1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

1.1. Identification of the substance/preparation

<table>
<thead>
<tr>
<th>Trade Name</th>
<th>2-Ethyl-1-hexanol (Octanol)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Name</td>
<td>2-Ethylhexan-1-ol</td>
</tr>
<tr>
<td>Chemical Family</td>
<td>Alcohols</td>
</tr>
<tr>
<td>Chemical Formula</td>
<td>CH₃(CH₂)₃CH(C₂H₅)CH₂OH</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>130.3</td>
</tr>
</tbody>
</table>

1.2. Uses of the substance/preparation

Production of PVC-plasticizers, plastics and synthetic rubber, synthetic lubricants (in form of dicarbonic acid esters); oil, fat, wax and resin solvent.

1.3. Company/undertaking identification

<table>
<thead>
<tr>
<th>Company Name</th>
<th>OLTCHIM SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td>1, Uzinei Street, 240050-R@mnicu V@lcea, Romania</td>
</tr>
<tr>
<td>Phone</td>
<td>+40 / 250 / 701200</td>
</tr>
<tr>
<td>Fax</td>
<td>+40 / 250 / 735446</td>
</tr>
<tr>
<td>e-mail</td>
<td><a href="mailto:oltchim@oltchim.ro">oltchim@oltchim.ro</a></td>
</tr>
</tbody>
</table>

1.4. Emergency telephone number

+40 / 250 / 738141

2. HAZARD IDENTIFICATION

Health effects: It is harmful if is swallowed, inhaled, or absorbed through skin. Vapors and mists severely irritate the eyes and respiratory tract, especially when heated. May affect central nervous system, have a narcotic effect. May cause allergic skin reaction.

Environmental effects: No critical hazard to the environment in the ordinary sense of valid regulations. This product is readily biodegradable. No ecological problems are to be expected when the product is handled and used with due care and attention. 2-Ethylhexanol is not classified as dangerous for environmental according to Directive 67/548/EEC, Annex I.

Emergency overview: 2-Ethylhexanol is a combustible and flammable liquid. In contact with strong oxidizers may cause fire. Vapor/air mixtures are explosive above 75°C. The substance is very little soluble in water, floats on the water level.
3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Hazardous components /constituents</th>
<th>Concentration %,wt.</th>
<th>CAS No.</th>
<th>EC No.</th>
<th>Annex I Index No.</th>
<th>Hazard Symbol</th>
<th>Risk phrases</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Ethylhexanol</td>
<td>99, 5</td>
<td>104-76-7</td>
<td>203-234-3</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

4. FIRST-AID MEASURES

Seek medical attention immediately in all cases of exposure!

**Inhalation:** Inhalation of vapors or mist is irritating to the upper respiratory tract. May have narcotic effect. Difficult breathing, coughing, headache, dizziness and drowsiness may occur. Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult give oxygen. Call a physician.

**Skin contact:** Causes skin irritation. May be absorbed through skin. May cause sensitization or allergic skin reaction in some individuals. Prolonged skin contact may result in dermatitis. Wash the contaminated skin with plenty of soap or mild detergent and water for at least 15 minutes while removing contaminated clothing and shoes. If irritation persists after washing, get medical attention.

**Eye contact:** Causes irritation, redness and pain. Wash the eyes immediately with large amount of water lifting the upper and lower lids, until no evidence of chemical remains at least 15-20 minutes. If irritation persists after washing get medical attention. Contact lenses should not be worn with this product.

**Ingestion:** May have narcotic effect. May cause abdominal pain, nausea, headache, dizziness and diarrhea. Large doses may affect kidneys and liver. Give large amount of water to drink. If large amounts were swallowed, get medical advise. Never give anything by mouth to mouth to an unconscious person.

5. FIRE-FIGHTING MEASURES

**Suitable extinguishing media:** Dry chemical, foam or carbon dioxide and water spray.

**Unsuitable extinguishing media:** Do not use a solid stream of water (water jet), since the stream will scatter and spread the fire. Use water spray to isolate the hazard area and to keep fire-exposed tanks cool.

**Exposure hazards:** 2-Ethylhexanol is a combustible and flammable liquid. In contact with strong oxidizers may cause fire. Vapor/air mixtures are explosive above 75°C. Vapor may flow along surface to distant ignition sources and flash back. Carbon monoxide and dioxide may form when heated to decomposition. In case of large fire and remove the containers if this it is possible.
Protection of fire-fighters: Wear full protective clothing and self contained breathing apparatus with full face piece operated in positive pressure mode.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Remove all sources of ignition. Ventilate area of leak or spill. Persons performing clean-up work should wear adequate personal protective equipment and a self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Keep unnecessary and unprotected personnel away from hazard area.

Environmental precautions: Prevent from contamination the ground and the surface water by isolating the hazard area. Contain and recover liquid when possible. Keep closed containers and dispose according to all applicable federal, state or local environment regulations.

