

SAFETY DATA SHEET

1. Identification

Product identifier 0165TS39

Other means of identification

Synonyms

Goodrich Kit Components: 74-451-151 (Contained in Goodrich Kits: 74-451-AG) * Silver Urethane Cement * Urethane-MEK Cement * Methyl Ethyl Ketone-Urethane Cement

Not available.

Recommended use

None known.

Recommended restrictions

Manufacturer/Importer/Supplier/Distributor information

Supplier

Company name

Goodrich Corporation

UTC Aerospace Systems Sensors and Integrated Systems (Formerly De-icing and Specialty Systems)

1555 Corporate Woods Parkway

Address

Uniontown, Ohio 44685

US

E-mail

Terry.Sluss@utas.utc.com

Contact name

EH&S Manager

Telephone number

(330)374-4011

Emergency telephone number

(800)424-9300

2. Hazard(s) identification

Physical hazards

Flammable liquids

Category 2

Health hazards

Skin corrosion/irritation

Category 2

Serious eye damage/eye irritation

Category 2A

Carcinogenicity

Category 2

Specific target organ toxicity, single exposure

Category 3 narcotic effects

Not classified.

OSHA defined hazards

Label elements



Signal word

Danger

Hazard statement

Highly flammable liquid and vapor. Causes skin irritation. Causes serious eye irritation. Suspected of causing cancer. May cause drowsiness or dizziness.

Precautionary statement

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. Avoid breathing mist or vapor. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection. Wash thoroughly after handling.

Response

In case of fire: Use appropriate media to extinguish. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If skin irritation occurs: Get medical advice/attention. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. If exposed or concerned: Get medical advice/attention. Wash contaminated clothing before reuse.

Storage

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

Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations. Repeated exposure may cause skin dryness or cracking.

Hazard(s) not otherwise classified (HNOC)

None.

Supplemental information

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Methyl ethyl ketone	78-93-3	70 - 90
Tetrahydrofuran	109-99-9	3 - 10
Aluminium	7429-90-5	1 - 3

Composition comments
All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

Inhalation

Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Call a POISON CENTER or doctor/physician if you feel unwell.

Skin contact

Take off immediately all contaminated clothing. Rinse skin with water/shower. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.

Eye contact

Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

Ingestion

Rinse mouth. Never give anything by mouth to a victim who is unconscious or is having convulsions. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Aspiration may cause pulmonary edema and pneumonitis. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed

May cause drowsiness and dizziness. Headache. Nausea, vomiting. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness and pain.

Indication of immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim under observation. Symptoms may be delayed.

General information

Take off all contaminated clothing immediately. IF exposed or concerned: Get medical advice/attention. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media

Water fog. Alcohol-resistant foam. Dry chemical powder. Carbon dioxide (CO₂).

Unsuitable extinguishing media

Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical

Vapors may form explosive mixtures with air. Vapors may travel considerable distance to a source of ignition and flash back. During fire, gases hazardous to health may be formed such as: Carbon monoxide. Carbon dioxide.

Special protective equipment and precautions for firefighters

Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions

In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk. Shut off the source of fuel, if possible. Use water spray to cool unopened containers. Use water spray to reduce vapors or divert vapor cloud drift.

Specific methods

Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards

Highly flammable liquid and vapor.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Wear appropriate protective equipment and clothing during clean-up. Avoid breathing mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. Take precautionary measures against static discharge. Use only non-sparking tools.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Following product recovery, flush area with water.

Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Avoid discharge into drains, water courses or onto the ground.

Environmental precautions

7. Handling and storage

Precautions for safe handling

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. When using do not smoke. Explosion-proof general and local exhaust ventilation. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. Avoid breathing mist or vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Should be handled in closed systems, if possible. Wear appropriate personal protective equipment. Wash thoroughly after handling. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Store locked up. Keep away from heat, sparks and open flame. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Store in a cool, dry place out of direct sunlight. Store in original tightly closed container. Store in a well-ventilated place. Keep in an area equipped with sprinklers. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

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

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	PEL	5 mg/m3 15 mg/m3 590 mg/m3	Respirable dust. Total dust.
Methyl ethyl ketone (CAS 78-93-3)	PEL	200 ppm 590 mg/m3	
Tetrahydrofuran (CAS 109-99-9)	PEL	200 ppm	

