GHS).
2.3 Other hazards which do not result in classification

- Product dust may be irritating to eyes, skin and respiratory system.
- Possible risk of irreversible effects through inhalation.
- Risk of pulmonary overload (respirable particulates)

SECTION 3: Composition/information on ingredients

3.1 Substance

Hazardous Ingredients and Impurities

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Identification number CAS-No.</th>
<th>Concentration [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barium sulfate</td>
<td>7727-43-7</td>
<td>&gt;= 95 - &lt; 99</td>
</tr>
</tbody>
</table>

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

3.2 Mixture

Not applicable, this product is a substance.

SECTION 4: First aid measures

4.1 Description of first-aid measures

**In case of inhalation**

- Move to fresh air.
- If symptoms persist, call a physician.

**In case of skin contact**

- Wash off with soap and water.

**In case of eye contact**

- Rinse thoroughly with plenty of water, also under the eyelids.
- If eye irritation persists, consult a specialist.

**In case of ingestion**

- Rinse mouth with water.
- Do NOT induce vomiting.
- If symptoms persist, call a physician or Poison Control Center immediately.

4.2 Most important symptoms and effects, both acute and delayed

**In case of inhalation**

Effects

- May cause nose, throat, and lung irritation.

Repeated or prolonged exposure

- Risk of pulmonary overload (respirable particulates)

**In case of skin contact**

Effects

- No known effect.
- See Toxicological Information Section 11.

**In case of eye contact**

**Effects**
- Contact with eyes may cause irritation.

**In case of ingestion**

**Effects**
- Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

4.3 **Indication of any immediate medical attention and special treatment needed**

**Notes to physician**
- If accidentally swallowed obtain immediate medical attention.
- When symptoms persist or in all cases of doubt seek medical advice.

---

**SECTION 5: Firefighting measures**

<table>
<thead>
<tr>
<th>Property</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flash point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammability / Explosive limit</td>
<td>No data available</td>
</tr>
</tbody>
</table>

5.1 **Extinguishing media**

**Suitable extinguishing media**
- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Unsuitable extinguishing media**
- None known.

5.2 **Special hazards arising from the substance or mixture**

**Specific hazards during fire fighting**
- Not combustible.

**Hazardous combustion products:**
- Barium oxide
- Sulfur oxides

5.3 **Advice for firefighters**

**Special protective equipment for fire-fighters**
- In the event of fire, wear self-contained breathing apparatus.

---

**SECTION 6: Accidental release measures**

6.1 **Personal precautions, protective equipment and emergency procedures**

**Advice for non-emergency personnel**
- Evacuate personnel to safe areas.
Avoid dust formation.

Advice for emergency responders
- Use personal protective equipment.
- Sweep up to prevent slipping hazard.
- Prevent further leakage or spillage.

6.2 Environmental precautions
- Should not be released into the environment.
- Local authorities should be advised if significant spillages cannot be contained.

6.3 Methods and materials for containment and cleaning up
- Sweep up and shovel into suitable containers for disposal.

6.4 Reference to other sections
- Refer to protective measures listed in sections 7 and 8.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
- Ensure adequate ventilation.

Hygiene measures
- When using do not eat, drink or smoke.
- Wash hands before breaks and at the end of workday.
- Handle in accordance with good industrial hygiene and safety practice.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/Storage conditions
- Store in original container.
- Store in a well-ventilated place.
- Keep in a dry place.
- Keep container closed.

Packaging material
- Paper.
- Polyethylene

7.3 Specific end use(s)
- Contact your supplier for additional information
### SECTION 8: Exposure controls/personal protection

Introductory Remarks: These recommendations provide general guidance for handling this product. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Assistance with selection, use and maintenance of worker protection equipment is generally available from equipment manufacturers.