Methods of cleaning up: Absorb spills with dry sand, earth or similar non-combustible absorbent material then collect into drums for later disposal. For large spills, dike and pump into suitable containers for disposal. Use water spray to reduce vapors and flush area with water. Resulted waste water will be treated in biological treatment plant. Dispose of under valid legal waste regulations.

Special precautions: Do not use combustible materials, such as saw dust to absorb the spills. Do not flush to sewer! Use only non sparking tools and equipment.

7. HANDLING AND STORAGE

Handling: Protect containers from physical damage. Use non sparkling tools, electric equipment and venting system. Sources of ignition such as smoking and open flames are prohibited when 2-ethylhexanol is handled. Do not use compressed air or oxygen for filling, discharging or handling. The personnel which handling the product must wear protective equipment.

Storage: Store in a tightly closed containers in a cool, dry, well ventilated area away from sources of heat and incompatible substances. Drums must be equipped with self-closing valves, nitrogen blanket. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits: Not established

Engineering control: A system of local and/or general exhaust is recommended to keep employee exposure as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its sources, preventing dispersions of it into the general work area. Ventilation equipment should be explosion-proof if explosive concentration of dust, vapor or fume are present.

OLTCHIM
Respiratory protection: For conditions of use where exposure to substance is apparent, consult an industrial hygienist. For emergencies or instances where the exposure level are not known, use a full face piece positive pressure air-supplied respirator.

Hand protection: Wear rubber (nitrile) gloves.

Eye / Face protection: Use chemical safety goggles and/or a full face shield when is possible.

Skin protection: Wear impervious protective clothing, including boots, gloves, lab coat apron or coveralls as appropriate, to prevent skin contact.

Other precautions: Maintain shower, eye wash fountain and quick-drench facilities in work area.

9. PHYSICAL AND CHEMICAL PROPERTIES

General informations
Appearance Clear liquid
Odor Characteristic

Important health, safety and environmental informations

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH value at 1g/l water</td>
<td>7</td>
</tr>
<tr>
<td>Boiling point</td>
<td>183-186°C</td>
</tr>
<tr>
<td>Flash point</td>
<td>75°C</td>
</tr>
<tr>
<td>Flammability</td>
<td>flammable</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>explosive under open flame</td>
</tr>
<tr>
<td></td>
<td>explosive limits in air: 1,1-7,7% vol</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>no oxidizing properties</td>
</tr>
<tr>
<td>Vapor pressure at 20°C</td>
<td>0,36 mmHg</td>
</tr>
<tr>
<td>Specific gravity (water=1) at 20°C</td>
<td>0,833</td>
</tr>
<tr>
<td>Solubility - water</td>
<td>1,1g/l</td>
</tr>
<tr>
<td>-organic solvents</td>
<td>miscible with most common solvents</td>
</tr>
<tr>
<td>Partition coefficient (log K_{ow})</td>
<td>3,1</td>
</tr>
<tr>
<td>Dynamic viscosity at 20°C</td>
<td>10 mPas</td>
</tr>
<tr>
<td>Vapor relative density (air=1)</td>
<td>4,5</td>
</tr>
<tr>
<td>Evaporation rate (BuAc=1)</td>
<td>0,01</td>
</tr>
<tr>
<td>Viscosity, dinamic</td>
<td>8,8 mPa*s</td>
</tr>
</tbody>
</table>

Other informations
Melting point                   -76°C
Autoignition temperature        270°C
**Chemical stability:** Stable under ordinary conditions of use and storage.

**Conditions to avoid:** Heat, flame, sources of ignition and incompatibles.

**Materials to avoid:** Strong oxidizers and acids.

**Hazardous decomposition products:** Carbon monoxide and dioxide may form when heated to decomposition. May produce acrid smoke and irritating fumes when heated to decomposition.

### 11. TOXICOLOGICAL INFORMATION

**Animal toxicity data:**
- LD<sub>50</sub>/Oral, rat: >3730 mg/kg
- LC<sub>50</sub>/Dermal, rat: >3000 mg/kg
- LC<sub>50</sub>/inhalation - rat: > 20 mg/l/4h

**Acute toxicity**
- Inhalation: Inhalation of vapor or mist is irritating to the upper respiratory tract. May have narcotic effect. Difficult breathing, coughing, headache, dizziness and drowsiness may occur. May be absorbed into the bloodstream with symptoms similar to ingestion.
- Skin contact: Causes skin irritation. May be absorbed through skin. May cause sensitization or allergic skin reaction in some individuals. Prolonged skin contact may result in dermatitis.
- Eye contact: Causes irritation, redness and pain.

**Ingestion:** May have narcotic effect. May cause abdominal pain, nausea, headache, dizziness and diarrhea. Large doses may affect kidneys and liver.

**Chronic effect:** Persons with pre-existing skin disorders or eye problems or impaired liver, kidney or respirator function may be more susceptible to the effects of the substance.

