GPS Safety Summary

Product Name: **Crude Naphthalene**

1. General Statement

Naphthalene is an organic compound extracted during coal tar distillation. Distillation of coal tar yields an oil containing about 50% naphthalene along with twelve other aromatic compounds. This oil after being washed with aqueous sodium hydroxide/sulphuric acid to remove acidic components (chiefly various phenols), and removing basic components, this oil undergoes fractional distillation to isolate naphthalene. The crude naphthalene resulting from this process is about 95%-97% naphthalene by weight.

2. Chemical Identity

Name:	Crude Naphthalene
Brand names:	Crude Naphthalene
Chemical name (IUPAC):	Naphthalene
CAS number(s):	91-20-3
EC number:	202-049-5
Molecular formula:	$C_{10}H_8$

3. Use and applications

- **Crude naphthalene uses:**

  Used in fine chemicals and pharmaceutical processes to produce beta naphthol phthalic anhydride.
  Used in sulphonated naphthalene and tanning agents.
  Used in making disinfectants for household usage.
  Used for organic synthesis including dye production.

4. Physical / Chemical properties

Property	Value
Appearance	Solid Crystals/ Flakes
Color	Slight Yellow or Off White
Odor	Characteristic
Odor threshold	0.015 PPM
Melting point/range	77.5– 80 °C
Boiling point/range	218 °C at 101.3 kPa
Vapor pressure	7.2 Pa at 20 °C
Density: (20ºC)	1.0253 g/cm³ (at 20 °C)
Solubility (in Water)	34.4 mg/l at 25 °C
Viscosity at 80°C	0.9 mPa
Flammable and Explosive Properties	80 °C (Method ASTM D93).

Flashpoint	
Spontaneous Ignition (Autoignition)	540 °C

5. Health Effects

Below health effects are subjected to if prolonged exposure to substance, negligence to suggested safety Precautions:

Effect Assessment	Result
Routes of Exposure	Inhalation, Eye, Skin, Ingestion.
Acute Inhalation	May cause respiratory tract irritation. May cause effects similar to those described for ingestion.
Acute Ingestion	Harmful if swallowed. May cause liver and kidney damage. May cause methemoglobinemia, cyanosis (bluish discoloration of skin due to deficient oxygenation of the blood), convulsions, and death. May cause severe digestive tract irritation with abdominal pain, nausea, vomiting and diarrhoea. Exposure may cause anemia and other blood abnormalities.
Acute eye	Vapours may cause eye irritation. Causes redness and pain.
Acute skin	May cause skin irritation. May be absorbed through the skin in harmful amounts. Causes redness and pain.
Inhalation	Inhalation of naphthalene vapor has been associated with headaches, nausea, vomiting and dizziness. Hemolysis, the abnormal breakdown of red blood cells. In humans, cataracts and other ocular injury have been reported following acute and chronic occupational exposure to naphthalene. Repeated or prolonged exposure to the substance can cause damage to the target organs.
Carcinogenicity	The International Agency for Research on Cancer (IARC) of the World Health Organization (WHO) concluded that there was inadequate evidence to evaluate the carcinogenicity of naphthalene to humans. IARC concluded their evaluation by placing naphthalene in Group 2B, possibly carcinogenic to humans. Suspected of causing cancer.

6. Environmental Effects

Naphthalene may be lost from soil via evaporation, volatilization, and biodegradation. Avoid release to the environment. Very toxic to aquatic life with long lasting effects.

Effect Assessment	Result
warming impact	While processing fumes comes out it impacts warm environment.

Fate and behavior	Result
Biodegradation	Material is biodegradable
Bioaccumulation potential	-
PBT/vPvB conclusion	Not relevant.

7. Exposure

Exposure guidelines:	**Exposure Limit Values-10ppm** CAS# 91-20-3: Hematologic eff; URT & eye irr; Skin; A3 (Confirmed Animal Carcinogen with Unknown Relevance to Humans: The agent is carcinogenic in experimental animals at a relatively high dose, by route(s) of administration, at site(s), of histologic type(s), or by mechanism(s) that may not be relevant to worker exposure. Available epidemiologic studies do not confirm an increased risk of cancer in exposed humans. Available evidence does not suggest that the agent is likely to cause cancer in humans except under uncommon or unlikely routes or levels of exposure).

8. Risk Management recommendations

Human health measures		
Organizational	A basic standard of occupational hygiene is recommended. Ensure operatives are well informed of the hazards and trained to minimize exposures. Ensure regular inspection and maintenance of equipment's and machines. Handle and store according to the indications of the Safety Data Sheet.	
Protection	**Eye/Face protection:**	Use Safety glasses with side-shields conforming to EN166, use equipment for eye protection tested and approved under approved under appropriate government standards such as NIOSH (US) or EN 166(EU).
	Skin protection:	Complete suit protecting against chemicals, Flame retardant antistatic protective clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific work place.
	Hand protection:	Handle with gloves. Gloves must be inspected prior to use. Use proper gloves removal technique. (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.
	Respiratory protection:	I Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). In case of brief exposure or low pollution use breathing filter apparatus (filter ABEK). In case of intensive or longer exposure use

		(self-contained) breathing equipment.
Engineering controls	Use process enclosures and/or exhaust ventilation to keep airborne dust concentrations below the occupational exposure limit.	
Environment protective measures		
Product must not be released into water without pre-treatment. Neutralize wastewater before release.		

9. Regulatory Information / Classification and Labelling

9.1 Regulatory Information

EU	Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
WHMIS	This material is classified as D2A under Canadian Worker Hazardous Materials Information System (WHMIS) criteria.
OSHA	OSHA PEL (TWA) (mg/m³) 50 mg/m³ OSHA PEL (TWA) (ppm) 10 ppm
US federal	US Government agencies have set occupational exposure limits to Naphthalene exposure. The Occupational safety & health Administration Has set a permissible exposure permissible exposure limit at 10 ppm (50 mg/m3) over an eight-hour time-weighted average.

9.2 Classification and labelling

Under GHS substances are classified according to their physical, health, and environmental hazards.

Classification	
Full text of R, H and EUH Statements.:	
H228:	Flammable Solid.
H302:	Harmful if swallowed.
H351:	Suspected of causing cancer.
H400:	Very toxic to aquatic life.
H410:	Very toxic to aquatic life with long lasting effects.
Signal Word	
Warning	
Pictogram	
GHS03: Flame over circle	

GHS04: Gas cylinder	
GHS06: Skull and crossbones	
GHS09: Environment