Section 1. Product and Company Identification

Product Name Isobornyl Acrylate
CAS Number 5888-33-5; Mixture

Parchem - fine & specialty chemicals
415 Huguenot Street
New Rochelle, NY 10801
(914) 654-6800 **(914) 654-6899**
parchem.com **info@parchem.com**

EMERGENCY RESPONSE NUMBER
CHEMTEL
Toll Free US & Canada: 1 (800) 255-3924
All other Origins: 1 (813) 248-0585
Collect Calls Accepted

Section 2. Hazards Identification

Classification of the substance or mixture
GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Skin irritation (Category 2), H315
Eye irritation (Category 2A), H319
Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335
Acute aquatic toxicity (Category 2), H401
Chronic aquatic toxicity (Category 2), H411

GHS Label Elements

Pictograms:

Signal word: Warning

Hazard and precautionary statements
Hazard statement(s)
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H411 Toxic to aquatic life with long lasting effects.
Precautionary statement(s)
P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P273 Avoid release to the environment.
P280 Wear eye protection/ face protection.

P280 Wear protective gloves.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P304 + P340 + P312 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332 + P313 If skin irritation occurs: Get medical advice/ attention.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P362 Take off contaminated clothing and wash before reuse.
P391 Collect spillage.
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
P501 Dispose of contents/ container to an approved waste disposal plant.

Emergency Overview
Clear water-white liquid with ester odor. May be irritating to the upper respiratory tract (including nasal tissues), skin, and eyes. Potential skin sensitizer. Product can undergo hazardous polymerization if not properly inhibited or exposed to high temperatures. Toxic to aquatic organisms. Do not release to water or the environment. Insoluble in water.

Hazard Rating System (HMIS)
Health = 1
Flammability = 1
Physical Hazard = 1

Potential Health Effects
Eyes: This product (including its vapors) may be irritating to the eyes. More serious effects, including corneal damage and permanent injury, may result if exposure is not treated.
Skin Irritation/Sensitization/ Absorption: This product may be irritating to the skin. Generally not expected to be a strong dermal irritant. The irritancy of this product varies from person to person and may be the result of the substance's skin sensitization potential. In susceptible individuals with heightened skin sensitivity, the product is a potential skin sensitizer and may cause allergic reactions and contact dermatitis resulting in severe irritation, dryness, and cracking of the skin. Irritation or allergic reactions may not necessarily be immediately apparent - effects may be delayed. This product is not expected to be absorbed through the skin.
Ingestion: This product is not expected to be harmful by ingestion. Over ingestion of this product may result in adverse effects.
Inhalation: The vapors of this product may be irritating to the upper respiratory tract (including nasal tissues). Prolonged (hours) exposure may be harmful and cause adverse effects including labored breathing and drowsiness, as well as damage to the upper respiratory tract.
See Section 7 regarding inhalation exposure potential during heating operations.
Subchronic Toxicity: There are no subchronic test data on this product. Based on test data on the methacrylate analog (isobornyl methacrylate), this product may present a limited subchronic toxicity hazard.

Reproductive Toxicity: There are no reproductive toxicity test data on this product. Based on test data on the methacrylate analog (isobornyl methacrylate), this product is not expected to present a reproductive toxicity hazard.
Teratogenicity (birth defects): There are no teratogenicity test data on this product. Based on test data on the methacrylate analog (isobornyl methacrylate), this product is not expected to present a teratogenicity hazard.
Mutagenicity: There are no mutagenicity test data on this product. Based on test data on the methacrylate analog (isobornyl methacrylate), this product is not expected to present a mutagenicity hazard.
Chronic Effects/Carcinogenicity: There are no chronic effects or carcinogenicity data on this product. Based on data on similar compounds, this product may present a limited chronic toxicity hazard.
-NTP: Not listed
-IARC: Not listed
-OSHA: Not listed
Medical Conditions Aggravated by Exposure: Not available.
Incompatibility: Not available.
Signs & Symptoms of Exposure: Exposure may cause eye, skin, and respiratory tract irritation. Labored breathing and drowsiness may also occur.

