

SAFETY DATA SHEET

METHYL METHACRYLATE

1. PRODUCT AND COMPANY IDENTIFICATION

**Company**

GreenChem Industries LLC  
222 Clematis Street, Suite 207  
West Palm Beach, FL 33401

**Methacrylics**

**Customer Service Telephone Number:** 561-659-2236  
(Monday through Friday, 8:00 AM to 5:00 PM EST)

**Emergency Information**

**Transportation:** CHEMTREC: (800) 424-9300  
(24 hrs., 7 days a week)

**Product Information**

**Product name:** METHYL METHACRYLATE  
**Synonyms:** Not available  
**Molecular formula:** C<sub>5</sub>H<sub>8</sub>O<sub>2</sub>  
**Chemical family:** methacrylates  
**Molecular weight:** 100.11 g/mol  
**Product use:** Organic intermediate

2. HAZARDS IDENTIFICATION

**Emergency Overview**

**Color:** Clear - colourless  
**Physical state:** liquid  
**Odor:** Slightly irritating

**\*Classification of the substance or mixture:**

Flammable liquid., Category 2, H225  
Skin irritation, Category 2, H315  
Skin sensitisation, Sub-category 1B, H317  
Specific target organ toxicity - single exposure, Category 3, Respiratory system, H335

\*For the full text of the H-Statements mentioned in this Section, see Section 16.

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**GHS-Labeling**

Hazard pictograms:



Signal word:

**Danger**

**Hazard statements:**

H225 : Highly flammable liquid and vapour.

H315 : Causes skin irritation.

H317 : May cause an allergic skin reaction.

H335 : May cause respiratory irritation.



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**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.  
P261 : Avoid breathing gas/mist/vapours/spray.  
P264 : Wash skin thoroughly after handling.  
P271 : Use only outdoors or in a well-ventilated area.  
P272 : Contaminated work clothing should not be allowed out of the workplace.  
P280 : Wear protective gloves/ eye protection/ face protection.

**Response:**

P303 + P361 + P353 : IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.  
P304 + P340 : IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
P312 : Call a POISON CENTER/doctor if you feel unwell.  
P333 + P313 : If skin irritation or rash occurs: Get medical advice/ attention.  
P362 : Take off contaminated clothing and wash before reuse.  
P370 + P378 : In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

**Storage:**

P403 + P233 : Store in a well-ventilated place. Keep container tightly closed.  
P403 + P235 : Store in a well-ventilated place. Keep cool.  
P405 : Store locked up.

**Disposal:**

P501 : Dispose of contents/ container to an approved waste disposal plant.

**Supplemental information:****Potential Health Effects:**

Inhalation may cause symptoms of: breathing difficulties  
Prolonged or repeated skin contact may cause: nervous system effects, tingling, loss of feeling, (affects fingers), (based on human experience).

**Medical conditions aggravated by overexposure:**

Respiratory disease or diminished respiratory capacity.

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

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Chemical Name	CAS-No.	Wt/Wt	GHS Classification**
Methyl methacrylate	80-62-6	$\geq 60 - \leq 100$ %	H225, H315, H317, H335
Phenol, 4-methoxy-	150-76-5	$> 10 - < 200$ PPM	H302, H319, H317, H412

\*\*For the full text of the H-Statements mentioned in this Section, see Section 16.

**4. FIRST AID MEASURES**

**4.1. Description of necessary first-aid measures:**

**Inhalation:**

If inhaled, remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**Skin:**

In case of contact, immediately flush skin with soap and plenty of water. Get medical attention. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse.

**Eyes:**

Immediately flush eye(s) with plenty of water.

**Ingestion:**

If swallowed, DO NOT induce vomiting. Get medical attention. Never give anything by mouth to an unconscious person.

**4.2. Most important symptoms/effects, acute and delayed:**

For most important symptoms and effects (acute and delayed), see Section 2 (Hazard Statements and Supplemental Information) and Section 11 (Toxicology Information) of this SDS.

