Organic Cationic Flocculant
Solve 137

Material Safety Data Sheet

Date Issued: February 2000
Date Revised: February 2000

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: SOLVE 137
CHEMICAL TYPE: Water-in-Oil Emulsion Cationic Flocculant Polyacrylamide
COMPANY: WaterSolve, LLC, 1791 Watermark Drive, Grand Rapids, MI 49546, USA
For Product information call 616-575-8693.
EMERGENCY PHONE: For emergency involving spill, leak, fire, exposure or accident call CHEMTREC: 1-800-424-9300. Outside the USA and Canada call 708-527-3887.

2. COMPOSITION/INFORMATION ON INGREDIENTS

OSHA Regulated Components

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS NO.</th>
<th>%</th>
<th>TWA/Ceiling</th>
<th>REFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum distillate</td>
<td>064742-47-8</td>
<td>20-25</td>
<td>500 ppm</td>
<td>OSHA</td>
</tr>
<tr>
<td>Hydrotreated light</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. HAZARDS IDENTIFICATION

Emergency Overview
Appearance and odor: White viscous opaque liquid; slight hydrocarbon odor
Statement of Hazard: WARNING! Causes Skin Irritation; May cause Eye Irritation

Potential Health effects
Effects of overexposure:
The acute oral (rat), acute dermal (rabbit) LD50 values are both estimated to be greater than 5,000 mg/kg and greater than 2,000 mg/kg, respectively.
The 4 hour inhalation LC50 (rat) value is estimated to be greater than 20 mg/L. Direct contact with this material may cause moderate skin and mild eye irritation. Overexposure to vapor may cause respiratory tract irritation and central nervous system depression. Refer to section 11 for toxicology information on the OSHA regulated components of this product.

4. FIRST AID MEASURES

Material is not expected to be harmful by ingestion. No specific first aid measures are required. In case of skin contact, remove contaminated clothing without delay. Flush skin thoroughly with water. Do not reuse clothing without laundering. In case of eye contact, immediately irrigate with plenty of water for 15 minutes. If vapor dust of this material is inhaled, remove from exposure. Administer oxygen if there is difficulty in breathing. Obtain medical attention immediately if necessary.

5. FIRE FIGHTING MEASURES

Flammable Properties
Flash point: >212 °F; 100 °C (method: Pensky-Martens Closed Cup)
6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Where exposure level is not known, wear NIOSH approved, positive pressure, self-contained respirator. Where exposure level is known, wear NIOSH approved respirator suitable for level of exposure. In addition to the protective clothing/equipment in Section 8, wear impervious boots. Spilled material becomes very slippery when wet. Sweep up spills and place in a waste disposal container. Flush the area thoroughly with water and scrub to remove residue. If slipperiness remains, apply more dry-sweeping compound. Do not flush large quantities of the material to sewer.

7. HANDLING AND STORAGE

Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. Spills should be scooped up or wiped up immediately, and the spill area flushed with water. To avoid product degradation and equipment corrosion, do not use iron, copper or aluminum containers or equipment.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS AND PERSONAL PROTECTIVE EQUIPMENT (PPE)

Engineering controls are not usually necessary if good hygiene practices are followed. Before eating, drinking, or smoking, wash face and hands thoroughly with soap and water. Avoid unnecessary skin contact. Impervious gloves are recommended to prevent prolonged skin contact. For operations where eye or face contact can occur, eye protection is recommended. Where exposures are below the Permissible Exposure Limit (PEL), no respiratory protection is required. Where exposures exceed the PEL, use respirator approved by NIOSH for the material and level of exposure. See “Guide to Industrial Respiratory Protection” (NIOSH).