Section 3. Composition / Information on Ingredients

Common Name Isobornyl Acrylate
Synonym(s) Acrylic acid, isobornyl ester; IBOA; 2-Propenoic acid, (1R,2R,4R)-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl ester, rel-
Formula $C_{13}H_{20}O_2$
CAS Number 5888-33-5

COMPONENT[1]	CAS NUMBER	CONCENTRATION
Isobornyl acrylate	5888-33-5	≥ 98.0%
Isobornyl alcohol	124-76-5	< 0.5%
Isobornyl acrylate oligomer	NE	< 0.2%
dl-Camphene	79-92-5	< 0.05%
Acrylic acid	79-10-7	< 0.002%
Hydroquinone methyl ether (MEHQ)[2]	150-76-5	100 ppm

Notes on Composition Information
[1] Hazardous/non-hazardous components present at or greater than 1% (0.1%).
[2] MEHQ functions as an inhibitor. The chemical is also identified as 4-methoxyphenol.
NE = Not established

Section 4. First Aid Measures

Skin Contact: Wash with plenty of water, then with soap and water for 15 minutes. Seek medical attention if exposed to large quantities, if contact is prolonged, or if exposure causes more than minor discomfort. Discard contaminated clothing and shoes.
Eye Contact: Immediately flush eyes with a continuous water stream for at least 20 minutes. Washing immediately after exposure is expected to be effective in preventing damage to the eyes. Seek medical attention.
Inhalation: If small amounts of this product are inhaled, specific treatment is generally not expected to be necessary. If exposed to excessive levels, if contact is prolonged, or if exposure causes adverse symptoms, move person to fresh air and seek medical attention.
Ingestion: In case of accidental overdose/over-ingestion, seek medical attention or contact a poison control center immediately. Do not induce vomiting. Dilute by giving 1 or 2 glasses of milk or water. Nothing by mouth if unconscious. Seek medical attention.
Note to Physicians: Exposure to this product may cause skin sensitization and allergic reaction.

Section 5. Firefighting Measures

Flash Point: 225 °F (107 °C) [closed cup]
Flammable Limits: Not available.
Autoignition Temperature: Not available.
Explosion Data: Not available.
Hazardous Combustion Products: Thermal decomposition may generate toxic vapors.
Extinguishing Media: Use dry chemical, foam, carbon dioxide, water spray/fog when fighting fires involving this product. For large fires, alcohol resistant foams are preferred. Water may not be as effective for large fires.
Fire Fighting Instructions and Procedures: Wear a self-contained breathing apparatus pressure demand (NIOSH approved or equivalent) and full protective gear. Toxic vapors may evolve. Fight fires from a safe distance or protected areas. Fire hoses with fog nozzles may be used for controlling fires but care must be exercised not to spread flaming. Use of large volumes of water may produce run-off that is expected to be toxic to aquatic life and/or pose a hazardous waste disposal problem. Water may not be as effective for large fires.
Unusual Fire and Explosion Hazards: Heat can cause hazardous exothermic polymerization. Sealed containers can explode in the heat of fire. Vapors may travel to ignition source because they are heavier than air. Run off may create an explosion, fire, and environmental hazard.
Other Information: See Section 7 (Precautions to be Taken in Handling and Storage) for further information.

Section 6. Accidental Release Measures

Spill/Release and Cleanup Procedures: In case of spill, evacuate the area and remove all ignition sources. Dike and contain spill with vermiculite, clay-based absorbents, or other absorbent materials such as polyethylene fiber or polypropylene fiber products. Do not discharge recovered material to water.

Wear appropriate personal protective equipment during any cleanup and response activities. In the event of an uncontrolled release of this material, the user should determine if the release is reportable under applicable laws and regulations.

Other Instructions: Do not release this product or waste streams containing this product to water or the environment.

Section 7. Handling and Storage

Precautions to be Taken in Handling and Storage: Caution - Hazardous polymerization may cause drums to rupture. Evacuate immediate area. Product undergoing hazardous polymerization is generally evidenced by a warm drum, high drum pressure, and/or bulging drum. If hazardous polymerization is evident, control or slow polymerization by spraying drum with cold water. When polymerization has ended (cold drum), carefully remove drum cap or bung (use blanket to cover cap or bung to prevent splashing) to release excess pressure. Workers conducting such operations should wear personal equipment including eye, face, and hand protection. If the material has not fully polymerized (i.e., not 100% solid), add 1% w/w of phenothiazine (PTZ) to stabilize material for transport and disposal. Properly dispose of both the drum and its contents.

This product contains the inhibitor methyl ether of hydroquinone (MEHQ), at a level of 100 ppm, which requires oxygen in air in order to be effective. Inhibitor level must be checked monthly in material stored for more than 3 months. Inhibitor must be maintained at original level to prevent unintended polymerization. Permit air space to exist inside storage containers, however, never use pure nitrogen or oxygen blanketing.

Other Precautions and Information: During heating operations involving this product, vapors may evolve or be released which are irritating to the eyes and respiratory system. During operations at room temperature, evaporation of the material is not expected to occur due to the low vapor pressure of the product. Misting operations at any temperature may result in exposure to the eyes and respiratory system.