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	1 mg/m3	Respirable fraction.
Methyl ethyl ketone (CAS 78-93-3)	STEL	300 ppm	
Tetrahydrofuran (CAS 109-99-9)	TWA	200 ppm	
	STEL	100 ppm	
	TWA	50 ppm	

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	5 mg/m3 5 mg/m3	Respirable. Welding fume or pyrophoric powder. Total
Methyl ethyl ketone (CAS 78-93-3)	STEL	10 mg/m3 885 mg/m3	
Tetrahydrofuran (CAS 109-99-9)	TWA	300 ppm 590 mg/m3 200 ppm 735 mg/m3	
	TWA	250 ppm 590 mg/m3 200 ppm	

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Determinant	Specimen	Sampling Time
Methyl ethyl ketone (CAS 78-93-3)	2 mg/l	MEK	Urine	*
Tetrahydrofuran (CAS 109-99-9)	2 mg/l	Tetrahydrofuran	Urine	*

* - For sampling details, please see the source document.

Exposure guidelines

US ACGIH Threshold Limit Values: Skin designation

Tetrahydrofuran (CAS 109-99-9)

Can be absorbed through the skin.

Appropriate engineering controls

Explosion-proof general and local exhaust ventilation. Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection

Chemical respirator with organic vapor cartridge and full facepiece.

Skin protection

Hand protection

Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.

Skin protection

Other

Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.

Respiratory protection

Chemical respirator with organic vapor cartridge and full facepiece.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

Observe any medical surveillance requirements. When using do not smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Silver liquid.

Physical state

Liquid.

Form

Liquid.

Color

Silver color.

Odor

Ketone.

Odor threshold

Not available.

pH

Not available.

Melting point/freezing point

Not available.

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Initial boiling point and boiling range 151 - 175 °F (66.11 - 79.44 °C)

Flash point 6.0 °F (-14.4 °C) TCC

Evaporation rate Not available.

Flammability (solid, gas) Not applicable.

Upper/lower flammability or explosive limits

Explosive limit - lower (%) 2 %

Explosive limit - upper (%) 11 %

Vapor pressure Not available.

Vapor density Heavier than air.

Relative density 0.85

Solubility(ies)

Solubility (water) Not available.

Partition coefficient Not available.

(n-octanol/water)

Auto-ignition temperature Not available.

Decomposition temperature Not available.

Viscosity Not available.

Other information

VOC (Weight %) > 90 %

10. Stability and reactivity

Reactivity

The product is stable and non-reactive under normal conditions of use, storage and transport.

Chemical stability Material is stable under normal conditions.

Possibility of hazardous reactions Will not occur.

Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials.

Incompatible materials

Strong oxidizing agents. Strong acids. Strong alkalis. Ammonia. Amines. Alkanolamines. Aldehydes. Isocyanates. Caustics. Chlorinated compounds.

Hazardous decomposition products Carbon monoxide. Carbon dioxide.

11. Toxicological information

Information on likely routes of exposure

Inhalation May cause drowsiness and dizziness. Headache. Nausea, vomiting.

Skin contact Causes skin irritation. Repeated exposure may cause skin dryness or cracking.

Eye contact Causes serious eye irritation.

Ingestion Aspiration may cause pulmonary edema and pneumonitis.

Symptoms related to the physical, chemical and toxicological characteristics May cause drowsiness and dizziness. Headache. Nausea, vomiting. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness and pain.

Information on toxicological effects

Acute toxicity Aspiration may cause pulmonary edema and pneumonitis.

Components	Species	Test Results
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Methyl ethyl ketone (CAS 78-93-3)