**4.3. Indication of immediate medical attention and special treatment needed, if necessary:**

Unless otherwise noted in Notes to Physician, no specific treatment noted; treat symptomatically.

**5. FIREFIGHTING MEASURES**

**Extinguishing media (suitable):**



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Water spray, Carbon dioxide (CO<sub>2</sub>), Foam, Dry chemical

**Extinguishing media (unsuitable):**

Water may be ineffective., Do not use a solid water stream as it may scatter and spread fire.

**Protective equipment:**

Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand / NIOSH approved or equivalent).

**Further firefighting advice:**

Fight fire from a protected location.

Explosion hazard

Cool closed containers exposed to fire with water spray.

Closed containers of this material may explode when subjected to heat from surrounding fire.

After a fire, wait until the material has cooled to room temperature before initiating clean-up activities.

Fire fighting equipment should be thoroughly decontaminated after use.

**Fire and explosion hazards:**

When burned, the following hazardous products of combustion can occur:

Carbon oxides

Hazardous organic compounds

A large amount of heat can be generated when monomers are exposed to a fire.

Vapors can travel to a source of ignition and flash back.

**6. ACCIDENTAL RELEASE MEASURES****Personal precautions, Emergency procedures, Methods and materials for containment/clean-up:**

Prevent further leakage or spillage if you can do so without risk. Evacuate area of all unnecessary personnel. Ventilate the area. Eliminate all ignition sources. Avoid generation of vapors. Contain and collect spillage with non-combustible absorbent material such as sodium bicarbonate, sodium carbonate, calcium carbonate, clean sand or non-acidic clay and then wet down (dampen) the mixture with water. Sweep or scoop up using non-sparking tools and place into suitable properly labeled containers for prompt disposal. The sweepings should be wetted down further with water.

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits.

**Protective equipment:**

Appropriate personal protective equipment is set forth in Section 8.



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**7. HANDLING AND STORAGE****Handling****General information on handling:**

Avoid breathing vapor or mist.  
Avoid contact with skin, eyes and clothing.  
Keep away from heat, sparks and flames.  
No smoking.  
Keep container closed.  
Use only with adequate ventilation.  
Wash thoroughly after handling.  
Check that all equipment is properly grounded and installed to satisfy electrical classification requirements.  
Container hazardous when empty.  
Follow label warnings even after container is emptied.  
RESIDUAL VAPORS MAY EXPLODE ON IGNITION.  
DO NOT CUT, DRILL, GRIND, OR WELD ON OR NEAR THIS CONTAINER.  
Improper disposal or reuse of this container may be dangerous and/or illegal.  
Emptied container retains vapor and product residue.

**Storage****General information on storage conditions:**

This product should be stored in a closed container, away from direct sunlight, at ambient temperatures. An air space is required above the liquid in all containers; avoid storage under an oxygen-free atmosphere. Keep in a dry, cool place. Store in tightly closed container. Keep away from direct sunlight. Keep container closed when not in use. Store in closed containers, in a secure area to prevent container damage and subsequent spillage. Store in well ventilated area away from heat and sources of ignition such as flame, sparks and static electricity. Ensure that all storage and handling equipment is properly grounded and installed to satisfy electrical classification requirements. Static electricity may accumulate when transferring material. All metal and groundable storage containers, including but not limited to drums, cylinders, Returnable Intermodal Bulk Containers (RIBCs) and Class C Flexible Intermodal Bulk Containers (FIBCs) must be bonded and grounded during filling and emptying operations. Observe all federal, state and local regulations and National Fire Protection Association (NFPA) Codes which pertain to the specific local conditions of storage and use, including OSHA 29 CFR 1910.106 and NFPA 30, 70, 77, and 497. Storage of this product above the maximum temperature tolerance reduces the shelf life.