Do not drop. Keep away from fire, heat, open flames, lights, and other ignition sources. Wear goggles and gloves when handling. Harmful if swallowed. Avoid breathing vapors. Eye-wash stations and emergency showers need to exist in areas where the material is handled, especially areas where loading and unloading operations occur. Wash hands thoroughly after handling and before eating, drinking, or smoking. Keep out of reach of children. Ground all containers when transferring the material.

Do not contaminate water, food, or feed by storage or disposal. Keep the product in original containers. Store in cool, dry, well ventilated, low fire risk area away from sunlight. Keep containers closed. Store only in approved containers, under approved conditions. Avoid pressure build-up in containers. An automatic water spray device should be immediately available. A spill control and containment plan should be developed. Storage area should not be subject to rapid temperature changes as such changes may cause increased internal pressure. Isolate from toxic materials or substances that may release corrosive, toxic, or flammable fumes on reaction.

Section 8. Exposure Controls / Personal Protection

Eye/Face Protection: Chemical safety goggles meeting the specifications of ANSI Standard Z87.1 are to be worn whenever there is the possibility of contact with the eyes. Spectacle type safety glasses do not provide satisfactory protection. An eyewash fountain should be readily accessible. Wear plastic face shield in addition to safety goggles where there is a danger of splashing.
Protective Gloves: Wear chemical resistant gloves appropriate to the conditions to prevent dermal exposure. Glove material comparisons indicate that gloves of butyl rubber are anticipated to afford adequate hand protection. (Gloves made of PVC, nitrile, and neoprene are not expected to provide adequate hand protection.) Rinse and remove gloves immediately after use, and wash hands thoroughly with soap and water. Gloves should be removed and replaced immediately if there are any signs of degradation or breakthrough.
Protective Clothing: Wear chemical resistant protective clothing and footwear impervious to the product for the duration of the anticipated exposure if there is a potential for skin contact. An emergency shower should be readily accessible. Discard any contaminated clothing.
Respiratory Protection: Wear adequate respiratory protection in the case where there is a potential for inhalation exposure during use or handling operations. Respirators equipped with organic vapor cartridges are anticipated to provide adequate respiratory protection during short-term exposures to low vapor concentrations of the product. Workers should wear a supplied-air respirator or self-contained breathing apparatus any time exposure is above low levels or during extended exposure periods. Use NIOSH approved respiratory equipment. Respirators should be selected based on the form and concentration of the contaminant in the air and in accordance with OSHA (29 CFR 1910.134). Handle only in the presence of adequate ventilation.
Engineering Controls: Good general ventilation should be sufficient to control low airborne levels of the product. If the product is present above low levels, local exhaust or other measures may be necessary to control worker exposure. Engineering controls may be necessary during heating operations where irritating vapors may evolve or be released.
Air Monitoring: A validated air-monitoring method is available for the methacrylate analog of this product (isobornyl methacrylate). This method may be partially applicable to this product. Contact Parchem for a copy of this method.
Exposure Guidelines: There are no established exposure guidelines or limits for this product.

Section 9. Physical and Chemical Properties

Appearance/Physical State: Clear water-white liquid
Odor: Ester odor
Refractive Index: 1.4744 (20 °C)
Vapor Pressure: Not available
Boiling Point: Not available
Freezing Point: < -60 °C
Specific Gravity: 0.993 (20 °C/4 °C)
Vapor Density: Heavier than air
Octanol/Water Partition Coefficient: 4.21 (estimated)
Solubility in Water: Insoluble
Viscosity: Dynamic viscosity: 7.6 cps (28 °C)

Color (APHA): 10 (typ.); 30 (max.)
T_g of Homopolymer: 94 °C
Volatile: 0%
Note: This substance has a low vapor pressure and evaporates slowly. Depending on the actual volatile test used (especially with respect to time and temperature), results may vary between 0% and 100% volatiles.

Section 10. Stability and Reactivity

Stability: Stable under normal conditions when properly inhibited.
Conditions to Avoid: Avoid heat, fire, open flames, direct light, ignition sources, and UV radiation.
Incompatibility/Materials to Avoid: Incompatible with free-radical initiators, oxidizing and reducing agents, and free iron or rust.
Hazardous Decomposition or Byproducts: Hazardous decomposition or byproducts are not expected under normal conditions.
Hazardous Polymerization: Hazardous polymerization can occur, particularly at elevated temperatures and may result in the release of hazardous decomposition products and vapors.
Conditions to Avoid Hazardous Polymerization: Avoid free radical initiators, and oxidizing and reducing agents. Also avoid excessive heat, open flames, UV radiation, and ignition sources. Store product with inhibitor.
Other Information: See Section 7 (Precautions to be Taken in Handling and Storage) for further information.

