208 South Magnolia Street Sumter, SC 29150 Customer Service 803-778-0264	**SAFETY DATA SHEET** **Nova Molecular Technologies, Inc.**	
		Date Issued: 5 May 2015 **Date Revised**: 21 January 2025
	Toluene	**Version:** 1.2

1. PRODUCT and COMPANY IDENTIFICATION

PRODUCT NAME: Toluene	**24 HR. EMERGENCY TELEPHONE NUMBERS**
GENERAL USE: Laboratory chemicals, Manufacture of substances	**Emergency Phone: 803-778-0264**
GENERIC NAME: Toluene	**For emergency, spill, leak, fire, exposure or accident, call: CHEMTREC: 1-800-424-9300** **Outside of the United States, call: 703-527-3887 (collect calls accepted)**
DISTRIBUTOR:	
Nova Molecular Technologies, Inc.	
208 South Magnolia Street	
Sumter, SC 29150	

2. HAZARDS IDENTIFICATION

GHS CLASSIFICATION	
Classification of the substance or mixture	**GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**
Flammable liquids (Category 2), H225 Skin irritation (Category 2), H315 Reproductive toxicity (Category 2), H361 Specific target organ toxicity - single exposure (Category 3), Central nervous system, H336 Specific target organ toxicity - repeated exposure (Category 2), H373 Aspiration hazard (Category 1), H304 Acute aquatic toxicity (Category 2), H401 Chronic aquatic hazard (Category 3)	
For the full text of the H-Statements mentioned in this Section, see Section 16.	

GHS LABEL	
SIGNAL WORD:	Danger
HAZARD STATEMENTS	
H225	Highly flammable liquid and vapor.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H336	May cause drowsiness or dizziness.
H361	Suspected of damaging fertility or the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure.
H401	Acute aquatic toxicity. H412 Chronic aquatic hazard
Precautionary statement(s)	
P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
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.
P260	Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P264	Wash skin thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/ eye protection/ face protection.
P281	Use personal protective equipment as required.
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P303 + P361 + P353	IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
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.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P331	Do NOT induce vomiting.
P332 + P313	If skin irritation 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.
P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P403 + P235	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.
	Hazards not otherwise classified (HNOC) or not covered by GHS - none

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	Wt.%	CAS
Toluene	100 %	108-88-3

4. FIRST AID MEASURES

General Advice	Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area
EYES:	Flush eyes as a precaution.
SKIN:	Wash off with soap and plenty of water. Consult a physician.
INGESTION:	Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.
INHALATION:	If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
Most important symptoms and effects, both acute and delayed	The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11
Indication of any immediate medical attention and special treatment needed	No data available

5. FIRE FIGHTING MEASURES

Extinguishing media	
Suitable extinguishing media	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Special hazards arising from the substance or mixture	Carbon oxides
Advice for firefighters	Wear self-contained breathing apparatus for firefighting if necessary.
Further information	Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas. For personal protection see section 8.
Environmental precautions	Prevent further leakage or spillage if safe to do so. Do not let product enter drains.
Methods and materials for containment and cleaning up	Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).
Reference to other sections	For disposal see section 13.
SPECIAL PROTECTIVE EQUIPMENT: EMERGENCY & NON-EMERGENCY RESPONDERS	Refer to Section 13 of this SDS for appropriate exposure controls and personal protective equipment (PPE).

7. HANDLING AND STORAGE

GENERAL PROCEDURES:	Handle in accordance with good industrial hygiene and safety practices. These practices include but are not limited to avoiding unnecessary exposure and prompt removal of material from eyes, skin and clothing. Do not breathe material. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. If needed, take first aid actions as indicated in Section 4 of this SDS.
HANDLING:	Use only with adequate ventilation. Wear appropriate personal protective equipment and use exposure controls as indicated in Section 8 of this SDS. Avoid contact with skin and eyes. Avoid breathing gas. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Do not reuse container. Remove contaminated clothing immediately. Wash with soap and water after working with this product.
STORAGE:	Keep in airtight container away from all heat sources. Store in a segregated and approved area. Store in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Keep container in a well-ventilated area. Store away from incompatible materials. Store in the original container or an approved alternative made from compatible material. Do not store in unlabeled containers. Treat empty containers in a similar fashion as residual product may exist. Use appropriate containment to avoid environmental contamination.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES

OSHA HAZARDOUS COMPONENTS (29 CFR1910.1200)					
		EXPOSURE LIMITS			
		OSHA PEL		ACGIH TLV	
Chemical Name		ppm	mg/m3	ppm	mg/m3
Toluene	TWA	100	375	20	N/E
	STEL	150	560	N/E	N/E
	TWA	200	N/E	N/E	N/E
	STEL	N/E	N/E	N/E	N/E