**Storage stability – Remarks:**

The typical shelf-life for this product is 12 months. The stability of this product should be checked periodically; typically every 90 days for bulk containers. Materials recommended for packaging include: stainless steel, aluminum, glass, HDPE, PP or PTFE.

**Storage incompatibility – General:**

This material polymerizes exothermically in the presence of heat, contamination, oxygen free atmosphere, free radicals, peroxides and inhibitor depletion liberating heat.

Store separate from:

Acids  
Bases  
Free radical generators  
Peroxides  
Reducing agents  
Oxidizing agents



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**Temperature tolerance – Do not store above:**  
86 °F (30 °C)

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Airborne Exposure Guidelines:****Methyl methacrylate (80-62-6)**

US. ACGIH Threshold Limit Values

Time weighted average	50 ppm
Short Term Exposure Limit (STEL):	100 ppm

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

PEL:	100 ppm (410 mg/m <sup>3</sup> )
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Only those components with exposure limits are printed in this section. Limits with skin contact designation above have skin contact effect. Air sampling alone is insufficient to accurately quantitate exposure. Measures to prevent significant cutaneous absorption may be required. Limits with a sensitizer designation above mean that exposure to this material may cause allergic reactions.

**Engineering controls:**

Investigate engineering techniques to reduce exposures below airborne exposure limits or to otherwise reduce exposures. Provide ventilation if necessary to minimize exposures or to control exposure levels to below airborne exposure limits (if applicable see above). If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.

Consult ACGIH ventilation manual or NFPA Standard 91 for design of exhaust systems.

**Respiratory protection:**

Avoid breathing vapor or mist. Where airborne exposure is likely or airborne exposure limits are exceeded (if applicable, see above), use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. Full facepiece equipment is recommended and, if used, replaces need for face shield and/or chemical goggles. Consult respirator manufacturer to determine appropriate type equipment for a given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where there may be a potential for significant exposure or where exposure limit may be significantly exceeded, use an approved full face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs must comply with 29 CFR § 1910.134.

**Skin protection:**

Wear appropriate chemical resistant protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine appropriate type glove material for given application. Wear chemical goggles, a face shield, and chemical resistant clothing such as a rubber apron when splashing may occur. Rinse immediately if skin is contaminated. Remove contaminated clothing immediately and wash before reuse. Clean protective equipment before reuse. Provide a safety shower at any location where skin contact can occur. Wash thoroughly after handling.

**Eye protection:**



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Where there is potential for eye contact, wear chemical goggles and have eye flushing equipment immediately available.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Color:</b>	Clear - colourless
<b>Physical state:</b>	liquid
<b>Odor:</b>	Slightly irritating
<b>Odor threshold:</b>	50 ppb
<b>Flash point</b>	50 °F (10 °C) (Method: closed cup)
<b>Auto-ignition temperature:</b>	815 °F (435 °C)
<b>Lower flammable limit (LFL):</b>	2.1 %(V)
<b>Upper flammable limit (UFL):</b>	12.5 %(V)
<b>pH:</b>	Not applicable
<b>Density:</b>	0.943 g/cm <sup>3</sup> (68 °F (20 °C))
<b>Specific Gravity (Relative density):</b>	No data available
<b>Vapor pressure:</b>	29.0 mmHg (68 °F (20 °C))
<b>Vapor density:</b>	not determined
<b>Boiling point/boiling range:</b>	212 °F (100 °C)
<b>Melting point/range:</b>	No data available
<b>Freezing point:</b>	No data available.
<b>Evaporation rate:</b>	No data available
<b>Solubility in water:</b>	15.3 g/l 68 °F (20 °C)
<b>Refractive index:</b>	1.412 77 °F (25 °C)
<b>Viscosity, dynamic:</b>	0.561 mPa.s 68 °F (20 °C)
<b>Molecular weight:</b>	100.11 g/mol
<b>Oil/water partition</b>	= 1.38





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**coefficient:****Thermal decomposition:** No data available**Flammability:** See GHS Classification in Section 2**10. STABILITY AND REACTIVITY****Stability:**

This material is chemically stable under normal and anticipated storage, handling and processing conditions. This material can undergo hazardous polymerization. See HANDLING AND STORAGE section of this SDS for specified conditions.