Section 11. Toxicological Information

Acute Toxicological Data:
Acute oral rat LD50: 4,890 mg/kg
Acute dermal rabbit LD50: > 5,000 mg/kg

Eye Irritation Data: In a study of unknown reliability, this product was found to be slightly irritating to the eyes.

Skin Irritation/Sensitization/ Absorption Data
In two studies of unknown reliability, this product was found to be slightly-to-moderately irritating to the skin.
There are no skin sensitization test data on this product.
The methacrylate analog (isobornyl methacrylate) was found to be non-sensitizing in the Guinea Pig Maximization Test
This product is not expected to be absorbed through the skin.

Subchronic Toxicity Data
There are no subchronic toxicity test data on this product. The methacrylate analog (isobornyl methacrylate) has been investigated in two subchronic toxicity studies using rats and dogs. The results of these studies are summarized below. The subchronic toxicity of the acrylate is expected to be slightly higher.

In the rat study, the product was administered at 0, 1000, 3000, and 10,000 ppm (0, 50, 150, and 500 mg/kg/day) for 3 months. No deaths were reported. Treatment-related effects included significantly decreased growth rate, food consumption and mean terminal body weights at 10,000 ppm. Increased liver weight and increased liver weight relative to body weight, increased kidney and testis weight relative to body weight, and decreased thyroid and adrenal weights were observed at 10,000 ppm. Histopathological findings were observed in the liver and kidneys at all dose levels. In the high dose group only, hypertrophy of the proximal convoluted tubules and hypercellularity of the bone marrow were observed. A NOAEL could not be established and the LOAEL was 1,000 ppm.

In the dog study, the product was administered at 0, 1000, 3000, and 10,000 ppm (0, 25, 75, and 250 mg/kg/day) for 13 weeks. No deaths were reported. Toxicologically-significant effects were limited to the animals at 10,000 ppm and included slightly increased blood urea nitrogen, increased liver to body weight ratio, and minimal to slight degenerative changes in the epithelial cells of the kidney proximal convoluted tubules. The NOAEL was 3,000 ppm and the LOAEL was 10,000 ppm.

Reproductive Toxicity Data
There are no reproductive toxicity test data on this product. The methacrylate analog (isobornyl methacrylate) has been investigated in a combined reproductive-developmental toxicity screening test in rats [OECD 421]. The results of this study are summarized below.

Three groups of male and female rats were administered the product daily via oral gavage for 15 days prior to mating, during mating and gestation, and through lactation day-5. The dose levels were 0, 25, 100, and 500 mg/kg/day. There was no effect of treatment on mating at any dose-level. The male and female fertility indices were unaffected by treatment. All pregnant females had live pups. The duration of gestation was similar in the control and treated groups. There was no effect of treatment on the mean number of live born pups or on pup death after birth. There were no gross external pup abnormalities in the control or treated groups. No differences of toxicological importance were noted in the male and female pup body weight gain. No relevant findings were noted in pups sacrificed at day-6. There was a statistically significant increase in liver weight and kidney weight (males only) at 500 mg/kg/day. No treatment-related findings were found in the reproductive organs examined. Microscopic findings in the liver included biliary proliferation/hypertrophy associated with fibrosis and macrophages infiltration (100 and 500 mg/kg/day); disorganization of the hepatic cords (500 mg/kg/day); and necrosis in the parenchyma (500 mg/kg/day, males). No treatment-related microscopic findings were observed at 25 mg/kg/day. In the kidneys, acidophilic globules were observed in the cortical tubular epithelium with a higher severity in males at 100 and 500 mg/kg/day. The NOAEL for parental toxicity was 25 mg/kg/day and the NOAEL for reproductive/developmental toxicity was 500 mg/kg/day.

Teratogenicity (birth defects) Data: There are no teratogenicity test data on this product. The methacrylate analog (isobornyl methacrylate) has been investigated in a combined reproductive-developmental toxicity screening test in rats [OECD 421]. See results above from this reproduction-developmental toxicity screening test.

Mutagenicity Data: There are no mutagenicity test data on this product. The methacrylate analog (isobornyl methacrylate) produced negative results (both with and without metabolic activation) in the in vitro Salmonella Reverse Mutation Assay. The methacrylate also produced negative results (both with and without metabolic activation) in the in vitro mammalian chromosome aberration test using cultured human lymphocytes. There are no in vivo mutagenicity data on this product or the methacrylate analog.

