

Appendix A

Safety Data Sheets for Priority Products Produced by the Submitter of This Abridged AA Report



SAFETY DATA SHEET According to GHS

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Dalton, GA

Hickory, NC

Mount Airy, NC

Salt Lake City, UT

Section 1: Identification

Product Identifier

Trade Name: A2-000
Chemical Name: Diphenylmethane Diisocyanate (MDI)
Recommended Use: Component for production of polyurethanes
Restrictions on Use:

Chemical Manufacturer Information

Name: NCFI Polyurethanes
Address: 1515 Carter St Mount Airy, NC 27030
Website: www.NCFI.com
Phone: (800) 346-8229
Fax: (336) 789-9586
Emergency Phone: CHEMTREC: 800-424-9300

Section 2: Hazard Identification

Classification of the substance or mixture

GHS Classification:	
• Skin irritation, Category 2	• Acute toxicity, Inhalative, Category 4
• Sensitization of respiratory airways, Category 1	• Eye irritation, Category 2
• Carcinogenicity, Category 2	• Sensitization of the skin, Category 1
• Specific target organ toxicity (repeated exposure), Category 2	• Specific target organ toxicity (single exposure), Category 3

GHS Labeling:



Danger

Hazard Statements:	
• May cause an allergic skin reaction	• Causes skin irritation
• Harmful if inhaled	• Causes serious eye irritation
• May cause respiratory irritation	• May cause allergy or asthma symptoms or breathing difficulties if inhaled
• May cause damage to organs through prolonged or repeated exposure	• Suspected of causing cancer

Precautionary Statements:	
• Do not breathe dust/fume/gas/mist/vapors/spray	• IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
• Wear protective gloves/eye protection/face protection	• IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
• IF ON SKIN: Wash with plenty of soap and water	

Other Hazards: Persons with respiratory conditions should avoid handling this product.



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Section 3: Composition

Hazardous Components

Type of product: substance

CAS#	Weight %	Name
101-68-8	38.0%	Diphenylmethane-4,4'-diisocyanate (MDI)
26447-40-5	< 10.0%	MDI Mixed Isomers
9016-87-9	< 55.0%	P-MDI

Section 4: First Aid Measures

General:	Remove contaminated clothing
Inhalation:	Remove affected individual to fresh air and keep person calm. Assist in breathing if necessary. Immediate medical attention required.
Skin Contact:	Wash affected areas with soap and water. Seek medical attention for irritation.
Eye Contact:	Rinse for at least 15 minutes with water. Immediate medical attention required.
Ingestion:	Rinse mouth and drink plenty of water. Do not induce vomiting. Immediate medical attention required.

Section 5: Fire-Fighting Measures

Suitable extinguishing media:	Water, dry chemicals, CO ₂
Unsuitable extinguishing media:	High volume water jet
Special hazards arising from the chemical:	At temperatures above 400°F, MDI can polymerize/decompose causing pressure build-up in closed containers and possibly rupture. Avoid water contamination in closed containers which may cause rupture (CO ₂ is evolved).
Precautions for firefighters:	Firefighters should be equipped with self-contained breathing apparatus and turnout gear.

Section 6: Accidental Release Measures

Personal precautions, protective equipment, and emergency procedures:	Clear area. Ensure adequate ventilation. Wear suitable personal protective clothing and equipment.
Environmental precautions:	Do not discharge into drains/surface waters/groundwater
Methods/material for containment and cleanup:	Physically remove; cover remainder with wet, absorbent material (e.g. sawdust, chemical binder based on calcium silicate hydrate, sand). After approx. one hour transfer to waste container and do not seal (evolution of CO ₂). Keep damp in a safe ventilated area for several days.

Spill area can be decontaminated with the following recommended decontamination solution:

Decontamination Solution #1: 8-10% sodium carbonate and 2% liquid soap in water

Decontamination Solution #2: Liquid/yellow soap (potassium soap with ~15% anionic surfactant): 20 ml; Water: 700 ml;
Polyethylene glycol (PEG 400): 350 ml



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Section 7: Handling and Storage

Precautions for safe handling:	Provide sufficient air exchange and/or exhaust in work rooms. Occupational exposure limits should not be exceeded (refer to Section 8). Contact with skin and eyes and inhalation of vapors must be avoided. Keep away from foodstuffs, drinks, and tobacco. Wash hands before breaks and at end of work.
Conditions for safe storage, including any incompatibilities:	Keep container tightly closed and protect against moisture. Segregate from bases. Store from 32°F – 110°F.

Section 8: Exposure Controls and PPE

Exposure Limits

Component	Type	Value
P-MDI	OSHA PEL	CLV 0.005 ppm 0.051mg/m ³
Diphenylmethane-4,4'-diisocyanate (MDI)	OSHA PEL	CLV 0.005 ppm 0.051mg/m ³

Exposure Controls

Respiratory Protection:	Respiratory protection required in insufficiently ventilated working areas and during spraying. An air-fed mask, or for short periods of work, a combination of charcoal filter and particulate filter is recommended.
Hand, eye, skin, body protection:	Chemical resistant protective gloves should be worn to prevent all skin contact. Wear eye/face protection. Wear suitable protective clothing