Acute

Dermal

LD50

5000 mg/kg

Rabbit

Inhalation

LC50

35.3 mg/l

Rat

Components	Species	Test Results
Oral LD50	Rat	3000 mg/kg
Tetrahydrofuran (CAS 109-99-9)		
Acute		
<i>Dermal</i> LD50	Rat	> 2000 mg/kg, 24 Hours
<i>Oral</i> LD50	Rat	1650 mg/kg
Skin corrosion/irritation		
Serious eye damage/eye irritation		
Respiratory or skin sensitization		
Respiratory sensitization	Not available.	
Skin sensitization	This product is not expected to cause skin sensitization.	
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.	
Carcinogenicity	Suspected of causing cancer.	
IARC Monographs. Overall Evaluation of Carcinogenicity		
	Not listed.	
NTP Report on Carcinogens		
	Not listed.	
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)		
	Not regulated.	
Reproductive toxicity	MEK - Embryofetotoxic effects have been observed in laboratory rats exposed to over 1000 ppm MEK for most of gestation period.	
Specific target organ toxicity - single exposure	May cause drowsiness and dizziness.	
Specific target organ toxicity - repeated exposure	Not classified.	
Aspiration hazard	Not available.	
Chronic effects	Prolonged inhalation may be harmful.	
12. Ecological information		
Ecotoxicity	The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.	
Components	Species	Test Results
Methyl ethyl ketone (CAS 78-93-3)		
Aquatic		
Crustacea	LC50	Daphnia magna 12600 mg/l, 24 Hours
Fish	LC50	Goldfish (Carassius auratus) > 5000 mg/l, 24 Hours
Tetrahydrofuran (CAS 109-99-9)		
Aquatic		
Fish	LC50	Fathead minnow (Pimephales promelas) 2160 mg/l, 96 Hours
Persistence and degradability	Methyl ethyl ketone: Readily biodegradable. Rapidly decomposed by photochemical processes in air.	
Bioaccumulative potential	Methyl ethyl ketone: Low bioaccumulation is expected.	
Partition coefficient n-octanol / water (log Kow)		
Methyl ethyl ketone (CAS 78-93-3)	0.29	
Tetrahydrofuran (CAS 109-99-9)	0.46	
Mobility in soil	No data available.	
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.	

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13. Disposal considerations

Disposal instructions

Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations

Dispose in accordance with all applicable regulations.

The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products

Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging

Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

UN1133

Adhesives, containing a flammable liquid (Tetrahydrofuran)

Transport hazard class(es)

3

Class

-

Subsidiary risk

3

Label(s)

II

Packing group

Read safety instructions, SDS and emergency procedures before handling.

Special provisions

149, B52, IB2, T4, TP1, TP8

Packaging exceptions

150

Packaging non bulk

173

Packaging bulk

242

IATA

UN1133

Adhesives containing flammable liquid (Tetrahydrofuran)

Transport hazard class(es)

3

Class

-

Subsidiary risk

II

Packing group

No.

Environmental hazards

3L

ERG Code

Read safety instructions, SDS and emergency procedures before handling.

Special precautions for user

IMDG

UN1133

ADHESIVES containing flammable liquid (Tetrahydrofuran)

Transport hazard class(es)

3

Class

-

Subsidiary risk

II

Packing group

No.

Environmental hazards

F-E, S-D

Marine pollutant

No.

Ems

F-E, S-D

Special precautions for user

Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not established.

15. Regulatory information

US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Methyl ethyl ketone (CAS 78-93-3)
 Tetrahydrofuran (CAS 109-99-9)

LISTED
 LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)**Hazard categories**

Immediate Hazard - Yes
 Delayed Hazard - Yes
 Fire Hazard - Yes
 Pressure Hazard - No
 Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Aluminium	7429-90-5	1 - 3

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

Methyl ethyl ketone (CAS 78-93-3) 6714

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Methyl ethyl ketone (CAS 78-93-3) 35 %WV

DEA Exempt Chemical Mixtures Code Number

Methyl ethyl ketone (CAS 78-93-3) 6714

US state regulations**US. Massachusetts RTK - Substance List**

Aluminium (CAS 7429-90-5)

Methyl ethyl ketone (CAS 78-93-3)

Tetrahydrofuran (CAS 109-99-9)

US. New Jersey Worker and Community Right-to-Know Act

Aluminium (CAS 7429-90-5)

Methyl ethyl ketone (CAS 78-93-3)

Tetrahydrofuran (CAS 109-99-9)

US. Pennsylvania Worker and Community Right-to-Know Law

Aluminium (CAS 7429-90-5)

Methyl ethyl ketone (CAS 78-93-3)

Tetrahydrofuran (CAS 109-99-9)

US. Rhode Island RTK

Aluminium (CAS 7429-90-5)

Methyl ethyl ketone (CAS 78-93-3)

Tetrahydrofuran (CAS 109-99-9)

US. California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	No
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	No

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Country(s) or region	Inventory name	On inventory (yes/no)*
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	No
New Zealand	New Zealand Inventory	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

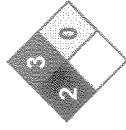
Issue date 29-March-2016

Revision date -

Version # 01

HMIS® ratings Health: 2*
Flammability: 3
Physical hazard: 0

NFPA ratings



Disclaimer

Goodrich Corporation cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.



