



SAFETY DATA SHEET

SDS ID NO.: 0386MAR020

Revision date 10/19/2021

1. IDENTIFICATION

Product Name	MPC Mixed Pentanes
Synonym	MPC Hydrocarbons, C5 Rich; C5 Rich Hydrocarbons; Hydrotreated Mixed Pentanes; MC5, Hydrotreated Pentanes; Targa Pentanes; Isomerate; DeHexanizer Overhead; Sweet Pentane, Isopentane, RS099
Product code	0386MAR020
Chemical family	Hydrocarbon Mixture
Recommended use	Refinery Stream.
Restrictions on use	All others.
Manufacturer, Importer, or Responsible Party Name and Address	MARATHON PETROLEUM COMPANY LP 539 South Main Street Findlay, OH 45840
SDS Information	1-419-421-3070 (M-F; 8-5 EST)
24 Hour Emergency Telephone	CHEMTREC: 1-800-424-9300 (CCN# 13740)

2. HAZARD IDENTIFICATION

OSHA Regulatory Status

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Classification

Flammable liquids	Category 1
Skin corrosion/irritation	Category 2
Germ cell mutagenicity	Category 1B
Carcinogenicity	Category 1B
Specific target organ toxicity (single exposure)	Category 3
Aspiration toxicity	Category 1
Chronic aquatic toxicity	Category 2

Hazards Not Otherwise Classified (HNOC)

Static accumulating flammable liquid

Label Elements

Danger

EXTREMELY FLAMMABLE LIQUID AND VAPOR
May accumulate electrostatic charge and ignite or explode
May be fatal if swallowed and enters airways
Causes skin irritation
May cause genetic defects
May cause cancer
May cause drowsiness or dizziness
Toxic to aquatic life with long lasting effects

**Appearance** Colorless Liquid**Physical State** Liquid**Odor** Hydrocarbon**Precautionary Statements - Prevention**

Obtain special instructions before use
 Do not handle until all safety precautions have been read and understood
 Keep away from heat/sparks/open flames/hot surfaces. - No smoking
 Keep container tightly closed
 Ground/bond container and receiving equipment
 Use explosion-proof electrical/ventilating/lighting/equipment
 Use only non-sparking tools.
 Take precautionary measures against static discharge
 Wear protective gloves/protective clothing/eye protection/face protection
 Wash hands and any possibly exposed skin thoroughly after handling
 Avoid breathing mist/vapors/spray
 Use only outdoors or in a well-ventilated area
 Avoid release to the environment

Precautionary Statements - Response

IF exposed or concerned: Get medical attention
 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
 If skin irritation occurs: Get medical attention
 Wash contaminated clothing before reuse
 If inhaled: Remove person to fresh air and keep at rest in a position comfortable for breathing
 Call a poison center or doctor if you feel unwell
 If swallowed: Immediately call a poison center or doctor
 Do NOT induce vomiting
 In case of fire: Use CO₂, dry chemical, or foam for extinction.
 Collect spillage

Precautionary Statements - Storage

Store in a well-ventilated place. Keep container tightly closed
 Keep cool
 Store locked up

Precautionary Statements - Disposal

Dispose of contents/container at an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

Mixed Pentanes is a complex combination of saturated hydrocarbons ranging from C₄ through C₆ (predominantly N-pentane and iso-pentane).

Composition Information

Name	CAS Number	% Concentration
Hydrocarbons, C5-Rich	68476-55-1	100
Isopentane	78-78-4	25-70
n-Pentane	109-66-0	10-60
Butane	106-97-8	4-10
Propane	74-98-6	0-2
Benzene	71-43-2	0-0.4

