RCT

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Safety Data Sheet

Palmitic Acid

I IDENTIFICATION

Synonyms	**1-hexadecanoic acid; n-hexadecanoic acid, 1-pentanecarboxylic acid**
CAS #	**57-10-3**
Europe ELINCS/EINECS #	**200-312-9**
Material Use	**lubricants, soaps, cosmetics, pharmaceuticals & others**

II HAZARD IDENTIFICATION

GHS Class (Category) ***NOT HAZARDOUS*** **GHS Symbols: no hazard symbols**

Signal Words ***no Signal Word***

Hazard Statements *no hazard statement*

WHMIS Class (Canada) **not controlled under WHMIS**

Key: ***B 2*** *– Flash Point <38°C,* ***B 3*** *– Flash Point >38°C & <93°C*
D 1 *– Immediately Toxic,* ***D 2*** *– Chronic Toxicity*
C *– Oxidising Substance,* ***E*** *- Corrosive*

III COMPOSITION

	CAS NUMBER	%	TLV ppm / mg/m³	LD_{50} (*mg/kg*) ORAL	LD_{50} (mg/kg) SKIN	LC_{50} ppm INHALATION
1-hexadecanoicacid	57-10-3	>90%	not listed	>10,000	not known	not known
n-Octadecanoic Acid	57-11-4	0-6%	not listed	4600	>5000	1620
Oleic Acid	112-80-1	0-10%	not listed	25,000	not known	not known

IV FIRST AID

SKIN: Brush off. Then wash with soap & of water. Remove contaminated clothing and do not reuse until laundered.

EYES: Wash eyes with plenty of water, holding eyelids open. Seek medical assistance promptly if there is any 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: Take no action. Do not induce vomiting (NOTE below). Keep victim quiet. If vomiting occurs, lower victim's head below the hips to prevent inhalation of vomited material. Seek medical help if victim feels unwell.

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 relatively low-toxicity product. The stomach should only be emptied under medical supervision, after the installation of an airway to protect the lungs.

PLEASE ENSURE THAT THIS MSDS IS GIVEN TO, AND EXPLAINED TO PEOPLE USING THIS PRODUCT.

EMERGENCY INFORMATION: Call CHEMTREC (800) 424-9300

V FLAMMABILITY & FIRE-FIGHTING

Flash Point	not known – probably around 200ºC / 392ºF (closed cup)
Autoignition Temperature	not known – probably around 400ºC / 752ºF
Flammable Limits	not known – *not considered flammable but will burn in fire*
Combustion Products	carbon monoxide, nitrogen oxides, irritating smoke & fumes, part oxidised hydrocarbon fragments
Firefighting Precautions	as for an oil fire (*water fog, alcohol-resistant foam, dry chemical*); firefighters must wear SCBA
Static Discharge	dust may accumulate a static charge; dust clouds may be flammable or explosive

NOTE: The above applies to pure or nearly pure palmitic acid. Data varies with purity – check your sales specifications.

VI ACCIDENTAL RELEASE MEASURES

Leak Precaution	not applicable – solid material – *NOTE: Spills of molten palmitic acid solidify rapidly.*
Handling Spill	sweep, shovel & store in closed containers for disposal

***NOTE:** Spilled material may be slippery.*

VII HANDLING & STORAGE

Store and use in a cool environment away from oxidising agents and alkalis. Palmitic acid dust clouds are potentially flammable/explosive. Avoid generating product dust. If dust forms in use, install adequate ventilation to clear workplace air. Avoid prolonged contact with skin and wash work clothes frequently. An eye bath should be available near the workplace.

Wear insulated butyl or neoprene gloves (& other clothing if appropriate) if handling molten material

VIII EXPOSURE CONTROL & PERSONAL PROTECTION

ACGIH TLV	not listed
OSHA PEL	not listed
Ventilation	no special mechanical ventilation required – *palmitic acid dust is flammable; a spark or flame may cause ignition*; if dust clouds form during handling, exhaust ventilation should be installed to prevent fire
Hands	no special protective gloves required – *for molten material, wear insulated butyl or neoprene* gloves*
Eyes	safety glasses with side shields – *always protect eyes!*
Clothing	no special protective clothing required – *for molten material wear butyl or neoprene* insulated clothing*

**** NOTE:** Other materials are also resistant to molten palmitic acid. Consult supplier for suitable alternatives.*

IX PHYSICAL AND CHEMICAL PROPERTIES

Odour & Appearance	white to pale yellow crystals or powder with faint fatty odour
Odour Threshold	not known – *nearly odourless*
Vapour Pressure	3.8×10^{-7}mmHg / 5.05×10^{-6}kPa (25ºC/ 77ºF); 1mmHg / 0.133kPa (154ºC / 309ºF)
Evaporation Rate (*Butyl Acetate = 1*)	not known – *not volatile*
Vapour Density (air = 1)	8.8 (theoretical value)
Boiling Point	351ºC / 665ºF
Melting Point	62-64ºC / 144-147ºF
Specific Gravity	0.853 (62ºC / 144)
Water Solubility	0.04mg/litre (25ºC / 77ºF)
- in other solvents	soluble in most organic solvents; *sparingly soluble in methanol*
Log K_{oc} (*Octanol/H_2O Partition Coefficient*)	7.17
Viscosity	7.8centipoise (70ºC / 147ºF) – *only applicable to molten material*
pH	none – *does not yield hydrogen ions in solution*
Molecular Weight	256grams/mole