#### 8.1 Control parameters

**Components with workplace occupational exposure limits**

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Value type</th>
<th>Value</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particles not otherwise specified (PNOS)</td>
<td>TWA</td>
<td>15 mg/m³</td>
<td>Occupational Safety and Health Administration - Table Z-1 Limits for Air Contaminants</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Form of exposure: total dust</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>All inert or nuisance dusts, whether mineral, inorganic, or organic, not listed specifically by substance name are covered by the Particulates Not Otherwise Regulated (PNOR) limit which is the same as the inert or nuisance dust limit of Table Z-3.</td>
</tr>
<tr>
<td>Particles not otherwise specified (PNOS)</td>
<td>TWA</td>
<td>5 mg/m³</td>
<td>Occupational Safety and Health Administration - Table Z-1 Limits for Air Contaminants</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Form of exposure: respirable fraction</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>All inert or nuisance dusts, whether mineral, inorganic, or organic, not listed specifically by substance name are covered by the Particulates Not Otherwise Regulated (PNOR) limit which is the same as the inert or nuisance dust limit of Table Z-3.</td>
</tr>
<tr>
<td>Particles not otherwise specified (PNOS)</td>
<td>TWA</td>
<td>10 mg/m³</td>
<td>American Conference of Governmental Industrial Hygienists</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Form of exposure: Inhalable fraction</td>
</tr>
<tr>
<td>Particles not otherwise specified (PNOS)</td>
<td>TWA</td>
<td>3 mg/m³</td>
<td>American Conference of Governmental Industrial Hygienists</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Form of exposure: Respirable fraction</td>
</tr>
<tr>
<td>Barium sulfate</td>
<td>TWA</td>
<td>5 mg/m³</td>
<td>American Conference of Governmental Industrial Hygienists</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Form of exposure: Inhalable fraction</td>
</tr>
<tr>
<td>Barium sulfate</td>
<td>TWA</td>
<td>5 mg/m³</td>
<td>American Conference of Governmental Industrial Hygienists</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Form of exposure: Respirable</td>
</tr>
<tr>
<td>Barium sulfate</td>
<td>TWA</td>
<td>10 mg/m³</td>
<td>American Conference of Governmental Industrial Hygienists</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Form of exposure: total</td>
</tr>
<tr>
<td>Barium sulfate</td>
<td>TWA</td>
<td>15 mg/m³</td>
<td>Occupational Safety and Health Administration - Table Z-1 Limits for Air Contaminants</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Form of exposure: total dust</td>
</tr>
</tbody>
</table>
### 8.2 Exposure controls

**Control measures**

**Engineering measures**
- Provide appropriate exhaust ventilation at places where dust is formed.
- Apply technical measures to comply with the occupational exposure limits.

**Individual protection measures**

**Respiratory protection**
- Use only respiratory protection that conforms to international/ national standards.
- Use NIOSH approved respiratory protection.
- Respirator with a particle filter (EN 143)

**Hand protection**
- Wear suitable gloves.

**Suitable material**
- PVC
- Natural Rubber

**Eye protection**
- Dust proof goggles, if dusty.

**Skin and body protection**
- Dust impervious protective suit

**Hygiene measures**
- When using do not eat, drink or smoke.
- Wash hands before breaks and at the end of workday.
- Handle in accordance with good industrial hygiene and safety practice.
SECTION 9: Physical and chemical properties

Physical and Chemical properties here represent typical properties of this product. Contact the business area using the Product information phone number in Section 1 for its exact specifications.