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: White, viscous, opaque liquid; slight hydrocarbon odor
Boiling Point: Aqueous phase 100 ºC; Oil phase 175 ºC
Melting Point: Not available
Vapor Pressure: 0.11 mm Hg @ 20 ºC
Specific Gravity: approx. 1 g/ml
Vapor Density: not available
% Volatile (By Wt): 50 (water)
pH: 4-6; (Aqueous Solution)
Saturation in Air (% by Vol): Not applicable
Evaporation Rate: not available
Solubility in Water: Limited by viscosity
10. **STABILITY AND REACTIVITY**

Stability: Stable
Conditions to avoid: Avoid contact with strong oxidizing agents
Polymerization: Will not occur
Conditions to Avoid: None known
Incompatible Materials: Strong oxidizing agents. This material reacts slowly with iron, copper and aluminum, resulting in corrosion and product degradation.

Hazardous Decomposition Products: Thermal decomposition or combustion may produce ammonia; oxides of carbon; nitrogen; oxides of sulfur (includes sulfur di- and tri-oxides) oxides of N₂, HCl vapor.

11. **TOXICOLOGICAL INFORMATION**

Toxicological information for the product is found under Section 3.

Toxicological information on the OSHA regulated components of this product is as follows:
Acute overexposure to petroleum distillate vapors may cause eye and throat irritation. Certain petroleum distillate fractions may produce moderate to severe skin irritation with direct contact. Prolonged repeated exposure to petroleum distillate vapor may cause central nervous system damage as well as heart and blood disorders.

The oral LD50 in the rat for various distillates ranges from 4.5 to greater than 25 ml/kg, and the inhalation LC50 in rats is about 15,000 ppm. Aspiration of petroleum distillate may cause chemical pneumonitis. Overexposure to vapor may cause dizziness, drowsiness, headache, and nausea.
Isopropanol has acute oral (rat) and dermal (rabbit) LD50 values of 5.0 g/kg and 12.8 g/kg, respectively. The 4-hour inhalation LC50 (rat) for isopropanol is >16,000 ppm (40.86 mg/l). Acute overexposure to isopropanol vapor may cause mild irritation of the eyes and respiratory tract. Chronic overexposure to isopropanol vapors may cause central nervous system depression, headaches, dizziness, nausea, and staggered gait. Liquid isopropanol is a severe eye irritant.
This product contains (a) chemical(s) known to the State of California to cause cancer, birth defects or other reproductive harm.

12. **ECOLOGICAL INFORMATION LC 50**

No aquatic LC50, BOD, or COD data available

Octanol/H₂O Partition Coefficient: Not Available

13. **DISPOSAL CONSIDERATIONS**

The information on RCRA waste classification and disposal methodology provided below applies only to the product, as applied. If the material has been altered or contaminated, or it has exceeded its recommended shelf life, the guidance may be inapplicable. Hazardous waste classification under federal regulations (40 CFR Part 261 et seq) is dependent upon whether a material is a RCRA “listed hazardous waste” or has any of the four RCRA “hazardous waste characteristics.” Refer to 40 CFR Part 261.33 to determine if a given material to be disposed of is a RCRA “listed hazardous waste”; information contained in Section 15 of this MSDS is not intended to indicated if the product is a “listed hazardous waste.” RCRA Hazardous Waste Characteristic. There are four characteristics defined in 40 CFR Section 261.21-61.24: Ignitability, Corrosivity, Reactivity, and Toxicity. To determine Ignitability, See Section 5 of this MSDS (flash point). For Corrosivity, see sections 9 and 14 (pH and DOT corrosivity). For Reactivity, see Section 10 (incompatible materials). For Toxicity, see Section 2 (composition). Federal regulations, may also apply to the classification of the material to be disposed. WaterSolve encourages the recycle, recovery and reuse of materials classified as RCRA hazardous wastes to be disposed of by thermal treatment or
incineration at EPA approved facilities. WaterSolve has provided the foregoing for information only; the person generating the waste is responsible for determining the waste classification and disposal method.

14. TRANSPORT INFORMATION

This section provides basic shipping classification information. Refer to appropriate transportation regulations for specific requirements.