All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

4. FIRST AID MEASURES

First aid measures

General advice	In case of accident or if you feel unwell, seek medical advice immediately (show directions for use or safety data sheet if possible).
Inhalation	Remove to fresh air. If not breathing, utilize bag valve mask or other form of barrier device to institute rescue breathing. If breathing is difficult, ensure airway is clear, give oxygen and continue to monitor. If heart has stopped, immediately begin cardiopulmonary resuscitation (CPR). Keep affected person warm and at rest. Get immediate medical attention.
Skin contact	Immediately wash exposed skin with plenty of soap and water while removing contaminated clothing and shoes. Get medical attention if irritation persists. Place contaminated clothing in closed container until cleaned or discarded. If clothing is to be laundered, inform the person performing the operation of contaminant's hazardous properties.
Eye contact	Flush immediately with large amounts of water for at least 15 minutes. Gently remove contacts while flushing. Eyelids should be held away from the eyeball to ensure thorough rinsing. Gently remove contacts while flushing. Get medical attention if irritation persists.
Ingestion	Do not induce vomiting because of danger of aspirating liquid into lungs, causing serious damage and chemical pneumonitis. If spontaneous vomiting occurs, keep head below hips, or if patient is lying down, turn body and head to side to prevent aspiration and monitor for breathing difficulty. Never give anything by mouth to an unconscious person. Keep affected person warm and at rest. Get immediate medical attention.

Most important signs and symptoms, both short-term and delayed with overexposure

Adverse effects	Irritating to the skin and mucous membranes. Symptoms may include redness, itching, and inflammation. May cause nausea, vomiting, diarrhea, and signs of nervous system depression: headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue. Aspiration hazard. May cause coughing, chest pains, shortness of breath, pulmonary edema and/or chemical pneumonitis. Repeated or prolonged skin contact may cause drying, reddening, itching and cracking.
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Indication of any immediate medical attention and special treatment needed

Notes to physician	<p>INHALATION: This material (or a component) sensitizes the myocardium to the effects of sympathomimetic amines. Epinephrine and other sympathomimetic drugs may initiate cardiac arrhythmias in individuals exposed to this material. Administration of sympathomimetic drugs should be avoided.</p> <p>INGESTION: This material represents a significant aspiration and chemical pneumonitis hazard. Induction of emesis is not recommended.</p>
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5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	For small fires, Class B fire extinguishing media such as CO ₂ , dry chemical, foam or water spray can be used. For large fires, water spray, fog or foam can be used. Firefighting should be attempted only by those who are adequately trained and equipped with proper protective equipment.
Unsuitable extinguishing media	Do not use straight water streams to avoid spreading fire.
Specific hazards arising from the chemical	This product has been determined to be an extremely flammable liquid per the OSHA Hazard Communication Standard and should be handled accordingly. May accumulate electrostatic charge and ignite or explode. Vapors may travel along the ground or be moved

by ventilation and ignited by many sources such as pilot lights, sparks, electric motors, static discharge, or other ignition sources at locations distant from material handling. Flashback can occur along vapor trail. For additional fire related information, see NFPA 30 or the Emergency Response Guidebook 128.

Hazardous combustion products	Smoke, carbon monoxide, and other products of incomplete combustion.
Explosion data	
Sensitivity to mechanical impact:	No.
Sensitivity to static discharge:	Yes.
Special protective equipment and precautions for firefighters	Firefighters should wear full protective clothing and positive-pressure self-contained breathing apparatus (SCBA) with a full face-piece, as appropriate. Avoid using straight water streams. Water may be ineffective in extinguishing low flash point fires, but can be used to cool exposed surfaces. Avoid excessive water spray application. Water spray and foam must be applied carefully to avoid frothing and from as far a distance as possible. Keep run-off water out of sewers and water sources.
Additional firefighting tactics	<p>FIRES INVOLVING TANKS OR CAR/TRAILER LOADS: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after the fire is out. Do not direct water at source of leak or safety devices; icing may occur. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.</p> <p>EVACUATION: Consider initial downwind evacuation for at least 1000 feet. If tank, rail car or tank truck is involved in a fire, ISOLATE for 5280 feet (1 mile) in all directions; also, consider initial evacuation of 5280 feet (1 mile) in all directions.</p>

NFPA Health 1 Flammability 4 Instability 0 Special Hazard -

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	Keep public away. Isolate and evacuate area. Shut off source if safe to do so. Eliminate all ignition sources.
Protective equipment	Use personal protection measures as recommended in Section 8.
Emergency procedures	Advise authorities and National Response Center (800-424-8802) if the product has entered a water course or sewer. Notify local health and pollution control agencies, if appropriate.
Environmental precautions	Avoid release to the environment. Avoid subsoil penetration.
Methods and materials for containment	Contain liquid with sand or soil.
Methods and materials for cleaning up	Use suitable absorbent materials such as vermiculite, sand, or clay to clean up residual liquids. Recover and return free product to proper containers. When recovering free liquids ensure all equipment is grounded and bonded. Use only non-sparking tools.