UTC Aerospace Systems

Revision: 3
08/12/2015

SAFETY DATA SHEET

1 PRODUCT AND COMPANY IDENTIFICATION

Product Name: KE7005

Synonyms: Goodrich Kit Components: 74-451-120; 74-451-120-1; 74-451-120-2; 74-451-143; 74-451-152. Goodrich Kits: 74-451-K; 74-451-L; 74-451-O; 74-451-R-1; 74-451-R-2; 74-451-T; 74-451-AB; 74-451-AG; 74-451-AQ1; 74-451-AQ2.

Material identifier/Product Codes: No data available
Molecular Formula: Not applicable
Molecular Weight: Not applicable

Manufacturer/Supplier: Goodrich Corporation
Address: 1555 Corporate Woods Parkway
Uniontown, Ohio 44685

Email: Terry.Sluss@utas.ute.com

Contact Person: EH&S Manager

Business Telephone: (330)374-4011

24 Hour Emergency: (800)424-9300

Intended Use: Accelerator.

2 HAZARDS IDENTIFICATION

Physical hazards

Flammable liquids Category 2

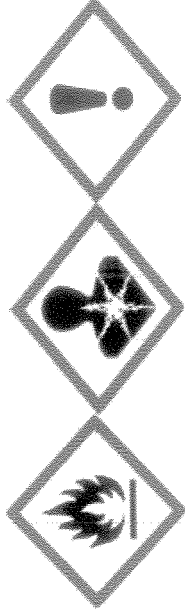
Health hazards

Acute Inhalation Category 4
Skin corrosion/irritation Category 2
Serious eye damage/eye irritation Category 2A
Sensitization, skin Category 1
Respiratory Sensitizer Category 1
Specific target organ toxicity, single exposure Category 3 respiratory tract irritation
Specific target organ toxicity, repeated Category 2(Lung)

OSHA defined hazards Not classified

Label elements

Hazard symbol

**Signal word**

Danger.

Hazard statement

Highly flammable Liquid and vapors. Harmful if inhaled. Causes skin irritation. Causes serious eye irritation. May cause an allergic skin reaction. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause respiratory irritation. May cause damage to organs (Lung) through prolonged or repeated exposure.

Prevention

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. Do not breathe mist or vapor. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Contaminated work clothing must not be allowed out of the workplace. Wear protective gloves. Wear eye/face protection. In case of inadequate ventilation, wear respiratory protection.

Response

In case of fire: Use appropriate media to extinguish. If inhaled: Remove person to fresh air and keep comfortable for breathing. Immediately call a poison center/doctor. Specific treatment is urgent (see this label). If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water / shower. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse. If exposed or concerned: Call a poison center /doctor.

Storage

Store away from incompatible materials. Store locked up. Store in a well-ventilated place. Keep container tightly closed.

Disposal

Dispose of contents/container in accordance with local regulations.

Hazard(s) not otherwise classified (HNOC) Not applicable.

Supplemental information Reacts slowly with water.

3 COMPOSITION / INFORMATION ON INGREDIENTS

Substance or Mixture: Mixture

Chemical Name	CAS-No.	Concentration (%)
Polymethylene polyphenyl isocyanate	9016-87-9	60
Containing: Diphenylmethane diisocyanate	101-68-8	20-25
Methyl ethyl ketone	78-93-3	40

Components not listed are not hazardous or are below reportable limits.

4 FIRST AID MEASURES

Inhalation: If inhaled, move to fresh air. If breathing is difficult, keep at rest in a position comfortable for breathing. Call a poison center/doctor if you feel unwell.

Eye contact: Rinse with plenty of water for at least 15 minutes. If easy to do, remove contact lenses, if worn. Get medical attention if irritation develops and persists.

Skin Contact: If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water / shower. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse.

Ingestion: If swallowed, do NOT induce vomiting unless directed to do so by medical personnel. If vomiting occurs; keep head lower than the hips to help prevent aspiration. Never give anything by mouth to an unconscious person. Get medical attention.

Expected acute and delayed symptoms: Dermatitis. Irritation of nose and throat. Rash. Severe eye irritation. May cause respiratory irritation. Coughing. Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea. Difficulty in breathing. Skin irritation. May cause redness and pain. May cause an allergic skin reaction. Prolonged exposure may cause chronic effects. May cause damage to organs through prolonged or repeated exposure.