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X REACTIVITY

Dangerously Reactive With	strong oxidising agents, strong reducing agents
Also Reactive With	reactive metals (eg: Na. Ca, K), finely divided aluminum; strong alkalis cause saponification which may become rapid enough to cause heating and fire; gradually corrodes brass
Chemical Stability	stable; will not polymerize
Decomposes in Presence of	ultraviolet light, slowly
Decomposition Products	short-chain aldehydes and ketones (irritating)
Mechanical Impact	not sensitive

XI TOXICITY INFORMATION

i. *ACUTE EXPOSURE*

Skin Contact	little to no effect
Skin Absorption	yes, slowly; toxic effects unlikely by this route
Eye Contact	dust may be a mechanical irritant – *not chemically irritating*
Inhalation	little to no effect
Ingestion	large quantities (100g or more) may cause nausea and steatorrhea (fatty diarrhoea) – *not a route of industrial exposure*

ii. *CHRONIC EXPOSURE*

General	no known effect
Sensitising	not a sensitiser
Carcinogen/Tumorigen	not known to be a tumorigen or a carcinogen in humans or animals
Reproductive Effect	no known effect on humans or animals
Mutagen	not known to be a mutagen or teratogen in humans or animals
Synergistic With	not known
LD_{50} (oral)	>5000[1] & >10,000mg/kg (rat) – *no mortality reported*
LD_{50} (skin)	>2000[1]mg/kg (rabbit) – *no mortality reported*
LC_{50} (inhalation)	>162[1]mg/m^3 (*saturated vapour*) – *no mortality reported*

XII ECOLOGICAL INFORMATION

Bioaccumulation	readily metabolised – will not bioaccumulate in animals; bioconcentrates in algae
Biodegradation	degrades readily & rapidly in the presence of oxygen; 37% in 5 days, >70% in 28 days; anaerobic biodegradation of 66% in 28 days
Abiotic Degradation	reacts with atmospheric hydroxyl (OH) radicals; likely ½-life in air is 20 hours
Mobility in soil, water	water insoluble; cannot move through soil and the water column
Aquatic Toxicity	
LC_{50} (Fish, 96hr)	>1000mg/litre (Brachydanio rerio)[1] – *palmitic acid emulsified into water by ultrasound; no mortality*
EC_{50} (Crustacea, 48hr)	>4.8mg/litre (Daphnia magna)[1] – *no mortality seen*
EC_{50} (Algae)	>0.9mg/litre (Pseudokirchneriella subcapitata)[1] – *no observed effect at thisdose*

XIII DISPOSAL CONSIDERATIONS

Waste Disposal	**do not flush to sewer**; incinerate in approved facility with flue gas monitoring & scrubbing; local regulations may permit disposal in sanitary landfill
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.***

NOTE: *Depending on impurities present, waste palmitic acid may be a suitable feedstock for the manufacture of biodiesel.*

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XIV TRANSPORT INFORMATION

USA 49 CFR & Canada TDG

Product Identification Number	**UN – not regulated for transport**
Shipping Name	**not regulated for transport**
Classification	**not regulated for transport**
Marine Pollution	***not a marine pollutant***
ERAP Required	***No***

EMERGENCY INFORMATION

In Canada	***Call CANUTEC (collect)***	***(613) 996-6666***
In the U.S.A.	***Call CHEMTREC***	***(800) 424-9300***

XV REGULATIONS

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

Palmitic acid – a naturally occurring substance – is probably present on the chemical inventories of most countries

European Hazard Classification ***not classified in Europe***

U.S.A. Regulations:

Allowable Tolerances: Residues of palmitic acid are exempted from the requirement of a tolerance when used as a diluent in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to growing crops or to raw agricultural commodities after harvest.

FIFRA Requirements: Residues of palmitic acid are exempted from the requirement of a tolerance when used as a diluent in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to growing crops or to raw agricultural commodities after harvest.

FDA Requirements: Palmitic acid is a food additive permitted for direct addition to food for human consumption, as long as 1) the quantity of the substance added to food does not exceed the amount reasonably required to accomplish its intended physical, nutritive, or other technical effect in food, and 2) any substance intended for use in or on food is of appropriate food grade and is prepared and handled as a food ingredient.

XVI OTHER INFORMATION

Date of Preparation **February 2012**
Date of Revision **April 2013**
Prepared for Rierden Chemical & Trading Company, by **Peter Bursztyn**
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

(1) European Chemicals Agency (ECHA), Palmitic Acid Dossier:
http://apps.echa.europa.eu/registered/data/dossiers/DISS-9d986157-7056-5eb0-e044-00144f67d249/AGGR-dbb87e12-fa7e-4be7-ae6e-d259ab4b9c6f_DISS-9d986157-7056-5eb0-e044-00144f67d249.html#AGGR-dbb87e12-fa7e-4be7-ae6e-d259ab4b9c6f

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