9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Crystalline powder</td>
</tr>
<tr>
<td>Color</td>
<td>white</td>
</tr>
<tr>
<td>Particle size</td>
<td>ca. 0.8 - 6 µm Mean diameter</td>
</tr>
<tr>
<td>Odor</td>
<td>odorless</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>Molecular weight</td>
<td>233.39 g/mol</td>
</tr>
<tr>
<td>pH</td>
<td>ca. 9.0</td>
</tr>
<tr>
<td>pKa</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>Decomposition: yes</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>Boiling point/boiling range:</td>
</tr>
<tr>
<td>Thermal decomposition</td>
<td>Decomposition: yes</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Evaporation rate (Butylacetate = 1)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (liquids)</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability / Explosive limit</td>
<td>Explosiveness: Not explosive</td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapor density</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Density</td>
<td>4.5</td>
</tr>
<tr>
<td>Relative density</td>
<td>Water solubility:</td>
</tr>
<tr>
<td>Solubility</td>
<td>3.1 mg/l (77 °F (25 °C))</td>
</tr>
<tr>
<td></td>
<td>insoluble</td>
</tr>
</tbody>
</table>
SECTION 10: Stability and reactivity

10.1 Reactivity
   - According to experience not expected

10.2 Chemical stability
   - Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
   - According to experience not expected

10.4 Conditions to avoid
   - To avoid thermal decomposition, do not overheat.

10.5 Incompatible materials
   - none

10.6 Hazardous decomposition products
   - Barium oxide
   - Sulfur oxides

SECTION 11: Toxicological information

11.1 Information on toxicological effects

   Acute toxicity
   Acute oral toxicity
   LD50: > 5,000 mg/kg, male
   Method: OECD Test Guideline 401
   Not classified as harmful if swallowed
   Published data

   Acute inhalation toxicity
   No data available
Acute dermal toxicity

By analogy

LD50 Dermal : > 2,000 mg/kg - Rat
Not classified as harmful by contact with skin
Published data

Acute toxicity (other routes of administration)

No data available

Skin corrosion/irritation

By analogy

No skin irritation
in vitro test
Unpublished reports

Serious eye damage/eye irritation

Rabbit
No eye irritation
Method: OECD Test Guideline 405
Unpublished reports

Respiratory or skin sensitization

By analogy

Local lymph node assay - Mouse
Does not cause skin sensitization.
Method: OECD Test Guideline 429
Unpublished reports

Mutagenicity

Genotoxicity in vitro

By analogy
In vitro tests did not show mutagenic effects

Genotoxicity in vivo

No data available

Carcinogenicity

By analogy

Rat
Mouse
Oral
Exposure duration: 2 y
No carcinogenic effects have been observed
Published data
This product does not contain any ingredient designated as probable or suspected human carcinogens by:
NTP
IARC
OSHA

Toxicity for reproduction and development

Toxicity to reproduction / fertility  No data available
Developmental Toxicity/Teratogenicity  No data available

STOT
STOT-single exposure
The substance or mixture is not classified as specific target organ toxicant, single exposure according to GHS criteria.

STOT-repeated exposure
The substance or mixture is not classified as specific target organ toxicant, repeated exposure according to GHS criteria.
Oral exposure 90-day - Rat , for males and females
NOAEL: > 104 mg/kg
Target Organs: Cardio-vascular system, hematology system, Adrenal gland drinking water
Published data

Experience with human exposure  No data available

Aspiration toxicity  No data available

Further information
Health injuries are not known or expected under normal use.
No data exists on the effects of nanometer sized particles on the body.
Other dangerous properties can not be excluded.

SECTION 12: Ecological information

12.1 Toxicity

Aquatic Compartment

Acute toxicity to fish
LC50 - 96 h : > 3.5 mg/l - Danio rerio (zebra fish)
static test
Analytical monitoring: yes

Test substance: Barium chloride dihydrate
Method: OECD Test Guideline 203
Unpublished internal reports
Acute toxicity to daphnia and other aquatic invertebrates

EC50 - 48 h : 14.5 mg/l - Daphnia magna (Water flea)
static test
Analytical monitoring: yes
Test substance: Barium chloride dihydrate
Method: OECD Test Guideline 202
Published data

Toxicity to aquatic plants

ErC50 - 72 h : > 1.15 mg/l - Pseudokirchneriella subcapitata (microalgae)
static test
Analytical monitoring: yes
Test substance: Barium chloride dihydrate
Method: OECD Test Guideline 201
Unpublished internal reports