Personal protection for first-aid responders: Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

Notes to physician: Treat symptomatically.

5 FIRE-FIGHTING MEASURES

Extinguishing Media: Water spray, dry chemical, carbon dioxide, foam.

Specific Hazards: Reacts slowly with water. May polymerize at temperatures above 160°C (320°F). Container may rupture from gas generation in a fire situation.

Special Fire Fighting Procedures: Self contained breathing apparatus and full protective clothing must be worn in case of fire. Stop leak if you can do it without risk. Use water to keep fire exposed containers cool and disperse vapors. Prevent buildup of vapors or gases to explosive concentrations.

Unusual Fire & Explosion Hazards: Reacts slowly with water. May polymerize at temperatures above 160°C (320°F). Container may rupture from gas generation in a fire situation. Vapors may cause a flash fire or ignite explosively. Vapors may travel considerable distance to a source of ignition and flash back.

Fire-fighting equipment/instructions: Move containers from fire area if you can do so without risk.

Specific methods: Use standard firefighting procedures and consider the hazards of other involved materials.

Hazardous Combustion Products: Carbon oxides, nitrogen oxides, cyanide compound.

6 ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Measures: Evacuate area. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Ventilate the area with fresh air. For large spill, or spills in confined spaces, provide mechanical ventilation to disperse or exhaust vapors, in accordance with good industrial hygiene practice. Do not breathe vapors. Avoid contact with eye, skin and clothing. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. **Refer to other sections of this SDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment.**

Clean-up Methods and Materials and Containment Measures: Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Take precautionary measures against static discharge. Use only non-sparking tools. Keep combustibles (wood, paper, oil, etc.) away from spilled material.

Small Liquid Spills: Wipe up or use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal.

Large Spillages: Contain spill. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Use water spray to reduce mist/vapors or divert vapor cloud drift. Prevent entry into waterways, sewer, basements or confined areas. Clean up residue with an appropriate solvent selected by a qualified and authorized person. Ventilate the area with fresh air. Read and follow safety precautions on the solvent label and SDS. Seal the container. Container must be labeled. Dispose of collected material as soon as possible. Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental Precautions: Avoid release to the environment. For larger spills, cover drains and build dikes to prevent entry into sewer systems or bodies of water.

7 HANDLING AND STORAGE

Handling: Personal Precautionary Measures: Wear appropriate personal protective equipment. Do not breathe mist or vapor. Avoid contact with eyes, skin and clothing. Do not taste or swallow. Handle in closed system. Wash thoroughly after handling. Keep out of the reach of children. Contaminated work clothing should not be allowed out of the workplace. Avoid release to the environment.

Prevention of Fire and Explosion: Keep away from ignition sources, heat, sparks and flames. Keep away from strong oxidizing agents. Comply with all national, state, and local codes pertaining to the storage, handling, dispensing, and disposal of flammable liquid. Keep away from incompatible materials (see section 10 of the sds).

Storage: Store in a well-ventilated place. Keep cool. Keep container tightly closed. Protect from sunlight. Store away from heat. Store away from oxidizing agents.

Special Handling Instructions: In addition to any precautions listed, consult occupational safety and health specialist to ensure that the suggested procedures will be adequate and in compliance with applicable laws and regulations.

8	EXPOSURE CONTROLS / PERSONAL PROTECTION				
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Occupational exposure limits:

Chemical Name	Source	Type	Exposure Limits	Notes
Polymethylene polyphenyl isocyanate (CAS9016-87-9)	OSHA	Ceiling	0.02 ppm 0.2 mg/m3	--
Methylene diphenyl diisocyanate (CAS 101-68-8)	OSHA	Ceiling	0.2 mg/m3	--
Methyl ethyl ketone (CAS 78-93-3)	OSHA	PEL	590 mg/m3	
Polymethylene polyphenyl isocyanate (CAS9016-87-9)	ACGIH	TWA	0.005 ppm	Respiratory sensitizer
Methylene diphenyl diisocyanate (CAS 101-68-8)	ACGIH	TWA	0.005 ppm	Respiratory sensitizer
Methyl ethyl ketone (CAS 78-93-3)	ACGIH	STEL TWA	300 ppm 200 ppm	
Methylene diphenyl diisocyanate (CAS 101-68-8)	US NIOSH	Ceiling	0.2 mg/m3	--
Methylene diphenyl diisocyanate (CAS 101-68-8)	US NIOSH	TWA	0.02 ppm 0.05 mg/m3 0.005 ppm	--
Polymethylene polyphenyl isocyanate (CAS9016-87-9)	US NIOSH	Ceiling	0.2 mg/m3	
Polymethylene polyphenyl isocyanate (CAS9016-87-9)	US NIOSH	TWA	0.02 ppm 0.05 mg/m3 0.005 ppm	
Methyl ethyl ketone (CAS 78-93-3)	US NIOSH	STEL	885 mg/m3	
Methyl ethyl ketone (CAS 78-93-3)	US NIOSH	TWA	300 ppm 590 mg/m3 200 ppm	

