



SAFETY DATA SHEET

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKEN

Kardol Quality Products
9933 Alliance Rd
Cincinnati, OH 45242

SDS Information Number 1-800-252-7365
Telephone 1-513-933-8206
Emergency Telephone Number 1-800-424-9300

Product Name TOLUENE NITRATION GRADE
Product Code 105032, 105033, 105034, 105035
Product Use or Description No Data

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance: Liquid, Colourless

WARNING! FLAMMABLE LIQUID AND VAPOR. MAY AFFECT THE CENTRAL NERVOUS SYSTEM CAUSING DIZZINESS, HEADACHE OR NAUSEA. MAY CAUSE EYE IRRITATION. MAY CAUSE SKIN AND RESPIRATORY TRACT IRRITATION. PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE DERMATITIS AND BURNS.

Potential Health Effects

Exposure Routes: Inhalation, Skin Absorption, Skin Contact, Eye Contact, Ingestion.

Eye Contact: Can cause eye irritation. Symptoms include stinging, tearing, redness, and swelling of eyes.

Skin Contact: Can cause skin irritation. Symptoms may include redness and burning of skin, and other skin damage. Prolonged or repeated contact may dry the skin. Symptoms may include redness, burning, and drying and cracking of skin, skin burns, and other skin damage.

Ingestion: Swallowing this material may be harmful. This material can get into the lungs during swallowing or vomiting. This results in lung inflammation and other lung injury.

Inhalation: Breathing of vapor or mist is possible. It is possible to breathe this material under certain conditions of handling and use (for example, during heating, spraying, or stirring). Breathing small amounts of this material during normal handling is not likely to cause harmful effects. Breathing large amounts may be harmful.

Aggravated Medical Condition: Skin, Upper respiratory tract, lung (for example, asthma-like conditions), Kidney, Central nervous system, auditory system, Individuals with preexisting heart disorders may be more susceptible to arrhythmias (irregular heartbeats) if exposed to high concentrations of this material.

Symptoms: Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include: metallic taste, stomach or intestinal upset (nausea, vomiting, diarrhea), irritation (nose, throat, airways), runny nose, central nervous system excitation (giddiness, liveliness, light-headed feeling) followed by central nervous system depression (dizziness, drowsiness, weakness, fatigue, nausea, headache, unconsciousness) and other central nervous system effects, temporary changes in mood and behavior, Lack of coordination, confusion, irregular heartbeat, coma.

Target Organs: Prolonged intentional toluene abuse may lead to damage to many organ systems having effects on: central and peripheral nervous systems, vision, hearing, liver, kidneys, heart and blood. Such abuse has been associated with brain damage characterized by disturbances in gait, personality changes and loss of memory. Comparable central nervous system effects have not been shown to result from occupational exposure to toluene. Prolonged intentional toluene abuse may lead to hearing loss progressing to deafness. In addition, while noise is known to cause hearing loss in humans, it has been suggested that workers exposed to organic solvents, including toluene, along with noise may suffer greater hearing loss than would be expected from exposure to noise alone. Overexposure to this material (or its components) has been suggested as a cause of the following effects in laboratory animals: mild, reversible liver effects, mild, reversible kidney effects, respiratory tract damage (nose, throat, and airways), effects on hearing, central nervous system damage. Overexposure to this material (or its components) has been suggested as a cause of the following effects in humans: kidney damage.

Carcinogenicity: This material is not listed as a carcinogen by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), or the Occupational Safety and Health Administration (OSHA).

Reproductive hazard: Toluene may be harmful to the human fetus based on positive test results with laboratory animals. Case studies show that prolonged intentional abuse of toluene during pregnancy can cause birth defects in humans.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Components	CAS-No.	Concentration
Toluene	108-88-3	90-100%

4. FIRST AID MEASURES

Eyes: If symptoms develop, immediately move individual away from exposure and into fresh air. Flush eyes gently with water for at least 15 minutes while holding eyelids apart; seek immediate medical attention.

