



PALAYESH SETAREH POOYA CASPIAN

Material Safety Data Sheet

(I-C5, N-C5)


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Issue	
3 rd revision	
Revised categories	
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1. Chemical product and company identification

- 1) Product name : C5
- 2) Advisable use and Restriction
 - Advisable use
 - Solvent using manufacturing of chlorides derivatives, foaming agent of polystyrene (isopentane)
 - Manufacturing of ice, Extract process of solvent and cryometer (pentane)
 - Restriction of product using : N/A
- 3) Manufacturer
 - Company : PALAYESH SETAREH POOYA CASPIAN
 - Address : Laleh Abad Industrial Area, Babol, Mazandran, Iran
 - Emergency: +98 111 35000

2. Hazard identification

- 1) Hazard classification: Flammable liquid Cat 1
Acute toxicity oral Cat 4
Skin corrosion/irritation Cat 2
Eye damage/irritation Cat 2
Specific target organ toxicity (single exposure) Cat 3
Aspiration hazard Cat 1
Hazardous to the aquatic environment chronic hazard Cat 2
- 2) Allocation label elements

<input type="radio"/> Symbol	<input type="radio"/> Signal word	<input type="radio"/> Hazard statement
	Danger	Extremely flammable liquid and vapour Harmful if swallowed Causes skin irritation Causes serious eye irritation May cause drowsiness or dizziness May be fatal if swallowed and enters airways Toxic to aquatic life with long lasting effects



○ Precautionary statements

- Prevention : P210 Keep away from heat/sparks/open flames/hot surfaces.– No smoking.
P233 Keep container tightly closed.
P240 Ground/Bond container and receiving equipment
P241 Use explosion–proof electrical/ventilating/lighting/equipment.
P242 Use only non–sparking tools.
P243 Take precautionary measures against static discharge.
P280 Wear protective gloves/eye protection/face protection
P264 Wash ... thoroughly after handling..
P261 Avoid breathing dust/fume/gas/mist/ vapours/spray
P271 Use only outdoors or in a well–ventilated area.
P273 Avoid release to the environment.
P270 Do not eat, drink or smoke when using this product.
- Response : P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P370+P378 In case of fire: Use Dry chemical, CO₂, water fog or regular foam for extinction.
P302+P352 IF ON SKIN: Wash with plenty of soap and water.
P321 Specific treatment (see ... on this label)
P332+P313 If skin irritation occurs: Get medical advice/attention.
P362 Take off contaminated clothing and wash before reuse.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313 If eye irritation persists: Get medical advice/attention.
P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P331 Do NOT induce vomiting.
P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P312 Call a POISON CENTER or doctor/physician if you feel unwell..
P391 Collect spillage.
P301+ P312 If swallowed: call a poison center or doctor/physician if you feel unwell.
P330 Rinse mouth.
- Storage : P403+P235 Store in a well–ventilated place. Keep cool.
P403+P233 Store in a well–ventilated place. Keep container tightly closed..
P405 Store locked up..
- Disposal : P501 Dispose of contents/container to in accordance with local/regional/ national/ international regulations (to be specified).

3) Other hazard information not included in hazard classification

- – NFPA Rating system: Health 2 Flammability 4 Reactivity 0

3. Ingredient information

Components	Common name	CAS No.	PCT(WT) (%)
n-PENTANE	Amryl hydride	109-66-0	80±2
iso-PENTANE	2-methylbutane	78-78-4	20±2

4. First aid measures

- 1) Eye contact :
 - Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.
 - Get medical aid immediately.
- 2) Skin contact :
 - removing contaminated clothing and shoes immediately.
 - Flush skin with plenty of soap and water for at least 15 minutes.
 - Get medical aid immediately.
- 3) Inhalation:
 - Remove from exposure to fresh air immediately.
 - If not breathing, give artificial respiration.
 - If breathing is difficult, give oxygen.
 - Get medical aid immediately.
- 4) Ingestion:
 - Get medical aid immediately.
- 5) Advice to physician
 - Gastric lavage and activated charcoal *slurry* may be administered if swallowed.