NOEC - 72 h : > 1.15 mg/l - Pseudokirchneriella subcapitata (microalgae)
static test
Analytical monitoring: yes
Endpoint: Growth rate
Test substance: Barium chloride dihydrate
Method: OECD Test Guideline 201
Unpublished internal reports

Toxicity to microorganisms

NOEC - 3 h : 622 mg/l - activated sludge
Respiration inhibition
Analytical monitoring: yes
Test substance: Barium chloride dihydrate
Method: OECD Test Guideline 209
Unpublished internal reports

Chronic toxicity to fish

NOEC: > 1.26 mg/l - 33 d - Danio rerio (zebra fish)
semi-static test
Analytical monitoring: yes
Test substance: Barium chloride dihydrate
Method: OECD Test Guideline 210
Unpublished internal reports

Chronic toxicity to daphnia and other aquatic invertebrates

NOEC: 2.9 mg/l - 21 Days - Daphnia magna (Water flea)
semi-static test
Analytical monitoring: yes
Test substance: Barium chloride dihydrate
Method: OECD Test Guideline 211
Published data

Terrestrial Compartment
Toxicity to soil dwelling organisms

By analogy

NOEC: 258 mg/kg - 21 Days - Eisenia fetida (earthworms)
Reproduction Test
Test substance: Barium
Published data

By analogy

NOEC: 211 mg/kg - 28 Days - Folsomia candida
Reproduction Test
Test substance: Barium
Published data

12.2 Persistence and degradability

Abiotic degradation

Photodegradation
inert product in normal environmental conditions
Medium
Water
Soil

Physical- and photo-chemical elimination
No data available

Biodegradation

Biodegradability
The methods for determining biodegradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

Partition coefficient: n-octanol/water
No data available

Bioconcentration factor (BCF)
Bioaccumulation is unlikely.

12.4 Mobility in soil

Adsorption potential (Koc)
Water/soil
low solubility and mobility potential adsorption
Air
mobility as solid aerosols

Known distribution to environmental compartments
No data available

12.5 Results of PBT and vPvB assessment
Not applicable
12.6 Other adverse effects

Ecotoxicity assessment

Acute aquatic toxicity
No toxicity at the limit of solubility.

Chronic aquatic toxicity
No adverse chronic effect observed up to and including the threshold of 1 mg / L.

Remarks
Contains a(many) hazardous substance(s) for the environment. Under massive form, product is biologically inert and non-degradable. Ingestion of solids may cause harm to wildlife due to intestinal mechanical blockage or starvation from false feeling of satiation.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product Disposal
- In accordance with local and national regulations.
- Dispose of wastes in an approved waste disposal facility.

Waste Code
- Environmental Protection Agency
- Hazardous Waste – NO

Advice on cleaning and disposal of packaging
- Containers that cannot be cleaned must be treated as waste.
- Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities.

SECTION 14: Transport information

DOT
not regulated

TDG
not regulated

NOM
not regulated

IMDG
not regulated

IATA
not regulated

Note: The above regulatory prescriptions are those valid on the date of publication of this sheet. Given the possible evolution of transportation regulations for hazardous materials, it would be advisable to check their validity with your sales office.
### SECTION 15: Regulatory information