Biological limit values:

Components	Value	Determinant	Specimen	Sampling Time
Methyl ethyl ketone (CAS 78-93-3).	2 mg/l	MEK	Urine	* *

* - For sampling details, please see the source document.

Engineering Measures: Explosion-proof general and local exhaust ventilation. Ensure adequate ventilation. Depending on use, process enclosures, local exhaust ventilation, or other engineering controls may be required to keep airborne contaminants below established exposure limits.

Personal Protective Equipment

Respiratory Protection: Respiratory Protection: If engineering controls do not keep airborne concentrations below established exposure limits, follow NIOSH guidelines in determining appropriate respirator protection.

Eye Protection: Wear safety glasses with side shields (or goggles) full-face respirator, if needed.

Hand Protection: Wear chemical-resistant gloves (e.g. nitrile or latex).

Skin and Body Protection: Wear flame resistant coveralls, lab coat, or apron to prevent skin contact.

Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Observe any medical surveillance requirements.

9 PHYSICAL AND CHEMICAL PROPERTIES**Appearance**

Color: Brown.

Odor: Musty.

Physical State: Liquid.

Odor Threshold: No data available.

pH: Not applicable.

Boiling Point: No data available

Melting Point: Not applicable.

Softening Point: Not applicable.

Flash Point: -4 °C (25°F).

Evaporation Rate: No data available.

Flammability Limit – Upper (vol %): No data available.

Flammability Limit – Lower (vol %): No data available.

Vapor Pressure: No data available.

Vapor Density (Air=1): No data available.

Specific Gravity: 1.025.

Solubility in Water: Reacts with water.

Partition Coefficient (n-Octanol/water): No data available.

Autoignition Temperature: No data available.

Decomposition Temperature: No data available.

Viscosity: No data available.

Volatiles: 40% by wt. or 50% by vol.

10 STABILITY AND REACTIVITY

Stability: Stable under recommended handling and storage conditions. Material reacts slowly with water.

Conditions to Avoid: **Avoid:** Excessive heat, ignition sources, sparks, flame, and moisture.

Incompatible Materials: Strong oxidizing agents, water, metals, polyols, moist organic absorbents.

Hazardous Decomposition Products: Carbon oxides, nitrogen oxides, and cyanide compounds.

Hazardous Polymerizations: Will not occur.

11 TOXICOLOGICAL INFORMATION

Acute Toxicity:

Test Results	Chemical Name
Oral LD ₅₀ (Rat): 9200 mg/kg	Diphenylmethane diisocyanate
Inhalation LC ₅₀ (Rat): 178 mg/m ³	Diphenylmethane diisocyanate
Dermal LD ₅₀ (Rabbit): >9400 mg/kg	Polymethylene polyphenyl isocyanate
Oral LD ₅₀ (Rat): 49 g/kg	Polymethylene polyphenyl isocyanate
Inhalation LC ₅₀ (Rat): 490 mg/m ³ /4H	Polymethylene polyphenyl isocyanate
Eye (Rabbit): 80 mg, Minimal to moderate irritation	Methyl ethyl ketone
Skin (Rabbit): 500 mg/24H, Moderate irritation	Methyl ethyl ketone
Dermal LD ₅₀ (Rabbit): 6480 mg/kg	Methyl ethyl ketone
Oral LD ₅₀ (Rat): 2737 mg/kg	Methyl ethyl ketone
Inhalation LC ₅₀ (Rat): 23500 mg/m ³ /8H	Methyl ethyl ketone

Information on likely routes of exposure

Ingestion May cause irritation to the digestive system. Symptoms include irritation, vomiting, and diarrhea.

Inhalation Harmful if inhaled. Mist or vapor irritating to the respiratory system. Can cause allergic respiratory reaction. Symptoms may include coughing, asthmatic breathing, headache and other systemic effects. Decreased lung function has been associated with overexposure to isocyanates.