5. Fire fighting measures

- 1) Extinguishing media
 - Proper extinguishing media: Dry chemical, Carbon dioxide, water fog or regular foam
 - Improper extinguishing media: Avoid direct water fog
 - Large fire: Water fog or water spray or regular foam
- 2) Hazards from chemical product
 - Decomposition : May cause toxic carbon oxides

 - Fire and explosive hazard
 - Most vapors are heavier than air. Vapors can travel to a source of ignition and flash back.
 - Vapors may explode when mixed with air.
 - Containers may explode when heated.
- 3) Protective clothing and fire fighting :
 - Move containers from fire area if you can do it without risk
 - Cool tank or structure with water fog to prevent fire extension.
 - For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.
 - Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.



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- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.)
- Fire fight only in case of stop the flow.
- Fire fight with water fog
- Cool container with plenty of water from far distance as possible.
- Water spray may be ineffective.

6. Accidental release measures

1) Health considerations and protective equipment :

- As an immediate precautionary measure, isolate spill or leak area for at least 25~50 meters in all directions, Keep unnecessary personnel away.
- Stay upwind and keep out of low areas.
- Shut off ignition sources; smoking, flames or other sources of ignition.
- Ventilate before entering confined space.
- Reducing vapor with water fog.

2) Environmental considerations:

- Air : N/A
- Soil : N/A
- Water : N/A.

3) Spill clean-up procedures

- Small spill:
 - Absorb spill with inert material, (e.g., dry sand or earth), then place into a chemical waste container
 - Scoop up with a non sparking tool, then place into a suitable container for disposal.
 - A vapor suppressing foam may be used to reduce vapors
 - Eliminate all ignition sources (no smoking or flames, sparks) and use spark-protection equipment.
 - Ground all equipment containing material
 - Do not touch or walk through spilled material
 - Attempt to stop leak if without undue personnel hazard
 - Keep material out of sewers, ventilating system and confined areas.
- Large spill: Dike far ahead of spill for later disposal.
Consider downwind initial evacuation for at least 300 meters

7. Handling and storage



1) Handling :

- Remove contaminated clothing and wash before reuse.
- Use spark-proof tools and explosion proof equipment
- Empty containers retain product residue, (liquid and/or vapor), and can be dangerous
- Prevent the generation of static electricity
- Do not get in eyes, on skin, or on clothing
- Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

2) Storage:

- Store according to authority environmental regulation.
- Store according to 29 CFR 1910.106
- Avoid contact with incompatibility and ignition source.
- Store in a tightly closed container.
- Store in a dry area. Refrigerator/flammables

8. Exposure controls and personal protection

1) Exposure limits value

Components	Regulatory in IRAN	ACGIH	Biological exposure limit
n-PENTANE	TWA : 600ppm, 1800mg/m ³ STEL : 750ppm, 2250mg/m ³	TWA: 600ppm	N/A
iso-PENTANE	N/A	TWA: 600ppm	N/A

2) Engineering controls :

- Provide local exhaust ventilation in a work-station location.
- Equip explosion proof equipment

3) Personal protection :

○ Respiratory protection

- air-line mask (pressure-demand, full face-piece)
- If unknown concentration or emergency, following respirator needs:
- air-mask(SCBA) (combination air-line mask). air-mask(SCBA) (pressure-demand, full face-piece).
- Respiratory protection classified from high concentration to low concentration and consider property before use.

○ Eye protection

- Dust goggles should be worn when excessively.
- An eye wash unit and safety shower station should be available nearby working place.

- Skin protection
 - Wear appropriate protective gloves to prevent skin exposure
- Body protection
 - Wear appropriate protective clothes to prevent skin exposure.

9. Physical and chemical properties

Specification	C5	n-PENTANE	iso-PENTANE
1) Appearance	N/A	Colorless, liquid	Colorless, liquid
2) Odor	N/A	Gasoline odor	Alcohol odor
3) Threshold of odor	N/A	2.2ppm	N/A
4) pH	N/A	N/A	N/A
5) M.P/B.P	N/A	-130 °C	-160 °C
6) Initial boiling point or range	N/A	36 °C	29 °C
7) Flash point	N/A	-57 °C	-51 °C
8) Evaporation rate	N/A	28.6	N/A
9) Flammability (solids, gas)	N/A	Flammable	Flammable
10) Upper/lower flammability/explosive limit	N/A	1.5–7.8%	1.4–7.6%
11) Vapor pressure	N/A	426mmHg (20 °C)	595mmHg (21 °C)
12) Solubility	N/A	0.04%	Non- miscibility
13) Vapor density	N/A	2.5	2.5
14) Specific gravity	N/A	0.6262	0.6201
15) n-octanol/water partition coefficient	N/A	3.39	2.72
16) Auto ignition temperature	N/A	260 °C	420 °C
17) Degradation temperature	N/A	N/A	N/A
18) Viscosity	N/A	N/A	N/A
19) M.W	N/A	72.15	72.15