**Hazardous reactions:**

None known.

**Materials to avoid:**

Free radical generators  
Peroxides  
Acids  
Bases  
Oxidizing agents  
Reducing agents

**Conditions / hazards to avoid:**

An uncontrolled polymerization may produce a rapid release of energy with the potential for an explosion of unvented closed containers or inadequately vented containers. Hazardous polymerization may occur upon depletion of inhibitor. This material polymerizes exothermically in the presence of heat, contamination, oxygen free atmosphere, free radicals, peroxides and inhibitor depletion liberating heat.

**Hazardous decomposition products:**

Thermal decomposition giving flammable and toxic products  
Carbon oxides  
Hazardous organic compounds

**11. TOXICOLOGICAL INFORMATION**

Data on this material and/or a similar material are summarized below.

**Data for METHYL METHACRYLATE****Acute toxicity****Oral:**

Practically nontoxic. (rat) LD50 = 7,900 - 9,400 mg/kg.

**Dermal:**

Practically nontoxic. (rabbit) LD50 > 5,000 mg/kg.

**Inhalation:**

Practically nontoxic. (rat) 4 h LC50 = 30 mg/l. (vapor)



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signs: respiratory irritation, breathing difficulties, anesthetic effects

**Specific target organ toxicity - single exposure:**

May cause respiratory irritation.

**Skin Irritation:**

Causes skin irritation. (rabbit)

**Eye Irritation:**

Causes mild eye irritation. (rabbit)

**Skin Sensitization:**

May cause allergic skin reaction. Guinea pig maximization test. Skin allergy was observed.

May cause allergic skin reaction. LLNA: Local Lymph Node Assay. (mouse) Skin allergy was observed.

Possible cross sensitization with other acrylates and methacrylates

**Repeated dose toxicity**

Chronic inhalation administration to rat and hamster / affected organ(s): olfactory tissue

Subchronic inhalation administration to rat and mouse / affected organ(s): bone marrow, kidney, liver, nasal tissues, respiratory tract, central nervous system, peripheral nervous system, olfactory tissue / signs: decreased survival / (Repeated exposure at high concentrations)

Repeated oral administration to rat / affected organ(s): kidney, stomach, nervous system

Chronic drinking water administration to rat / affected organ(s): kidney / signs: increased organ weight

Repeated dermal application administration to rat, rabbit / signs: irritation

**Carcinogenicity**

Chronic inhalation administration to rat and mouse / affected organ(s): lung, upper respiratory tract / signs: fibrosis, nasal lesions affecting the sense of smell / No increase in tumor incidence was reported. (increased mortality)

Chronic drinking water administration to rat / No increase in tumor incidence was reported.

Repeated dermal administration to rat / affected organ(s): skin / No increase in tumor incidence was reported.

Repeated dietary administration to dog / No increase in tumor incidence was reported.

**Genotoxicity****Assessment in Vitro:**

No genetic changes were observed in laboratory tests using: bacteria

Both positive and negative responses for genetic changes were observed in laboratory tests using: animal cells

**Assessment in Vivo:**

No genetic changes were observed in laboratory tests using: mice, rats

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**Developmental toxicity**

Exposure during pregnancy. Inhalation (rat and mouse) / No birth defects were observed. (delays in development, levels produced toxic effects in the mothers and offspring)

Exposure during pregnancy. Oral (rabbit) / No birth defects were observed.

**Reproductive effects**

Reproduction Test. Inhalation (mouse) / No toxicity to reproduction

Reproduction Test. Oral (rat) / No toxicity to reproduction

**Human experience****General:**

Epidemiology studies have not shown an increase in cancer .

