

8155 E. 46th St. Tulsa, OK 74145 | 888.313.8173

Safety Data Sheet Orange Solve

1. IDENTIFICATION

Synonyms none
 CAS# see Part 3, below
 Material Use Spotter & Booster

IN AN EMERGENCY CALL: INFOTRAC 1-800-535-5053

2. HAZARD IDENTIFICATION

GHS Class (Category)	<i>flammable (3)</i>	<i>aspiration hazard (2)</i>
Signal Words	WARNING	WARNING
Hazard Statements	<i>flammable liquid and vapor (H227)</i>	<i>may be harmful if swallowed & enters airways (H305)</i>



GHS Precautionary Statements for Labeling

P210 Keep away from heat, sparks, open flames and hot surfaces. No smoking.
 P240, P241 Ground or bond container and receiving equipment. Use explosion-proof electrical, ventilating and lighting equipment.
 P242, P243 Use only non-sparking tools. Take precautionary measures against static discharge.
 P262, P264 Do not get in eyes or on skin. Wash thoroughly after handling.
 P270, P280 Do not eat, drink or smoke when using this product. Wear eye protection & protective gloves of "Viton".

3. COMPOSITION

	CAS NUMBER	%	TLV ppm / mg/m ³	LD ₅₀ (mg/kg) ORAL	LD ₅₀ (mg/kg) SKIN	LC ₅₀ ppm INHALATION
Odorless Mineral Spirits	68551-17-7	40-60%	not listed	10,000	>3160	>3200
d-Limonene	5989-27-5	30-40%	not listed	>4400	>5000	not known
Glycol Ether EB	111-76-2	5-10%	20/100 (skin)	>300	>450	>450
Non-ionic Surfactant	on request	5-10%	not listed	>2000	not known	not known

4. FIRST AID

SKIN: Wash with soap & plenty of water. Remove contaminated clothing. Do not reuse until thoroughly cleaned. Seek medical help promptly if there is persistent itching or redness in the affected area.
 EYES: Wash eyes with plenty of water, holding eyelids open. Seek medical assistance if there is persistent irritation.
 INHALATION: Remove from contaminated area promptly. **CAUTION: Rescuer must not endanger himself!** If victim's breathing stops, administer artificial respiration and seek medical aid promptly.
 INGESTION: Give plenty of water to dilute product. Do not induce vomiting (NOTE below). Keep victim quiet. If vomiting occurs, lower victim's head below hips to prevent inhalation of vomited material. Seek medical help promptly.

NOTE: Inadvertent inhalation of vomited material may seriously damage the lungs. The danger of this is greater than the risk of poisoning through absorption of this low-toxicity product. The stomach should only be emptied under medical supervision, after the installation of an airway to protect the lungs.

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5. FLAMMABILITY & FIRE-FIGHTING

Flash Point	above 43°C / 109°F (closed cup)
Autoignition Temperature	above 237°C / 458°F
Flammable Limits	approx. 0.7% – 6.0%
Combustion Products	carbon monoxide, nitrogen oxides, smoke, part oxidized hydrocarbon fragments
Firefighting Precautions	foam, dry chemical, water fog, water spray only to cool & dilute, product floats on water – water jet spreads flames; firefighters must wear SCBA
Static Discharge	cannot accumulate a static charge

6. ACCIDENTAL RELEASE MEASURES

Leak Precaution	dike to control spillage and prevent environmental contamination
Handling Spill	ventilate contaminated area; recover free liquid with explosion-proof pumps; absorb residue on an inert sorbent, pick up using non-sparking plastic or aluminium shovel, & store in closed containers for disposal

7. HANDLING & STORAGE

Store & use in a cool environment, away from sources of ignition and oxidizing agents. Take care to avoid sparks. Non-sparking bronze or aluminium hand tools, plus explosion-proof electrical & mechanical equipment (lighting, switchgear, forklift trucks, etc) are recommended. Empty containers may contain a flammable vapor. Never cut, drill, weld or grind on or near this container, whether empty or full. Always replace drum, pail or IBC cap prior to moving the container!

Avoid generating or breathing product vapor or mist. If mist or vapor form in use, install adequate ventilation to control airborne concentration of the product to regulated limits (see Part 8, below). Avoid prolonged contact with skin & wash work clothes frequently. An eye bath and safety shower should be available near the workplace.