Skin: Remove contaminated clothing. Flush exposed area with large amounts of water. If skin is damaged, seek immediate medical attention. If skin is not damaged and symptoms persist, seek medical attention. Launder clothing before reuse.

Ingestion: Seek medical attention. If individual is drowsy or unconscious, do not give anything by mouth; place individual on the left side with the head down. Contact a physician, medical facility, or poison control center for advice about whether to induce vomiting. If possible, do not leave individual unattended.

Inhalation: If symptoms develop, move individual away from exposure and into fresh air. If symptoms persist, seek medical attention. If breathing is difficult, administer oxygen. Keep person warm and quiet; seek immediate medical attention.

Notes to Physician

Hazards: Inhalation of high concentrations of this material, as could occur in enclosed spaces or during deliberate abuse, may be associated with cardiac arrhythmias. Sympathomimetic drugs may initiate cardiac arrhythmias in persons exposed to this material. This material is an aspiration hazard. Potential danger from aspiration must be weighed against possible oral toxicity (See Section 2 - Swallowing) when deciding whether to induce vomiting.

Treatment: No information available.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media: Dry chemical, Carbon dioxide (CO₂), Water spray.

Hazardous Combustion Products: Aldehydes, Hydrocarbons, carbon dioxide and carbon monoxide, acrid smoke and fumes.

Precaution For Fire-Fighting: Material is volatile and readily gives off vapors which may travel along the ground or be moved by ventilation and ignited by pilot lights, flames, sparks, heaters, smoking, electric motors, static discharge or other ignition sources at locations near the material handling point. Never use welding or cutting torch on or near drum (even empty) because product (even just residue) can ignite explosively. Wear full firefighting turn-out gear (full Bunker gear), and respiratory protection (SCBA). Water may be ineffective for extinguishment unless used under favorable conditions by experienced fire fighters. Use water spray to cool fire exposed containers and structures until fire is out if it can be done with minimal risk. Avoid spreading burning material with water used for cooling purposes.

NFPA Flammable and Combustible Liquids Classification: Flammable Liquid Class IB

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: For personal protection see section 8. Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Ensure adequate ventilation. Eliminate all ignition sources (flares, flames including pilot lights, electrical sparks). Pay attention to the spreading of gases especially at ground level (heavier than air) and to the direction of the wind.

Environmental Precautions: Prevent spreading over a wide area (e.g. by containment or oil barriers). Do not let product enter drains. Do not flush into surface water or sanitary sewer system. Local authorities should be advised if significant spillages cannot be contained.

Methods for Clean Up: Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

Other Information: Comply with all applicable federal, state, and local regulations. Suppress (knock down) gases/vapours/mists with a water spray jet.

7. HANDLING AND STORAGE

Handling: Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in the data sheet must be observed. Static ignition hazard can result from handling and use. Electrically bond and ground all containers, personnel and equipment before transfer or use of material. Special precautions may be necessary to dissipate static electricity for non-conductive containers. Use proper bonding and grounding during product transfer as described in National Fire Protection Association document NFPA 77. Warning. Sudden release of hot organic chemical 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. Published "autoignition" or "ignition" temperature values cannot be treated as safe operating temperatures in chemical processes without analysis of the actual process conditions. Any use of this product in elevated temperature processes should be thoroughly evaluated to establish and maintain safe operating conditions.

Storage: Store in a cool, dry, ventilated area, away from incompatible substances.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Toluene		108-88-3
ACGIH	8 hr time weighted average	20 ppm
NIOSH	Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek	100 ppm
NIOSH	Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek	375 mg/m3
NIOSH	Short term exposure limit 15-minute TWA exposure that should not be exceeded at any time during a workday	150 ppm
NIOSH	STEL - 15-minute TWA exposure that should not be exceeded at any time during a workday	560 mg/m3
OSHA	8-hour time weighted average	200 ppm
OSHA	Acceptable ceiling concentration	300 ppm
OSHA	Acceptable maximum peak above the acceptable ceiling concentration for an 8-hr shift	500 ppm
OSHA	8-hour time weighted average	100ppm
OSHA	8-hour time weighted average	375 mg/m3
OSHA	Short-term exposure limit	150 PPM
OSHA	Short-term exposure limit	560 mg/m3

General Advice: These recommendations provide general guidance for handling this product. Personal protective equipment should be selected for individual applications and should consider factors which affect exposure potential, such as handling practices, chemical concentrations and ventilation. It is ultimately the responsibility of the employer to follow regulatory guidelines established by local authorities.