**Inhalation:**

Respiratory system: irritation, asthma-like symptoms. (based on reports of occupational exposure to workers) Dust and/or vapor are reported to cause irritation when proper industrial hygiene controls/procedures are not used.

**Skin contact:**

Skin: dermatitis, numbness, tingling, peripheral neuropathy. Skin allergy was observed. (based on reports of occupational exposure to workers)

**Eye contact:**

Eyes: Lachrymation, irritation. (based on reports of occupational exposure to workers)

**12. ECOLOGICAL INFORMATION****Chemical Fate and Pathway**

Data on this material and/or a similar material are summarized below.

**Data for METHYL METHACRYLATE****Biodegradation:**

Readily biodegradable. (14 d) biodegradation 94 %

**Octanol Water Partition Coefficient:**

log Pow = 1.38

**Ecotoxicology**

Data on this material and/or a similar material are summarized below.

**Data for METHYL METHACRYLATE****Aquatic toxicity data:**

Practically nontoxic. *Lepomis macrochirus* (Bluegill sunfish) 96 h LC50 = 191 - 283 mg/l

No effect up to the limit of solubility. *Oncorhynchus mykiss* (rainbow trout) 96 h LC50 > 79 mg/l

**Aquatic invertebrates:**

Harmful. *Daphnia magna* (Water flea) 48 h EC50 = 69 mg/l

**Algae:**

Practically nontoxic. *Pseudokirchneriella subcapitata* (green algae) 72 h ErC50 > 110 mg/l



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**Microorganisms:**

Activated sludge 14 d EC50 &gt; 100 mg/l

**Chronic toxicity to fish:**

Practically nontoxic. Danio rerio (zebra fish) 35 d NOEC (Early-life Stage) = 9.4 mg/l

**Chronic toxicity to aquatic invertebrates:**

Practically nontoxic. Daphnia magna (Water flea) 21 d NOEC = 37 mg/l

**13. DISPOSAL CONSIDERATIONS****Waste disposal:**

Disposal via incineration is recommended. Dispose of in accordance with federal, state and local regulations. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits. Note: Chemical additions to, processing of, or otherwise altering this material may make this waste management information incomplete, inaccurate, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations.

**14. TRANSPORT INFORMATION****US Department of Transportation (DOT)**

**UN Number** : 1247  
**Proper shipping name** : Methyl methacrylate monomer, stabilized  
**Class** : 3  
**Packaging group** : II  
**Marine pollutant** : no  
**Reportable quantity** : 1000 lbs (Methyl methacrylate)

**International Maritime Dangerous Goods Code (IMDG)**

**UN Number** : 1247  
**Proper shipping name** : METHYL METHACRYLATE MONOMER, STABILIZED  
**Class** : 3  
**Packaging group** : II  
**Marine pollutant** : no  
**Flash point** : 50 °F (10 °C)

**15. REGULATORY INFORMATION****Chemical Inventory Status**

EU. EINECS	EINECS	Conforms to
US. Toxic Substances Control Act	TSCA	The components of this product are all on the TSCA Inventory.



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Canadian Domestic Substances List (DSL)	DSL	All components of this product are on the Canadian DSL
China. Inventory of Existing Chemical Substances in China (IECSC)	IECSC (CN)	Conforms to
Japan. ENCS - Existing and New Chemical Substances Inventory	ENCS (JP)	Conforms to
Japan. ISHL - Inventory of Chemical Substances	ISHL (JP)	Conforms to
Korea. Korean Existing Chemicals Inventory (KECI)	KECI (KR)	Conforms to
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	PICCS (PH)	Conforms to
Australia Inventory of Chemical Substances (AICS)	AICS	Conforms to

**United States – Federal Regulations****SARA Title III – Section 302 Extremely Hazardous Chemicals:**

The components in this product are either not SARA Section 302 regulated or regulated but present in negligible concentrations.