Isocyanates: At room temperature, vapors are minimal due to low volatility. However, certain operations may generate vapor or mist concentrations sufficient to cause respiratory irritation and other adverse effects. Such operations include those in which the material is heated, sprayed or otherwise mechanically dispersed such as drumming, venting or pumping. Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs. May cause pulmonary edema (fluid in the lungs.) Effects may be delayed. Decreased lung function has been associated with overexposure to isocyanates.

Skin contact Causes skin irritation. May cause an allergic skin reaction. Exposure may cause rash, redness, itching, and inflammation.

Eye contact Causes serious eye irritation. Exposure may cause eye tearing, redness and discomfort.

Symptoms related to the physical, chemical and toxicological characteristics

Dermatitis. Irritation of nose and throat. Rash. Severe eye irritation. May cause respiratory irritation. Coughing. Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea. Difficulty in breathing. Skin irritation. May cause redness and pain. May cause an allergic skin reaction. Prolonged exposure may cause chronic effects. May cause damage to lungs through prolonged or repeated exposure.

Information on toxicological effects

Acute toxicity Harmful if inhaled. May cause an allergic skin reaction. May cause respiratory irritation.

Skin corrosion/irritation Causes skin irritation: Signs/symptoms may include localized redness, swelling, itching, and dryness. Signs/symptoms may include redness, swelling, blistering, and itching.

Serious eye damage/eye Causes serious eye irritation. Signs/symptoms may include redness, swelling, pain, irritation, tearing, and blurred or hazy vision.

Respiratory or skin sensitization

Respiratory sensitization May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Skin sensitization May cause an allergic skin reaction.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity

Listed Carcinogens:

Chemical Name	IARC	NTP	OSHA	ACGIH
Polyethylene polyphenyl isocyanate (CAS 9016-87-9)	3 Not classifiable as to carcinogenicity to humans.	--	--	--
Methylene diphenyl diisocyanate (CAS 101-68-8)	3 Not classifiable as to carcinogenicity to humans.	--	--	--

Reproductive toxicity	Due to lack of data the classification is not possible.
Specific target organ toxicity - single exposure	May Cause respiratory tract irritation. May cause drowsiness and dizziness.
Specific target organ toxicity - repeated exposure	Lungs
Aspiration hazard	Due to lack of data the classification is not possible.
Further information:	None

12 ECOLOGICAL INFORMATION

Ecotoxicity	Accumulation in aquatic organisms is expected. Avoid releasing to the environment.
Persistence and Degradability	The product is not expected to be readily biodegradable.
Bioaccumulation	No data available.
Mobility in Soil	No data available.
Other hazardous	None known.

13 DISPOSAL CONSIDERATIONS

General Information: Dispose in accordance with applicable federal, state, and local regulations. Mix with compatible chemical which is less flammable and incinerate.

Residual Waste: Dispose in accordance with applicable federal, state, and local regulations.

Contaminated Packaging: Empty containers of this material may contain residual liquid, vapors or dust. Residual vapors may explode on ignition; do not cut, drill, grind, or weld on or near this container. Precautions previously cited should be observed with such containers. Follow label warnings even after container is emptied.

14 TRANSPORT INFORMATION

General Information: The transportation classification in this section is meant as a guide to the overall classification of the product and may be subject to change as a result of varying package sizes and/or updates to the specific regulations. Consult the specific shipping requirements under the appropriate transportation authority [IMO/IMDG, ICAO/IATA, 49 CFR, TDG, etc.] to assure regulatory compliance.

DOT:

UN No.: 1193

Proper Shipping Name: Methyl ethyl ketone mixture

Class: 3

Packaging Group: II

Label(s): Flammable liquid

TDG:

UN No.: 1193

Proper Shipping Name: Methyl ethyl ketone mixture

Class: 3

Packaging Group: II

Label(s): Flammable liquid

IATA:

UN No.: 1193

Proper Shipping Name: Methyl ethyl ketone mixture

Class: 3

Packaging Group: II

Environmental Hazard: No

Label(s): Flammable liquid

IMDG:

UN No.: 1193

Proper Shipping Name: Methyl ethyl ketone mixture

Class: 3

Packaging Group: II

Marine Pollutant: No

Label(s): Flammable liquid

15 REGULATORY INFORMATION**US federal regulations** All components are on the U.S. EPA TSCA Inventory List.

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)