Exposure Controls: Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below exposure guidelines (if applicable) or below levels that cause known, suspected or apparent adverse effects.

Eye Protection: Wear chemical splash goggles when there is the potential for exposure of the eyes to liquid, vapor or mist.

Skin and Body Protection: Wear normal work clothing including long pants, long-sleeved shirts and foot covering to prevent direct contact of the product with the skin. Launder clothing before reuse. If skin irritation develops, contact your facility health and safety professional or your local safety equipment supplier to determine the proper personal protective equipment for your use.

Wear resistant gloves (consult your safety equipment supplier).

Discard gloves that show tears, pinholes, or signs of wear.

Respiratory Protection: A NIOSH-approved air-purifying respirator with an appropriate cartridge and/or filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits (if applicable) or if overexposure has otherwise been determined. Protection provided by air-purifying respirators is limited. Use a positive pressure, air-supplied respirator if there is any potential for uncontrolled release, exposure levels are not known or any other circumstances where an air-purifying respirator may not provide adequate protection.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	liquid
Form	liquid
Colour	colourless, transparent
Odour	sweet, pungent, hydrocarbon-like, aromatic
Boiling point/boiling range	228 - 232 °F / 109 - 111 °C
Melting point/range	(-139 °F / -95 °C)
pH	na
Flash point	39 °F / 4 °C
Ignition temperature	no data available
Evaporation rate	no data available
Lower explosion limit/Upper explosion limit	1.2 %(V) / 7 %(V)
Particle size	no data available
Vapour pressure	24.000 mmHg @ 68 °F / 20 °C
Relative vapour density	3
Density	6.850 lb/gal @ 68 °F / 20 °C
Bulk density	No data
Water solubility	soluble
Solubility(ies)	no data available
Partition coefficient: n-octanol/water	no data available
log Pow	no data available
Autoignition temperature	997 °F / 536 °C
Viscosity, dynamic	no data available
Viscosity, kinematic	(<)3 mm2/s
Solids in Solution	no data available
Decomposition temperature	no data available
Burning number	no data available
Dust explosion constant	No Data
Minimum ignition energy	no data available

10. STABILITY AND REACTIVITY

Stability: Stable

Conditions to Avoid: Heat, flames and sparks.

Incompatible Products: Oxygen, halogens, Chlorine, hydrogen peroxide.

Hazardous Decomposition Products: Hydrocarbons, carbon dioxide and carbon monoxide.

Hazardous Reactions: Product will not undergo hazardous polymerization.

Thermal decomposition: No Data

11. TOXICOLOGICAL INFORMATION

Acute oral toxicity

Acute oral toxicity - Product	LD50: > 5,580 mg/kg Species: rat
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Acute oral toxicity Components

TOLUENE	LD50: > 5,580 mg/kg Species: rat
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Acute inhalation toxicity

Acute inhalation toxicity - Product	LC50: 12,500 - 28,800 mg/l Exposure time: 4 h Species: Rat
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Acute inhalation toxicity - Components

Toluene	LC50: 12,500 - 28,800 mg/l Exposure time: 4 h Species: Rat
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Acute dermal toxicity

Acute dermal toxicity - Product	LD50: 12,196 mg/kg Species: rabbit
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Acute dermal toxicity - Components

Toluene	LD50: 12,196 mg/kg Species: rabbit
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12. ECOLOGICAL INFORMATION

Biodegradability

Biodegradability - Product	Remarks: Readily biodegradable
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Biodegradability - Components	
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Toluene	100 % Remarks: Readily biodegradable
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Bioaccumulation