<table>
<thead>
<tr>
<th>D.O.T. SHIPPING INFORMATION</th>
<th>IMO SHIPPING INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHIPPING NAME:</td>
<td>N.A./NOT REGULATED</td>
</tr>
<tr>
<td>HAZARD CLASS/</td>
<td>N.A.</td>
</tr>
<tr>
<td>PACKING GROUP:</td>
<td>N.A.</td>
</tr>
<tr>
<td>UN NUMBER:</td>
<td>N.A.</td>
</tr>
<tr>
<td>IMDG PAGE:</td>
<td>N.A.</td>
</tr>
<tr>
<td>D.O.T. HAZARDOUS SUBSTANCE:</td>
<td>N.A.</td>
</tr>
<tr>
<td>TRANSPORT LABEL REQUIRED:</td>
<td>NOT REQUIRED</td>
</tr>
<tr>
<td>ICAO/IATA</td>
<td>TRANSPORT CANADA</td>
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<tr>
<td>SHIPPIING NAME:</td>
<td>N.A./NOT REGULATED</td>
</tr>
<tr>
<td>HAZARD CLASS:</td>
<td>N.A.</td>
</tr>
<tr>
<td>SUBSIDIARY CLASS:</td>
<td>N.A.</td>
</tr>
<tr>
<td>UN/ID NUMBER:</td>
<td>N.A.</td>
</tr>
<tr>
<td>PACKING GROUP:</td>
<td>N.A.</td>
</tr>
<tr>
<td>TRANSPORT LABEL REQUIRED:</td>
<td>NOT REQUIRED</td>
</tr>
<tr>
<td>PACKING INSTR:</td>
<td>PASSENGER</td>
</tr>
<tr>
<td>MAX NET QTY:</td>
<td>PASSENGER</td>
</tr>
<tr>
<td>TECHNICAL NAME (N.O.S.):</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

15. REGULATORY INFORMATION

INVENTORY INFORMATION

US TSCA: This product is manufactured in compliance with all provisions of the Toxic Substances Control Act, 15 U.S.C. 2601 et. Seq.

CANADA DSL: Components of this product have been reported to Environment Canada in accordance with subsection 25 of the Canadian Environmental Protection Act and are included on the Domestic Substances List.

EEC EINECS: All components of this product are included in the European Inventory of Existing Chemical Substances (EINECS) or are polymers of which the components are in EINECS, inc compliance with Council Directive 67/548/EEC and its amendments.

OTHER ENVIRONMENTAL INFORMATION

The following components of this product may be subject to reporting requirements pursuant to Section 313 of CERCLA (40 CFR 372), Section 12(b) of TSCA, or may be subject to release reporting requirements (40 CFR 307, 40 CFR 311, etc.) See Section 13 for information on waste classification and waste disposal of this product.
<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>CAS NO.</th>
<th>%</th>
<th>TPQ(lbs)</th>
<th>RQ(lbs)</th>
<th>S313</th>
<th>TSCA 12B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isoproponal</td>
<td>000067-63-0</td>
<td>0.0-0.15</td>
<td>None</td>
<td>None</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Ammonium Sulfate</td>
<td>007783-20-2</td>
<td>0.2-0.8</td>
<td>None</td>
<td>None</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Product Classification under section 311 of SARA

Acute (Y) Chronic (N) Fire (N) Reactive (N) Pressure (N)

16. OTHER INFORMATION

NFPA HAZARD RATING (National Fire Protection Association)

<table>
<thead>
<tr>
<th>Fire</th>
<th>Fire: Materials that must be preheated before ignition can occur</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Health</td>
<td>Health: Materials, which on exposure under fire conditions, would offer no</td>
</tr>
<tr>
<td>_ Reactivity</td>
<td>Reactivity: Materials, which in themselves are normally stable, even under fire</td>
</tr>
<tr>
<td>Special</td>
<td>Special conditions, and which are not reactive with water.</td>
</tr>
</tbody>
</table>

REASON FOR ISSUE:

New Product

This information is for the specific material described only and may not be valid if the material is used in combination with any other materials or in any process. The user is responsible to determine the completeness of the information and suitability for the user’s own particular use. The knowledge and belief of WaterSolve, LLC, the information is accurate and reliable as of the date indicated but WaterSolve, LLC makes no express or implied warranty of merchantability for the material or the information. WaterSolve, LLC makes no express or implied warranty of fitness for a purpose for the material or for the information.