Chronic/Carcinogenicity Data: There are no chronic effects or carcinogenicity data on this product or the methacrylate analog (isobornyl methacrylate).

Section 12. Ecological Information

Ecotoxicological Data: There are no ecotoxicological test data on this product. The methacrylate analog (isobornyl methacrylate) has been tested in several ecotoxicology studies. The results of these studies are summarized below. The ecotoxicity of the acrylate is expected to be slightly higher.

Acute Fish (Danio rerio) [96-hour]
LC50: 1.8 mg/l
NOEC: 1.0 mg/l

Acute Daphnia magna LC50 [48-hour]: > 2.57 mg/l (saturated solution)

Algae (Pseudokirchneriella subcapitata) [96-hour]
ErC50: 2.7 mg/l
ErC10: 1.0 mg/l
EbC50: 0.9 mg/l
EbC10: 0.3 mg/l
NOEC: 0.25 mg/l

Environmental Fate Data: There are no environmental fate test data on this product.

In biodegradability testing, the methacrylate analog (isobornyl methacrylate) was found to be readily biodegradable in which the compound reached the 60% pass level in 10 days and 70% after 28 days.

Based on the estimated log Kow (4.21) and the low water solubility of this product, there may be a potential for bioaccumulation.

Physical/Chemical Properties: See Section 9 (Physical and Chemical Properties).

Section 13. Disposal Considerations

Waste Treatment Methods: Dispose of product and contaminated packaging in accordance with all local, state, and federal environmental control regulations.

Section 14. Transport Information

U.S. DOT

UN Number: 3082
Hazard Class: 9
Packing Group: III
Proper Shipping Name : Environmentally hazardous substance, liquid, n.o.s. (Isobornyl acrylate, Stabilized)
Label: CLASS 9
Marine Pollutant: Yes
Additional Information/Remarks: Classification Category: Chronic 1

NOTE: This material need not be classified as an environmentally hazardous substance when shipped in *non-bulk packagings* when transported wholly in the U.S. only by motor vehicles, rail cars, or aircraft.

Non-bulk packaging means a packaging which has:
(1) A maximum capacity of 450 L (119 gallons) or less as a receptacle for a liquid;
(2) A maximum net mass of 400 kg (882 pounds) or less and a maximum capacity of 450 L (119 gallons) or less as a receptacle for a solid; or
(3) A water capacity of 454 kg (1000 pounds) or less as a receptacle for a gas.

For Class 9, a CLASS 9 placard is not required for domestic transportation, including that portion of international transportation which occurs within the U.S. However, bulk packaging must be marked with the appropriate identification number on a CLASS 9 placard, an orange panel, or a white square-on-point display configuration.

IMDG/IMO

UN Number: 3082
Hazard Class: 9
Packing Group: III
Proper Shipping Name: Environmentally hazardous substance, liquid, n.o.s. (Isobornyl acrylate, Stabilized)
Label: CLASS 9
Marine Pollutant: Yes
Additional Information/Remarks: Classification Category: Chronic 1

ICAO/IATA

UN Number: 3082
Hazard Class: 9
Packing Group:v III
Proper Shipping Name **:** Environmentally hazardous substance, liquid, n.o.s. (Isobornyl acrylate, Stabilized)
Label: CLASS 9
Marine Pollutant: Yes
Additional Information/Remarks: Classification Category: Chronic 1

Section 15. Regulatory Information

TSCA Inventory Status: All chemical substances contained within this product either are listed on the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory or exempt under TSCA.

International Chemical Inventory Status

Country	Inventory	Listed	Not Listed	Notes
Australia	AICS	X		
Canada	DSL	X		
	NDSL		X	
China	IECSC	X		
European Union	REACH	X		List of Pre-Registered Substances (227-561-6)
Japan	ENCS	X		4-1552X
New Zealand	NZIoC	X		
Philippines	PICCS	X		
South Korea	ECL	X		KE-34433
U.S.	TSCA	X		

OSHA: This product is considered to be hazardous under the OSHA Hazard Communication Standard.
Waste Classification: If discarded in its manufactured form, this product may be a hazardous waste under RCRA. However, it is the responsibility of the user to determine at the time of disposal whether a material containing the product or derived from the product should be classified as a solid or hazardous waste. See Section 13 for additional information.
EPCRA/SARA III: This product contains no toxic chemicals at or above the de-minimis threshold subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR 372.
California Proposition 65: This product contains no chemicals known to the state of California to cause cancer or reproductive toxicity.

Section 16. Other Information

Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product.

REVISION DATE: 7/21/2015