**SARA Title III - Section 311/312 Hazard Categories:****SARA Title III – Section 313 Toxic Chemicals:**

The following components are subject to reporting levels established by SARA Title III, Section 313:

<u>Chemical name</u>	<u>CAS-No.</u>	<u>De minimis concentration</u>	<u>Reportable threshold:</u>
Methyl methacrylate	80-62-6	1.0 %	25000 lbs (Manufacturing and processing) 10000 lbs (Otherwise used (non-manufacturing/processing))

**Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) - Reportable Quantity (RQ):**

<u>Chemical name</u>	<u>CAS-No.</u>	<u>Reportable quantity</u>
Methyl methacrylate	80-62-6	1000 lbs

**United States – State Regulations****New Jersey Right to Know**

<u>Chemical name</u>	<u>CAS-No.</u>
Methyl methacrylate	80-62-6



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**New Jersey Right to Know – Special Health Hazard Substance(s)**

<u>Chemical name</u>	<u>CAS-No.</u>
Methyl methacrylate	80-62-6

**Pennsylvania Right to Know**

<u>Chemical name</u>	<u>CAS-No.</u>
Methyl methacrylate	80-62-6

**Pennsylvania Right to Know – Environmentally Hazardous Substance(s)**

<u>Chemical name</u>	<u>CAS-No.</u>
Methyl methacrylate	80-62-6

**California Prop. 65**

This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive defects.

**16. OTHER INFORMATION****Full text of H-Statements referred to under sections 2 and 3.**

H225 Highly flammable liquid and vapour.  
H302 Harmful if swallowed.  
H315 Causes skin irritation.  
H317 May cause an allergic skin reaction.  
H319 Causes serious eye irritation.  
H335 May cause respiratory irritation.  
H412 Harmful to aquatic life with long lasting effects.

## Miscellaneous:

Other information: Refer to National Fire Protection Association (NFPA) Codes 30, 70, 77, and 497 and OSHA 29 CFR 1910.106, for safe handling.

## Latest Revision(s):

Reference number: 200010140  
Date of Revision: 01/21/2017  
Date Printed: 01/22/2017

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construed as an inducement to infringe any patent and the user is advised to take appropriate steps to be sure that any proposed use of the product will not result in patent infringement. See SDS for Health & Safety Considerations.

*GreenChem has implemented a Medical Policy regarding the use of GreenChem products in Medical Devices applications that are in contact with the body or circulating bodily fluids (<http://www.GreenChem.com/en/social-responsibility/responsible-product-management/medical-device-policy/index.html>) GreenChem has designated Medical grades to be used for such Medical Device applications. Products that have not been designated as Medical grades are not authorized by GreenChem for use in Medical Device applications that are in contact with the body or circulating bodily fluids. In addition, GreenChem strictly prohibits the use of any GreenChem products in Medical Device applications that are implanted in the body or in contact with bodily fluids or tissues for greater than 30 days. The GreenChem trademarks and the GreenChem name shall not be used in conjunction with customers' medical devices, including without limitation, permanent or temporary implantable devices, and customers shall not represent to anyone else, that GreenChem allows, endorses or permits the use of GreenChem products in such medical devices. It is the sole responsibility of the manufacturer of the medical device to determine the suitability (including biocompatibility) of all raw materials, products and components, including any medical grade GreenChem products, in order to ensure that the final end-use product is safe for its end use; performs or functions as intended; and complies with all applicable legal and regulatory requirements (FDA or other national drug agencies) It is the sole responsibility of the manufacturer of the medical device to conduct all necessary tests and inspections and to evaluate the medical device under actual end-use requirements and to adequately advise and warn purchasers, users, and/or learned intermediaries (such as physicians) of pertinent risks and fulfill any postmarket surveillance obligations. Any decision regarding the appropriateness of a particular GreenChem material in a particular medical device should be based on the judgment of the manufacturer, seller, the competent authority, and the treating physician.*