8. EXPOSURE CONTROL & PERSONAL PROTECTION

Odorless Mineral Spirits – no listing; limits for Mineral Oil Mist below:

ACGIH TLV	not listed	STEL	not listed
OSHA PEL	5mg/m ³	STEL	not listed
NIOSH	5mg/m ³	STEL	10mg/m ³

Glycol Ether EB:

ACGIH TLV	20ppm / 100mg/m ³	ACGIH STEL	not listed
OSHA PEL	25ppm / 120mg/m ³	OSHA STEL	not listed

Ventilation	no special mechanical ventilation required
Hands	wear “Viton” gloves – <i>other types also protect; always confirm suitability with supplier</i>
Eyes	safety glasses with side shields or chemical goggles – <i>always protect eyes!</i>
Clothing	no special protective clothing required

9. PHYSICAL AND CHEMICAL PROPERTIES

NOTE: for Flash Point, Autoignition Temperature & Flammable Limits see Part 5.

Odor & Appearance	clear to slightly hazy, colorless, liquid with a strong orange odor
Odor Threshold	not known
Vapor Pressure	below 3mmHg / 0.4kPa (15°C / 60°F)
Evaporation Rate (<i>Butyl Acetate = 1</i>)	not known – <i>similar to regular mineral spirits</i>
Vapor Density (air = 1)	4.6 (<i>d</i> -limonene), ~5 (odorless mineral spirits), 4.1 (glycol ether EB)
Boiling Range	approximately 170 to 200°C / 338 to 392°F
Freezing Point	not known, but below -20°C / -4°F
Decomposition Temperature	not known
Specific Gravity	not measured – approximately 0.82 (20/20°C)
Water Solubility	not measured – approximately 20%
Viscosity	not known – <i>thin mobile liquid</i>
pH	none – <i>does not yield hydrogen ions in solution</i>

10. REACTIVITY

Dangerously Reactive With	strong oxidizing agents
Also Reactive With	none known
Chemical Stability	stable; will not polymerize

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Decomposes in Presence of	no decomposition triggers known
Decomposition Products	none apart from Hazardous Combustion Products
Mechanical Impact	not sensitive

11. TOXICITY INFORMATION

i. ACUTE EXPOSURE

Skin Contact	slightly irritating
Skin Absorption	slight; no toxic effects likely by this route
Eye Contact	may irritate
Inhalation	mist & vapor may irritate respiratory system
Ingestion	low toxicity; deliberate ingestion likely to cause diarrhea – <i>not a route of industrial exposure</i>
Calculated LD ₅₀ (oral)	2030mg/kg (rat)
Calculated LD ₅₀ (skin)	2285mg/kg (rabbit)
LC ₅₀ (inhalation)	<i>insufficient information to calculate</i>

ii. CHRONIC EXPOSURE

General	prolonged or repeated contact may remove skin oils, causing dermatitis; <i>prolonged inhalation may cause headache, dizziness & drowsiness</i>
Sensitizing	not a sensitizer in humans or animals
Carcinogen/Tumorigen	not considered a tumorigen or a carcinogen in humans or animals
Reproductive Effect	no known effect in humans or animals
Mutagen	no known effect on humans or animals
Synergistic With	not known

12. ECOLOGICAL INFORMATION

Odorless Mineral Spirits:

Bioaccumulation	poorly absorbed; not a bioaccumulator
Biodegradation	biodegrades in the presence of oxygen; rate of biodegradation varies widely: 30% in 3 days, 42% in 21 days, 99% in 28 days; similar products have also shown lower rates 2% to 12% in 28 days
Abiotic Degradation	attacked by airborne hydroxyl radicals; for hydrocarbons of similar carbon chain length & configuration, ½-life in air 0.5-2.0 days
Mobility in soil, water	water insoluble; immobile in soil and water
Aquatic Toxicity	<i>(data for similar substances combined below)</i>
LC ₅₀ (Fish, 96hr)	18-19, 45, 2200 & >10,000mg/litre (Pimephelas promelas), 1740mg/litre (Lepomis macrochirus) >8000mg/litre (Tilapia mossambica)
EC ₅₀ (Crustacea, 48hr)	4720mg/litre (Dendronereides heteropoda), 4.3mg/litre (Crangon crangon), 2.6mg/litre (Chaetogammarus marinus)
EC ₅₀ (Algae)	no data
EC ₅₀ (Bacteria)	no data

Aquatic toxicity data vary widely. This may be due to the very low water solubility & the methods used to mix the product with water.

d-Limonene:

Bioaccumulation	probably not a bioaccumulator because it is metabolized by animal tissue
Biodegradation	biodegrades in the presence of oxygen; 48-100% in 2-3 weeks (various studies)
Abiotic Degradation	reacts with atmospheric hydroxyl radicals; estimated ½-life in air is 40 minutes
Mobility in soil, water	water insoluble; moves slowly in soil and water
Aquatic Toxicity	<i><u>d-Limonene is classified as a Marine Pollutant</u></i>
LC ₅₀ (Fish, 96hr)	34mg/litre (Leuciscus idus), 80mg/litre (Oncorhynchus mykiss), 0.7mg/litre (Pimephales promelas)
EC ₅₀ (Crustacea, 48hr)	0.031 & 0.75mg/litre (Daphnia magna)
NOEC – 96hr (Algae)	4.1mg/litre (“green algae”) – <i>the algae are not specifically identified</i>