ENGINEERING CONTROLS:	Provide adequate general and local exhaust ventilation to meet exposure limit requirements. Provide readily accessible eye wash stations and emergency showers. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

PERSONAL PROTECTIVE EQUIPMENT	
Eye/face protection	Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).
Skin protection	Handle with gloves. Gloves must be inspected prior to use. Use proper glove 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.
Full contact	Material: Fluorinated rubber Minimum layer thickness: 0.7 mm Break through time: 480 min Material tested: Vitoject® (KCL 890 / Aldrich Z677698, Size M)
Splash contact	Material: Fluorinated rubber Minimum layer thickness: 0.7 mm Break through time: 480 min Material tested: Vitoject® (KCL 890 / Aldrich Z677698, Size M)
Respiratory protection	Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi- purpose combination (US) or type ABEK (EN 14387) 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).

WORK HYGIENIC PRACTICES:	Use good personal hygiene practices. Avoid repeated and/or prolonged skin exposure. Wash hands before eating, drinking, smoking, or using toilet facilities. Promptly remove contaminated clothing and launder before reuse. Shower after work using plenty of soap and water.

9. PHYSICAL AND CHEMICAL PROPERTIES

a. Appearance	Form: liquid Color: colorless
b. Odor	AROMATIC
c. Odor Threshold	No data availible
d. pH	No data available
e. Melting point/freezing point	Melting point/range: -93 °C (-135 °F)
f. Initial boiling point and boiling range	110 - 111 °C (230 - 232 °F)
g. Flash point	4.0 °C (39.2 °F) - closed cup
h. Evaporation rate	No data available
i. Flammability (solid, gas)	No data available
j. Upper/lower flammability or explosion limits	Upperexplosionlimit:7%(V) Lower explosion limit: 1.2%(V)
k. Vapor pressure	29.1 hPa (21.8 mmHg) at 20.0 °C (68.0 °F)
l. Vapor density	No data available
m. Relative density	0.865 g/mL at 25 °C (77 °F)
n. Water solubility	0.5 g/l at 15 °C (59 °F)
o. Partition coefficient: n-octanol/water	No data available
p. Auto ignition temperature	535.0 °C (995.0 °F)
q. Decomposition temperature	No data available
r. Viscosity	No data available
s. Explosive properties	No data available
t. Oxidizing properties	No data available
Other safety information	
Surface tension	No data available

10. STABILITY AND REACTIVITY

Reactivity	No data available
Chemical stability	Stable under recommended storage conditions.
Possibility of hazardous reactions	Vapors may form explosive mixture with air.
Conditions to avoid	Heat, flames and sparks.
Incompatible materials	Strong oxidizing agents
Hazardous decomposition products	Other decomposition products - No data available In the event of fire: see section 5

11. TOXICOLOGICAL INFORMATION

ACUTE

Chemical Name	ORAL LD_{50} (rat)	DERMAL LD_{50} (rabbit)	INHALATION LC_{50} (rat)
Toluene	> 5,580 mg/kg	12,196 mg/kg	4 h - 12,500 - 28,800 mg/m3

Skin corrosion/irritation	Skin - Rabbit Result: Skin irritation - 24 h
Serious eye damage/eye irritation	Eyes - Rabbit Result: No eye irritation (OECD Test Guideline 405)
Respiratory or skin sensitization	No data available
Germ cell mutagenicity	Rat Liver DNA damage
Carcinogenicity	IARC: 3 - Group 3: Not classifiable as to its carcinogenicity to humans (Toluene) NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP. OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
Reproductive toxicity	Damage to fetus possible Suspected human reproductive toxicant
Specific target organ toxicity - single exposure	No data available
Specific target organ toxicity - repeated exposure	No data available
Aspiration hazard	No data available
Additional Information	RTECS: XS5250000 Lung irritation, chest pain, pulmonary edema, Inhalation studies on toluene have demonstrated the development of inflammatory and ulcerous lesions of the penis, prepuce, and scrotum in animals., Central nervous system Stomach - Irregularities - Based on Human Evidence Stomach - Irregularities - Based on Human Evidence

12. ECOLOGICAL INFORMATION

Toxicity	
Toxicity to fish	LC50 - Oncorhynchus mykiss (rainbow trout) - 7.63 mg/l - 96 h NOEC - Pimephales promelas (fathead minnow) - 5.44 mg/l - 7 d
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 8.00 mg/l - 24 h Immobilization EC50 - Daphnia magna (Water flea) - 6 mg/l - 48 h
Toxicity to algae	EC50 - Chlorella vulgaris (Fresh water algae) - 245.00 mg/l -