Methylene diphenyl diisocyanate (CAS 101-68-8) LISTED

Polymethylene polyphenyl isocyanate (CAS 9016-87-9) LISTED

Methyl ethyl ketone (CAS 78-93-3) Listed

SARA Title III (Emergency Planning & Community Right-to-Know Act (EPCRA))**Section 302 Extremely Hazardous Substance (40 CFR 355, Appendix A):** None**Section 311/312 (40 CFR 370):** Acute (Immediate)

Chronic (Delayed)

Fire

Reactive

Pressure

Generating

Section 313 Toxic Release Inventory (40 CFR 372):

Component	CAS No.	Concentration
Polymethylene polyphenyl isocyanate	9016-87-9	100%
Methylene diphenyl diisocyanate	101-68-8	40-50%

Clean Air Act (CAA) Section 112, 1990 Amendments, Statutory Hazardous Air Pollutants:

Methylene diphenyl diisocyanate (CAS 101-68-8)
 Polymethylene polyphenyl isocyanate (CAS 9016-87-9)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40CFR 68.130): None

Clean Water Act Section 307 Toxic Pollutants (40 CFR 401.15): None

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3): None

Drug Enforcement Act:

Drug Enforcement Administration (21 CFR 1310.02(b) and 1310.04 (f)(2)):

Methyl ethyl ketone (CAS 78-93-3) 6714

Drug Enforcement Administration (21 CFR 1310.12(c)): Methyl ethyl ketone

TSCA:

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D) (revised, effective January 16, 2007):
None

ITAR, US Munitions List, Category V, Explosives & Energetic Materials, Propellants, Incendiary Agents and their Constituents (22 CFR 121): None

Homeland Security:

ATF List of Explosive Materials (27 CFR 555.23 as amended): None

State Regulations

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance
Not listed.

US - Massachusetts RTK - Substance List

Methylene diphenyl diisocyanate (CAS 101-68-8)
 Polymethylene polyphenyl isocyanate (CAS 9016-87-9)

Methyl ethyl ketone (CAS 78-93-3)

US, New Jersey Worker and Community Right-to-Know Act

Methylene diphenyl diisocyanate (CAS 101-68-8)

Polymethylene polyphenyl isocyanate (CAS 9016-87-97)

Methyl ethyl ketone (CAS 78-93-3)

US, Pennsylvania Worker and Community Right-to-Know Law

Methylene diphenyl diisocyanate (CAS 101-68-8)

Polymethylene polyphenyl isocyanate (CAS 9016-87-9)

Methyl ethyl ketone (CAS 78-93-3)

US, Rhode Island RTK

Methylene diphenyl diisocyanate (CAS 101-68-8)

Polymethylene polyphenyl isocyanate (CAS 9016-87-9)

Methyl ethyl ketone (CAS 78-93-3)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippine	Inventory of Chemicals and Chemical Substances PICCS) Philippines	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16

OTHER INFORMATION

Hazard Ratings

	Health Hazard	Fire Hazard	Reactivity Hazard	Special Hazard
NFPA	3	3	0	--

	Health Hazard	Fire Hazard	Reactivity Hazard
HMIS	3*	3	1

0 – Minimal; 1 – Slight; 2 – Moderate; 3 – Serious; 4 – Severe; * – Chronic health effect

Prepared by: Ariel Authoring Services – a 3E Company

Issue Date: 08/12/15 Revision 3

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Goodrich De-Icing and Specialty Systems
74-451-AG Silver Urethane Stall Bar Installation Kit
ATA Chapter 30

1) Planning Information

A. Effectivity

The 74-451-AG Kit is approved for installation of silver urethane stall bar on silver urethane pneumatic de-icer.

B. Description

The 74-451-AG Kit contains appropriate materials to install silver urethane stall bar on silver urethane pneumatic de-icer.

C. Required Materials

NOTE: One 74-452-AG kit is sufficient to cover 450 square inches.

74-451-AG Kit contains:

74-451-151	½ pt.	0165TS39, Part A, Silver Patch Cement
74-451-152	½ oz.	KE-7005, Part B, Accelerator

2) Accomplishment Instructions

- A. Locate stall bar on the de-icer and mask off the perimeter of the bonding area with masking tape. Be sure to tape as close to the stall bar as possible.
- B. Clean masked off area on the de-icer and bond side of stall bar several times with a clean cloth dampened in toluene.

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