#### 15.1 Notification status

<table>
<thead>
<tr>
<th>Inventory Information</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States TSCA Inventory</td>
<td>Listed on Inventory</td>
</tr>
<tr>
<td>Mexico INSQ (INSQ)</td>
<td>In compliance with the inventory</td>
</tr>
<tr>
<td>Canadian Domestic Substances List (DSL)</td>
<td>Listed on Inventory</td>
</tr>
<tr>
<td>New Zealand. Inventory of Chemical Substances</td>
<td>In compliance with the inventory</td>
</tr>
<tr>
<td>Australia Inventory of Chemical Substances (AICS)</td>
<td>Listed on Inventory</td>
</tr>
<tr>
<td>Japan. CSCL - Inventory of Existing and New Chemical Substances</td>
<td>Listed on Inventory</td>
</tr>
<tr>
<td>Korea. Korean Existing Chemicals Inventory (KECI)</td>
<td>Listed on Inventory</td>
</tr>
<tr>
<td>China. Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>Listed on Inventory</td>
</tr>
<tr>
<td>Philippines Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>Listed on Inventory</td>
</tr>
<tr>
<td>EU. European Registration, Evaluation, Authorisation and Restriction of Chemical (REACH)</td>
<td>- When purchased from a European Solvay legal entity, this product is compliant with the registration provisions of the REACH Regulation (EC) No. 1907/2006 as all its components are either excluded, exempt, pre-registered and/or registered. When purchased from a legal entity outside of Europe, please contact your local representative for additional information.</td>
</tr>
</tbody>
</table>

#### 15.2 Federal Regulations

**US. EPA EPCRA SARA Title III**

**SARA HAZARD DESIGNATION SECTIONS 311/312** (40 CFR 370)

No SARA Hazards

**Section 313 Toxic Chemicals** (40 CFR 372.65)

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

**Section 302 Emergency Planning Extremely Hazardous Substance Threshold Planning Quantity** (40 CFR 355)

This material does not contain any components with a section 302 EHS TPQ.

**Section 302 Emergency Planning Extremely Hazardous Substance Reportable Quantity** (40 CFR 355)

This material does not contain any components with a SARA 302 RQ.

**Section 304 Emergency Release Notification Reportable Quantity** (40 CFR 355)

This material does not contain any components with a section 304 EHS RQ.
US. EPA CERCLA Hazardous Substances and Reportable Quantities (40 CFR 302.4)

This material does not contain any components with a CERCLA RQ.

15.3 State Regulations

US. California Safe Drinking Water & Toxic Enforcement Act (Proposition 65)

This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

SECTION 16: Other information

NFPA (National Fire Protection Association) - Classification

<table>
<thead>
<tr>
<th>Category</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>1 slight</td>
</tr>
<tr>
<td>Flammability</td>
<td>0 minimal</td>
</tr>
<tr>
<td>Instability or Reactivity</td>
<td>1 slight</td>
</tr>
<tr>
<td>Special Notices</td>
<td>None</td>
</tr>
</tbody>
</table>

HMIS (Hazardous Materials Identification System (Paint & Coating)) - Classification

<table>
<thead>
<tr>
<th>Category</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>1 slight</td>
</tr>
<tr>
<td>Flammability</td>
<td>0 minimal</td>
</tr>
<tr>
<td>Reactivity</td>
<td>1 slight</td>
</tr>
<tr>
<td>PPE</td>
<td>Determined by User; dependent on local conditions</td>
</tr>
</tbody>
</table>

Further information

- Product evaluated under the US GHS format.

Date Prepared: 06/01/2018

Key or legend to abbreviations and acronyms used in the safety data sheet

- PEL Permissible exposure limit
- TWA 8-hour, time-weighted average
- ACGIH American Conference of Governmental Industrial Hygienists
- OSHA Occupational Safety and Health Administration
- NTP National Toxicology Program
- IARC International Agency for Research on Cancer
- NIOSH National Institute for Occupational Safety and Health

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information, and belief at the date of its publication. Such information is only given as a guidance to help the user handle, use, process, store, transport, dispose, and release the product in satisfactory safety conditions and is not to be considered as a warranty or quality specification. It should be used in conjunction with technical sheets but do not replace them. Thus, the information only relates to the designated specific product and may not be applicable if such product is used in combination with other materials or in any other manufacturing process, unless otherwise specifically indicated. It does not release the user from ensuring he is in conformity with all regulations linked to its activity.