7. HANDLING AND STORAGE

Safe handling precautions	NEVER SIPHON THIS PRODUCT BY MOUTH. Use appropriate grounding and bonding practices. Static accumulating flammable liquid. Bonding and grounding may be insufficient to eliminate the hazard from static electricity. Do not expose to heat, open flames, strong oxidizers or other sources of ignition. No smoking. Avoid repeated and prolonged skin contact. Avoid breathing gas or mists. Use only with adequate ventilation. Use personal
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protection measures as recommended in Section 8. Use only non-sparking tools. Do not cut, drill, grind or weld on empty containers since explosive residues may remain. Refer to applicable EPA, OSHA, NFPA and consistent state and local requirements.

Components of this product are basically non-conductors of electricity and can become electrostatically charged during mixing, filtering or pumping at high flow rates. If this charge reaches a sufficiently high level, sparks can form that may ignite the vapors of flammable liquids. Sudden release of hot organic vapors or mists from process equipment operating at elevated temperature and pressure, or sudden ingress of air into vacuum equipment, may result in ignitions without the presence of obvious ignition sources.

Storage conditions Store in properly closed containers that are appropriately labeled and in a cool, well-ventilated area. Do not puncture or incinerate container.

Incompatible materials Strong oxidizing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Name	ACGIH TLV	OSHA PELS	NIOSH IDLH
Isopentane 78-78-4	1000 ppm TWA	-	-
n-Pentane 109-66-0	1000 ppm TWA	TWA: 1000 ppm TWA: 2950 mg/m ³	1500 ppm
Butane 106-97-8	1000 ppm STEL	-	1600 ppm
Propane 74-98-6	Simple asphyxiant	TWA: 1000 ppm TWA: 1800 mg/m ³	2100 ppm
Benzene 71-43-2	0.5 ppm TWA 2.5 ppm STEL Skin - potential significant contribution to overall exposure by the cutaneous route	TWA: 1 ppm STEL: 5 ppm TWA: 10 ppm (applies to industry segments exempt from the benzene standard) (see 29 CFR 1910.1028)	500 ppm

Notes: No further information available.

Engineering measures Local or general exhaust required in an enclosed area or when there is inadequate ventilation. Use mechanical ventilation equipment that is explosion-proof.

Personal protective equipment

Eye protection Use goggles or face-shield if the potential for splashing exists.

Skin and body protection Use nitrile rubber, Viton® or PVA gloves for repeated or prolonged skin exposure. Glove suitability is based on workplace conditions and usage. Contact the glove manufacturer for specific advice on glove selection and breakthrough times.

Respiratory protection Approved organic vapor chemical cartridge or supplied air respirators should be worn for exposures to any components exceeding the established exposure limits. Observe respirator assigned protection factors (APFs) criteria cited in federal OSHA 29 CFR 1910.134. Self-contained breathing apparatus should be used for fire fighting.

Hygiene measures Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance Colorless Liquid
Physical State Liquid

Color	Colorless
Odor	Hydrocarbon
Odor Threshold	No data available.
Property	Values (method)
pH	Not applicable
Melting Point / Freezing Point	No data available.
Initial Boiling Point / Boiling Range	No data available.
Flash Point	< -51 °C / <-60 °F
Evaporation Rate	No data available.
Flammability (solid, gas)	Not applicable
Flammability Limit in Air (%):	
Upper Flammability Limit:	8.5
Lower Flammability Limit:	1.4
Explosion Limits	No data available.
Vapor Pressure	110-125 kPa @20°C
Vapor Density	2-2.5
Specific Gravity / Relative Density	0.57-0.61
Water Solubility	No data available.
Partition Coefficient	No data available.
Autoignition Temperature	260 °C / 500 °F
Decomposition Temperature	No data available.
Kinematic Viscosity	No data available.
VOC Content (%)	No data available.
Bulk Density	Not applicable

10. STABILITY AND REACTIVITY

Reactivity	The product is non-reactive under normal conditions.
Chemical stability	The material is stable at 70°F (21°C), 760 mmHg pressure.
Possibility of hazardous reactions	None under normal processing.
Hazardous polymerization	Will not occur.
Conditions to avoid	Excessive heat, sources of ignition, open flame.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	None known under normal conditions of use.