Nonionic Surfactant:

Bioaccumulation	cannot bioaccumulate; <i>however, breakdown product, unethoxylated nonylphenol, is water insoluble & may accumulate</i>
Biodegradation	34% in 20 days to di- & mono-ethoxylate; <i>these latter compounds resist further biodegradation (below)</i>
Abiotic Degradation	may react with atmospheric hydroxyl (OH) radicals; low volatility – a minor degradation route
Mobility in soil, water	sufficiently water soluble to move readily through soil and the water column
Aquatic Toxicity	
LC ₅₀ (Fish, 96 hr)	2.1-2.6mg/litre (Pimephelas promelas), 13.9-19.5mg/litre (Poecilia reticulata – 48hr)
LC ₅₀ (Crustacea, 48hr)	3.8-6.2 & 18.2mg/litre (Daphnia magna), 20.9mg/litre (Gammarus pulex)
EC ₅₀ (Algae, 96hr)	15mg/litre (Lemna minor), 7mg/litre (Scenedesmus quadricauda)

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12. ECOLOGICAL INFORMATION, cont'd

NOTE: The Nonylphenol Ethoxylate class of compounds biodegrade to estrogenic hormone mimics in the environment & may lead to instances of reproductive failure in shore birds, amphibia & fish. (For further information, see Notes in Part XV, Regulations)

2-Butoxyethanol:

Bioaccumulation	rapidly eliminated from the body, cannot bioaccumulate; biological ½-life <48hr
Biodegradation	biodegrades readily & rapidly in the presence of oxygen; 75%-100% in 20-28 days
Abiotic Degradation	reacts with atmospheric hydroxyl radicals; estimated ½-life in air 16 hours
Mobility in soil, water	water soluble; moves readily & rapidly in soil and water
Aquatic Toxicity	
LC ₅₀ (Fish, 96hr)	1490 & 2950mg/litre (Lepomis macrochirus), 1250mg/litre (Menidia beryllina),
EC ₅₀ (Crustacea, 24hr)	1700-1940 & 5000mg/litre (Daphnia magna), 600-1000mg/litre (Crangon crangon, 48hr)
EC ₅₀ (Algae)	35mg/litre (Microcystis aeruginosa), 900mg/litre (Scenedesmus quadricauda)
EC ₅₀ (Bacteria)	911mg/litre (Chilomonas paramecium), 700mg/litre (Pseudomonas putida)

13. DISPOSAL CONSIDERATIONS

Waste Disposal **do not flush to sewer**; incinerate in approved facility with flue gas monitoring & scrubbing

Containers **Drums** should be reused. Recondition and pressure test by a licensed reconditioner prior to re-use.
Pails must be vented and thoroughly dried prior to crushing and recycling.
IBCs (intermediate bulk containers): polyethylene bottle must be pressure tested & recertified at 30 months. Replace at 60 months (5 years). Steel containers must be inspected, pressure tested & recertified every 5 years.
Warning: never cut, drill, weld or grind on or near this container, even if empty.

14. TRANSPORT INFORMATION

USA 49 CFR & Canada/International TDG

Product Identification Number	UN – 1993
Shipping Name	Flammable liquids, N.O.S. (d-Limonene)
Classification	Class 3; Packing Group III
Marine Pollution	<i>not a marine pollutant</i>
ERAP Required	<i>No</i>
Reportable Quantity (RQ)	<i>none</i>



15. REGULATIONS

Canada DSL	on inventory
U.S.A. TSCA	on inventory
Europe EINECS	on inventory

U.S.A. Regulations – Nonylphenol Ethoxylates:

In the USA, the EPA mounted (August 18, 2010) an “action plan” for nonylphenol ethoxylates: See the *Nonylphenol & Nonylphenol Ethoxylates Action Plan Summary*, <http://www.epa.gov/oppt/existingchemicals/pubs/actionplans/np-npe.html> AND http://www.epa.gov/oppt/existingchemicals/pubs/actionplans/RIN2070-ZA09_NP-NPEs%20Action%20Plan_Final_2010-08-09.pdf

16. OTHER INFORMATION

Date of Preparation	May 2015
Date of Revision	-
Prepared for PCS	

With data from the Registry of Toxic Effects of Chemical Substances (RTECS), Hazardous Substance Data Base (HSDB), Cheminfo (CCOHS), OSHA, IUCLID Datasheets (European Chemical Substance Information System - ESIS), & others sources (below if used), as required/available

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