Bioaccumulation - Product	no data available
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Ecotoxicity effects

Toxicity to fish

Toxicity to fish - Product	LC50: 7.63 mg/l Exposure time: 96 h Species: Oncorhynchus mykiss (rainbow trout)
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Toxicity to fish - Components	
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Toluene	LC50: 7.63 mg/l LC50: 7.63 mg/l Species: Oncorhynchus mykiss (rainbow trout)
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Toxicity to daphnia and other aquatic invertebrates

Toxicity to daphnia and other aquatic invertebrates	EC50: 8 mg/l Exposure time: 24 h
Product	Species: Daphnia magna (Water flea)

Toxicity to daphnia and other aquatic invertebrates - Components	
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Toluene	EC50: 8.0 mg/l Exposure time: 24 h Species: Daphnia magna (Water flea)
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Toxicity to algae

TOLUENE	EC50: 10 mg/l Exposure time: 24 h Species: Pseudokirchneriella subcapitata (green algae)
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Toxicity to algae - Components	
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TOLUENE	EC50: 10 mg/l Exposure time: 24 h Species: Pseudokirchneriella subcapitata (green algae)
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Toxicity to Bacteria

TOLUENE	no data available
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13. DISPOSAL CONSIDERATIONS

Waste Disposal Methods: For assistance with your waste management needs - including disposal, recycling and waste stream reduction, contact Kardol's Environmental Services at 800-252-7365.

14. TRANSPORT INFORMATION

REGULATION

ID Number /	Proper Shipping Name	/	*Hazard Class	/	Subsidiary Hazards	/	Packing Group	/	Packing Group/ Marine Pollutant	LTD QTY
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U.S. DOT - ROAD

U.N. 1294	Toluene		3				II			
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U.S. DOT - RAIL

U.N. 1294	Toluene		3				II			
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U.S. DOT - INLAND WATERWAYS

U.N. 1294	Toluene		3				II			
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TRANSPORT CANADA - ROAD

U.N. 1294	Toluene		3				II			
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TRANSPORT CANADA - RAIL

U.N. 1294	Toluene	3	II
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TRANSPORT CANADA - INLAND WATERWAYS

U.N. 1294	Toluene	3	II
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INTERNATIONAL MARITIME DANGEROUS GOODS

U.N. 1294	Toluene	3	II
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INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO

U.N. 1294	Toluene	3	II
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INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER

U.N. 1294	Toluene	3	II
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MEXICAN REGULATION FOR THE LAND TRANSPORT OF HAZARDOUS MATERIALS AND WASTES

U.N. 1294	Toluene	3	II
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***ORM = ORM-D, CBL = COMBUSTIBLE LIQUID**

Dangerous goods descriptions (if indicated above) may not reflect quantity, end-use or region-specific exceptions that can be applied. Consult shipping documents for descriptions that are specific to the shipment.

15. REGULATORY INFORMATION**California Prop. 65**

WARNING! This product contains a chemical known to the State of California to cause cancer.	ETHYL BENZENE Cumene BENZENE
WARNING! This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.	TOLUENE BENZENE

SARA Hazard Classification

Fire Hazard Acute Chronic
Acute Health Hazard
Chronic Health Hazard

SARA 313 Component(s)

TOLUENE	100.00%
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New Jersey RTK Label Information

TOLUENE	108-88-3
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Pennsylvania RTK Label Information

TOLUENE	108-88-3
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Notification status

United States TSCA Inventory	y (positive listing)
Canadian Domestic Substances List (DSL)	y (positive listing)

Reportable quantity - Product

US. EPA CERCLA Hazardous Substances (40 CFR 302)	1000 lbs
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Reportable quantity-Components

TOLUENE	108-88-3	1000 lbs
	HMIS	NFPA
Health	2*	2
Flammability	3	3
Physical hazards	0	0
Instability	0	0
Specific Hazard	0	0

16. OTHER INFORMATION

The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This MSDS has been prepared by Kardol's Environmental Health and Safety Department (1-800-252-7365).