	24 h EC50 - Pseudokirchneriella subcapitata (green algae) - 10.00 mg/l - 24 h
Persistence and degradability	No data available
Biodegradability	Result: - Readily biodegradable
Bio-accumulative potential	Bioaccumulation Leuciscus idus (Golden orfe) - 3 d - 0.05 mg/l Bioconcentration factor (BCF): 90
Mobility in soil	No data available
Results of PBT and vPvB assessment	PBT/vPvB assessment not available as chemical safety assessment not required/not conducted
Other adverse effects	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Toxic to aquatic life.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods	
Product	Contact a licensed professional waste disposal service to dispose of this material. Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company.
Contaminated packaging	Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)							
UN number:	**1294**	**Class:**	**3**	**Packing Group:**	**II**		
Proper shipping name:		Toluene					
Reportable Quantity (RQ):		**1000 lbs.**					
Poison inhalation hazard:		**No**					

IMDG							
UN number:	**1294**	**Class:**	**3**	**Packing Group:**	**II**	EMS-No:	**F-E, S-D**
Proper shipping name:		TOLUENE					

IATA							
UN number:	**1294**	**Class:**	**3**	**Packing Group:**	**II**		
Proper shipping name:		Toluene					

15. REGULATORY

Information United States	
SARA 302 Components	No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313 Components	The following components are subject to reporting levels established by SARA Title III, Section 313:
Massachusetts Right To Know Components	Toluene
Pennsylvania Right To Know Components	Toluene
New Jersey Right To Know Components	Toluene
California Prop. 65 Components	WARNING! This product contains a chemical known to the State of California to cause birth defects or other reproductive.

16. OTHER

INFORMATION	
Full text of H-Statements referred to under sections 2 and 3.	
Aquatic Acute	Acute aquatic toxicity
Asp Tox	Aspiration hazard
Flam Liq	Flammable liquids
H225	Highly flammable liquid and vapor.
H304	May be fatal if swallowed and enters airways
H315	Causes skin irritation
H336	May cause drowsiness or dizziness
H361	Suspected of damaging fertility or the unborn child
H373	May cause damage to organs through prolonged or repeated exposure.
H401	Toxic to aquatic life.
Repr	Reproductive toxicity
Skin Irrit	Skin irritation
HMIS RATING	
Health Hazard	**2**
Chronic health hazard	*****
Flammability	**3**
Physical hazard	**0**
NFPA RATING	
Health Hazard	**2**
Fire Hazard	**3**
Reactivity hazard	**0**

DATA SOURCES:

REFERENCES

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Lide, D.R. CRC Handbook of Chemistry and Physics. 88th Edition. Boca Raton, FL. CRC Press, 2008.
UNECE. Globally Harmonized System of Classification and Labeling of Chemicals (GHS). Third Revised Edition. New York and Geneva. United Nations, 2009.
US DOT; Pipeline and Hazardous Materials Safety Administration. 2008 Emergency Response Guidebook. Neenah, WI. J.J. Keller & Associates, Inc. 2008.
US EPA. Consolidated List of Chemicals Subject to the Emergency Planning and Community Right-To-Know Act (EPCRA)

and Section 112(r) of the Clean Air Act. [Available] Online: http://www.epa.gov/ceppo/pubs/title3.pdf. Retrieved 02/02/2011.

ADDITIONAL SDS INFORMATION:

KEY / LEGEND

ACGIH - American Conference of Governmental Industrial Hygienists
ADR - Agreement on Dangerous Goods by Road
CAA - Clean Air Act
CAS - Chemical Abstracts Service Registry Number
CDG - Carriage of Dangerous Goods By Road and Rail Manual
CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
CFR - Code of Federal Regulations
EINECS - European Inventory of Existing Chemical Substances Registry Number
ERG - Emergency Response Guidebook
EPCRA - Emergency Planning and Community Right-to-Know Act
GHS - Globally Harmonized System of Classification and Labeling of Chemicals
IARC - International Agency for Research on Cancer
IATA - International Air Transport Association
ICAO - International Civil Aviation Organization
IMDG - International Maritime Dangerous Goods Code
IMO - International Maritime Organization
N/E - Not Established
NTP - National Toxicology Program
OSHA - Occupational Safety and Health Administration
PEL - Permissible Exposure Limit
PPE - Personal Protective Equipment
RCRA - Resource Conversation and Recovery Act
RID - Regulations Concerning the International Transport of Dangerous Goods by Rail

RQ - Reportable Quantities
SARA - Superfund Amendments and Reauthorization Act of 1986
SDS - Safety Data Sheet
TCC - Tag Closed Cup
TDG - Transportation of Dangerous Goods
TLV - Threshold Limit Value
TSCA - Toxic Substance Control Act
UN/NA - United Nations / North American Number
UNECE - United Nations Economic Commission for Europe
US DOT - United States Department of Transportation
US EPA - United States Environmental Protection Agency
Vol. - Volume
WHMIS - Workplace Hazardous Materials Information System

GENERAL STATEMENTS: Other information not included anywhere else in this SDS is included in this section if, in fact, such data exists.

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