11. TOXICOLOGICAL INFORMATION

Potential short-term adverse effects from overexposures

Inhalation	May cause drowsiness or dizziness. Breathing high concentrations of this material in a confined space or by intentional abuse can cause irregular heartbeats which can cause death.
Eye contact	Exposure to vapor or contact with liquid may cause mild eye irritation, including tearing, stinging, and redness.
Skin contact	Causes skin irritation. Prolonged and repeated contact may cause defatting and drying of the skin and may lead to irritation and/or dermatitis.
Ingestion	May be fatal if swallowed or vomited and enters airways. May cause irritation of the mouth, throat and gastrointestinal tract.

Acute toxicological data

Name	Oral LD50	Dermal LD50	Inhalation LC50
Isopentane 78-78-4	-	-	450 mg/L (Mouse) 2 h
n-Pentane 109-66-0	> 2000 mg/kg (Rat)	-	364 mg/L (Rat) 4 h
Butane 106-97-8	-	-	658 mg/L (Rat) 4 h
Propane 74-98-6	-	-	> 1,464 mg/L (Rat) 15 min
Benzene 71-43-2	> 2000 mg/kg (Rat)	> 5000 mg/kg (Rabbit)	> 20 mg/l (Rat) 4 h

Immediate and delayed effects as well as chronic effects from short and long-term exposure

PROPANE, BUTANE and PENTANE: Laboratory animal studies indicate exposure to extremely high levels (1 to 10 vol.% in air) may cause cardiac arrhythmias (irregular heartbeats) which may be serious or fatal.

BENZENE: Benzene exposure may cause skin, eye and respiratory irritation. Excessive exposures may cause central nervous system effects. Numerous studies of workers exposed to airborne benzene for prolonged or repeated periods show strong evidence that overexposure can cause cancer of the blood, AML (acute myeloid leukemia), along with other disorders indicating damage to the blood forming organs including aplastic anemia, leukopenia, thrombocytopenia, and the development of myelodysplastic syndrome. Some studies of pregnant women occupationally exposed to benzene suggest associations with an increased risk of miscarriage, stillbirth, reduced birth weight, and gestational age. Prolonged and repeated exposure to benzene has induced chromosomal aberrations in circulating human lymphocytes, in bone marrow cells of laboratory animals, and in sperm cells of both humans and laboratory animals.

Adverse effects related to the physical, chemical and toxicological characteristics

Signs and symptoms	Irritating to the skin and mucous membranes. Symptoms may include redness, itching, and inflammation. May cause nausea, vomiting, diarrhea, and signs of nervous system depression: headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue. Aspiration hazard. May cause coughing, chest pains, shortness of breath, pulmonary edema and/or chemical pneumonitis. Repeated or prolonged skin contact may cause drying, reddening, itching and cracking.
Acute toxicity	None known.
Skin corrosion/irritation	Causes skin irritation.
Serious eye damage/eye irritation	None known.
Sensitization	None known.
Mutagenic effects	May cause genetic defects.
Carcinogenicity	May cause cancer. Cancer designations are listed in the table below

Name	ACGIH (Class)	IARC (Class)	NTP	OSHA
Benzene 71-43-2	Confirmed human carcinogen (A1)	Carcinogenic to humans (1)	Known to be human carcinogen	Known carcinogen

Reproductive toxicity	None known.
Specific Target Organ Toxicity (STOT) - single exposure	May cause drowsiness or dizziness.
Specific Target Organ Toxicity (STOT) - repeated exposure	None known.
Aspiration hazard	May be fatal if swallowed or vomited and enters airways.

12. ECOLOGICAL INFORMATION

Ecotoxicity

This product should be considered toxic to aquatic organisms, with the potential to cause long lasting adverse effects in the aquatic environment.

Name	Fish	Crustacea	Algae/aquatic plants
Hydrocarbons, C5-Rich 68476-55-1	8.41: 96 h Oncorhynchus mykiss mg/L LC50 semi-static, closed	-	-
Isopentane 78-78-4	96-hr LC50 = 3.1 mg/L Rainbow trout	48-hr EC50 >1 - <10 mg/L Daphnia magna	-
n-Pentane 109-66-0	96-hr LC50 >1 - <10 mg/L Rainbow trout	48-hr EC50 = 9.7 mg/L Daphnia magna	-
Benzene 71-43-2	96-hr LC50 = 5.3 mg/l Rainbow trout (flow-through)	48-hr EC50 = 8.76-15.6 mg/l Daphnia magna (Static)	72-hr EC50 = 29 mg/l Algae

Persistence and degradability

Readily biodegradable in the environment.