10. Stability and reactivity

- 1) Stability and hazardous reactivity
 - Stable at normal temperatures and pressures
 - Polymerization will not occur.
- 2) Conditions to avoid
 - Avoid heat, sparks, open flames, or other sources of ignition.
 - Vapor may explode.
 - Containers may explode when heated.
 - Keep contamination of sewer.
- 3) Incompatibility
 - oxidizing agent: fire and explosion
 - plastic, rubber and coating: may cause react
- 4) Hazardous decomposition products
 - May cause toxic carbon oxides.

11. Toxicological information

- 1) Exposure route information :
 - Inhalation of respiratory system :
 - n-pentane: LC50 = 364mg/L (rat/4hr)
 - iso-pentane : LC50 = 280mg/L (rat/4hr)
 - Ingestion of oral:
 - n-pentane: LD50=2000mg/kg (rat)
 - iso-pentane : N/A
 - Skin/eye contact :
 - n-pentane: LD50=3000mg/kg (rabbit)
 - iso-pentane : N/A
- 2) Health and hazard information
 - Acute toxicity: oral
 - n-pentane: LD50=2000mg/kg (rat)
 - iso-pentane : N/A
 - Acute toxicity: dermal
 - n-pentane: LD50=3000mg/kg (rabbit)
 - iso-pentane : N/A
 - Acute toxicity: inhalation
 - n-pentane: LC50 = 364mg/L (rat/4hr)
 - iso-pentane : LC50 = 280mg/L (rat/4hr)
 - Skin corrosion/irritation:
 - n-pentane: Not irritatnt
 - iso-pentane : May cause rash

- Serious eye damage/eye irritation :
 - n-pentane: Not irritant
 - iso-pentane : irritant

- Respiratory sensitization :
 - n-pentane: N/A
 - iso-pentane : N/A

- Skin sensitization :
 - n-pentane: No sensitization
 - iso-pentane : No sensitization

- Carcinogenicity :
 - n-pentane: N/A
 - iso-pentane : N/A

- Germ cell mutagenicity :
 - n-pentane: negative, (rat, bone marrow)
 - iso-pentane : N/A

- Reproductive toxicity :
 - n-pentane: N/A
 - iso-pentane : N/A

- Specific target organ toxicity (single exposure) :
 - n-pentane: respiratory irritant, anesthesia
 - iso-pentane : anesthesia

- Specific target organ toxicity (repeated exposure) :
 - n-pentane: N/A
 - iso-pentane : N/A

- Aspiration hazard :
 - n-pentane: Aspiration hazard
 - iso-pentane : Aspiration hazard

12. Ecological information

- 1) Aquatic/terrestrial toxicity
 - n-pentane: EC50=2.7mg/L (*daphnia magna*, 48hr)
 - iso-pentane : EC50=2.3mg/L (*daphnia magna*, 48hr)

- 2) Persistence and degradation:
 - Persistence :
 - n-pentane: Log Kow=3.39
 - iso-pentane : Log Kow=2.72

 - Degradation :
 - n-pentane: N/A
 - iso-pentane : N/A



3) Bioaccumulation

 Biodegradation :

- n-pentane: BOD=96%
- iso-pentane : N/A

 Bioaccumulation :

- n-pentane: N/A
- iso-pentane : N/A

4) Mobility in soil: :

- n-pentane: Koc=874.5 (estimated)
- iso-pentane : Koc=229.2 (estimated)

5) Other hazardous information: : N/A

13. Disposal considerations

1) Disposal : Waste must be disposed of in accordance with commission to permitted person

2) Precaution : Waste generators must consult state and local hazardous waste regulations to ensure.

14. Transport information

1) UN No. : 1265

2) Proper shipping name : PENTANES, liquid

3) Class or division : 3

4) Packing group : I

5) Marine pollutant : N/A

6) Special safety response for transportation or transportation measure

 Fire schedule EmS No. : F-E Spillage schedule EmS No : S-D