**CMR effects (Carcinogenity, Mutagenicity, toxicity for Reproduction):**
- **Carcinogenity:** No carcinogenic effect.
- **Mutagenicity:** No mutagenic effect.
- **Toxicity for Reproduction:** Not affect reproductive parameters.

### 12. ECOLOGICAL INFORMATION

**Ecotoxicity**
- Fish: *P. promelas*  
  LC<sub>50</sub>=29.7mg/l/96 hours  
- Fish: *Onchorhynchus mykiss*  
  LC<sub>50</sub>=>7.5mg/l/96 hours  
- Daphnia: *Daphnia magna*  
  LC<sub>50</sub>=39mg/l/48 hours  
- Algae: *Desmodesmus subspicatus*  
  LC<sub>50</sub>=11.5mg/l/72 hours
**2-ETHYL-1-HEXANOL (OCTANOL)**

**MSDS No. 02-11**

**Revision: 7**  **Last updated: October 14, 2008**  **Date issued: July 21, 1999**  **Page 6/7**

**Bacteria Ps. putida**  **EC₅₀=540mg/l/18hours**

**Mobility:** 2-Ethylhexanol may enter the environment from industrial discharges, municipal waste treatment, plant discharges or spills. Due to the low vapor pressure, the chemical is extended in air in limited amount. Volatilization is not a dominant transport process. Because 2-ethylhexanol is slightly soluble in water, it may be expected to sink rapidly into soils as a consequence. It may be transported into groundwater by leaching through fissures rather than matrix pores.

**Persistence and degradability:** When released into the air, this material may be readily degraded by reaction with photochemically produced hydroxyl radicals with a half-life of 10 hours. When released into the soil, watercourses and groundwater, this chemical may be readily biodegraded under aerobic conditions (95% after 5 days).

**Bioaccumulative potential:** With regard to bioconcentration factor $BCF=13$, bioaccumulation in organism is not expected.

**Bioaccumulation in Aquatic Organisms:** The concentration of 2-ethylhexanol found in fish tissue is expected to be about the same as the average concentration of 2-ethylhexanol in the water.

**Other adverse effects:** The substance has a harmful effect on aquatic organisms. No ecological problems are to be expected when the product is handled and used with due care and attention. *Do not allow to enter waters, waste water or soil!*

**13. DISPOSAL CONSIDERATIONS**

**Waste treatment:** Whatever cannot be saved for recovery or recycling should be handled as non-hazardous waste. Any disposal practice must be in compliance with all local, regional and national regulations. Do not dump into any sewers, on the ground, or into any body of water.

**Packaging treatment:** The empty containers/tanks are treated with steam and rinsed with plenty of water. The resulted effluent are treated in the same way as waste. The empty and clean containers are to be reused in conformity with regulations.

**14. TRANSPORT INFORMATION**

2-Ethylhexanol has not specific regulations of transportation.

**15. REGULATORY INFORMATION**

2-ETHYL-1-HEXANOL is not classified and labeled as hazardous material according to Directive 67/548/EC.

**EC-Number:** 203-234-3

[OLTCHIM logo]
2-ETHYL-1-HEXANOL (OCTANOL)
MSDS No.02-11
Revision: 7          Last up date:  October 14, 2008      Date issued: July 21, 1999           Page 7/7

Hazard symbol: Xi  Irritant

R phrases: R 36/37/38   Irritating to eyes, respiratory system and skin.

S phrases: S 23   Do not breathe vapour.
S 28   After contact with skin, wash immediately with plenty of water and soap.
S 36/37/39   Wear suitable protective clothing, gloves and eyes/face protective.

16. OTHER INFORMATION

Precautions to be taken in handling and storing: Keep well ventilated the areas where 2-ethylhexanol is stored and handled.

Work hygienic practices: Avoid direct contact of substance with skin/eyes. Avoid the exposure of personnel with liver, kidney or lung damages to the substance.

Interdictions: Do not drink or eat in working area.
Do not smoke in or near working area.
The use of open flame in working areas is prohibited.

Uses and Restrictions: Advice in this document relates only to product as originally supplied. Chemical intermediate for organic synthesis.

Hazardous reaction: 2-Ethylhexanol is a combustible and flammable liquid. Vapours may travel considerable far distances. Vapours are heavier than air, may cumulate along the ground and in enclosed spaces. Do not empty into drains. When burning, it may emit pungent fumes and toxic carbon monoxide.

MSDS Revisions: This Material Safety Data Sheet is made in accordance to European Regulations and will replace the previous version 6 dated July 17, 2008.

Revised information:

Chapter 14: it was modified transport information.

This MSDS has been elaborated in accordance with Regulation (EC) No.1907/2006 REACH
The information contained here in is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.
This MSDS cannot cover all possible situations which the user may experience during handling and processing. Each aspect of the user’s operation should be examined to determine if, or where, additional precautions may be necessary. All health and safety information contained within this MSDS should be provided to the user’s employees or customers.