Bioaccumulation

Not expected to bioaccumulate in aquatic organisms.

Mobility in soil

May partition into air, soil and water.

Other adverse effects

No information available.

13. DISPOSAL CONSIDERATIONS

Description of waste residues

This material may be a flammable liquid waste.

Safe handling of wastes

Handle in accordance with applicable local, state, and federal regulations. Use personal protection measures as required. Use appropriate grounding and bonding practices. Use only non-sparking tools. Do not expose to heat, open flames, strong oxidizers or other sources of ignition. No smoking.

Disposal of wastes / methods of disposal

The user is responsible for determining if any discarded material is a hazardous waste (40 CFR 262.11). Dispose of in accordance with federal, state and local regulations.

Contaminated packaging disposal

Empty containers should be completely drained and then discarded or recycled, if possible. Do not cut, drill, grind or weld on empty containers since explosive residues may be present. Dispose of in accordance with federal, state and local regulations.

14. TRANSPORT INFORMATION

DOT

UN/Identification No: UN 1265
 UN Proper Shipping Name: Pentanes
 Transport Hazard Class(es): 3
 Packing Group: I

IATA

UN/Identification No: UN 1265
 UN Proper Shipping Name: Pentanes
 Transport Hazard Class(es): 3
 Packing Group: I

IMDG

UN/Identification No: UN 1265
 UN Proper Shipping Name: Pentanes
 Transport Hazard Class(es): 3
 Packing Group: I
 Marine Pollutant: Yes

15. REGULATORY INFORMATION

Regulatory Information

US TSCA Chemical Inventory This product and/or its components are listed on the TSCA Chemical Inventory or are exempt.

Canada DSL/NDSL Inventory This product and/or its components are listed either on the Domestic Substances List (DSL) or are exempt.

EPA Superfund Amendment & Reauthorization Act (SARA)

SARA Section 302 This product does not contain any component(s) included on EPA's Extremely Hazardous Substance (EHS) List above the de minimis threshold.

SARA Section 304 This product may contain component(s) identified either as an EHS or a CERCLA Hazardous substance which in case of a spill or release may be subject to SARA reporting requirements:

Name	Hazardous Substances RQs
Benzene 71-43-2	10 lb 4.54 kg

SARA Section 311/312 The following EPA hazard categories apply to this product:

Flammable
Hazard Not Otherwise Classified (HNOC)-Physical
Skin corrosion or irritation
Germ cell mutagenicity
Carcinogenicity
Specific target organ toxicity
Aspiration hazard

SARA Section 313 This product may contain component(s), which if in exceedance of the de minimus threshold, may be subject to the reporting requirements of SARA Title III Section 313 Toxic Release Reporting (Form R).

Name	CERCLA/SARA 313 Emission reporting
Benzene 71-43-2	0.1 % de minimis concentration

U.S. State Regulations

California Proposition 65 This product can expose you to chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm.

Name	California Proposition 65
Benzene 71-43-2	Carcinogen, initial date 02/27/87 Male developmental toxicity, initial date 12/26/97

For more information, go to www.P65Warnings.ca.gov.

State Right-To-Know Regulations The following component(s) of this material are identified on the regulatory lists below:

Name	New Jersey Right-To-Know	Pennsylvania Right-To-Know	Massachusetts Right-To-Know
Isopentane 78-78-4	Listed	Listed	Listed
n-Pentane 109-66-0	Listed	Listed	Listed

Butane 106-97-8	Listed	Listed	Listed
Propane 74-98-6	Listed	Listed	Listed
Benzene 71-43-2	Listed	Listed	Listed

16. OTHER INFORMATION

Prepared by Toxicology & Product Safety

Revision Notes

Revision date 10/19/2021

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is intended as guidance for safe handling, use, processing, storage, transportation, accidental release, clean-up and disposal and is not considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

17. MPC COMMENTS (non-publishable)