Section 9: Physical and Chemical Properties

Basic chemical and physical properties

Appearance:	liquid	Flammability	not applicable
Color	dark amber	Upper/lower flammability or explosive limits	Not applicable
Odor	Slightly aromatic	Vapor pressure	0.00016 mmHg
Odor threshold	not established	Vapor density	not established
pH	not established	Relative density	1.24
Melting pt/freezing pt	3° C	Solubility(ies)	Reacts with water
Boiling pt/boiling range	>300°C	Partition coefficient (n-octanol/water)	not established
Flash point	>250°C	Auto-ignition temperature	not applicable
Evaporation rate	not established	Decomposition temperature	not established

Section 10: Stability and Reactivity

Chemical stability:	Polymerizes at about 200°C with evolution of CO ₂
Possibility of hazardous reactions:	Exothermic reaction with amines and alcohols; reacts with water forming CO ₂ ; in closed containers, risk of bursting owing to increase of pressure
Conditions to avoid:	Avoid moisture
Incompatible materials:	water, alcohols, strong bases, amines



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Hazardous decomposition products:	By high heat or fire; CO, CO ₂ , NO _x , benzene, toluene, aliphatic fragments and traces of HCN
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Section 11: Toxicological Information

Acute toxicity (inhalation):	LC50: 490mg/kg , vapor, 4hr rat
Chronic toxicity:	2 years, inhalation; NOAEL: 0.2mg/m ³ , (rat, Male/Female, 6hrs/day 5 days/week)
Likely routes of exposure:	Skin, inhalation
Symptoms related to physical, chemical and toxicological characteristics:	Minor skin irritation; asthma-like symptoms
Delayed and immediate effects and chronic effects from short and long-term exposure:	Possible sensitization
Numerical toxicity measures:	

Section 12: Ecological Information

Ecotoxicity:	LC0: >1,000mg/l (Zebra fish 96 hrs) LC0: >3,000mg.l (Killifish 96hrs)
Persistence and degradability:	0%
Bioaccumulative potential:	Does not bioaccumulate
Mobility in soil:	

Section 13: Disposal

Waste disposal:	Incinerate or dispose of in a licensed facility. Do not discharge substance/product into sewer system. Do not burn empty drums or cut open with gas or an electric torch as toxic decomposition products may be liberated. Do not reuse empty containers.
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Section 14: Transport

Land transport

USDOT	Not classified as dangerous good
China	Not classified as dangerous good

Sea transport

IMDG	Not classified as dangerous good
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Air transport

IATA/ICAO	Not classified as dangerous good
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Further information

DOT: This product is regulated if the amount in a single receptacle exceeds the Reportable Quantity (RQ). Refer to Section 15 for the RQ of this product.



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Section 15: Regulatory

Relevant safety, health, and environmental regulations:	
Inventory Status:	TSCA listed
US Regulations:	Not regulated
US Superfund Amendments and Reauthorization Act (SARA) Title III Section 313 information:	Methylene Bis Phenylisocyanate 101-68-8 5000 lbs. (Same as Diphenylmethane diisocyanate (MDI) Polymeric Diphenylmethane diisocyanate 9016-87-9

Section 16: Other

SDS Preparation Date:	05/08/2017
Revision Date:	10/24/2017
Revision 2 Date:	10/27/2017

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Section 1: Identification

Product Identifier

Trade Name: B-10-011
Chemical Name: Polyurethane Resin
Recommended Use: Component for the manufacture of Polyurethanes
Restrictions on Use:

Chemical Manufacturer Information

Name:	NCFI Polyurethanes	Phone:	(800) 346-8229
Address:	1515 Carter St Mount Airy, NC 27030	Fax:	(336) 789-9586
Website:	www.NCFI.com	Emergency Phone:	CHEMTREC: 800-424-9300

Section 2: Hazard Identification

Classification of the substance or mixture:

GHS Classification:	
• Skin irritation, Category 3	• Eye irritation, Category 2

GHS Labeling:



Warning

Hazard Statements:	
• May cause skin irritation	• May cause eye irritation
• May cause respiratory irritation	

Precautionary Statements:	
• Do not breathe fume/gas/mist/vapors/spray	• Wear protective gloves/eye protection/face protection
• IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.	• IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
• IF ON SKIN: Wash with plenty of soap and water	

Other Hazards:



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Section 3: Composition

Hazardous Components

Type of product: Mixture

CAS#	Weight %	Name
460-73-1	<9	1,1,1,3,3-Pentafluoropropane (CF ₃ CH ₂ CHF ₂ or HFC-245fa)
Proprietary	<4	Tertiary amine catalysts
156-60-5	<3	Trans-1,2-Dichloroethylene

Section 4: First Aid Measures

Inhalation:	Move to fresh air if symptoms develop. If breathing is difficult, give oxygen and call physician.
Eye Contact:	Flush with water for at least 15 minutes. See a physician if irritation develops.
Ingestion:	Do not induce vomiting unless told to do so by a medical professional.
Most Important symptoms and effects, acute and delayed:	May cause skin or eye irritation upon contact. Avoid breathing vapors. The dense vapors can displace and reduce breathing air in confined or unventilated spaces causing asphyxiation. Overexposure may cause tremors, confusion, irritation, and may result in cardiac sensitization.
Indication of immediate medical attention and special treatment, if applicable:	N/A
Skin Contact:	Wash with soap and water at first opportunity.

Section 5: Fire-Fighting Measures

Suitable extinguishing media:	Water, dry chemicals, CO ₂
Unsuitable extinguishing media:	None
Special hazards arising from the chemical:	Overheated containers may rupture due to pressure produced by CF ₃ CH ₂ CHF ₂ . CF ₃ CH ₂ CHF ₂ burns to form acids and noxious gases.
Precautions for fire-fighters:	A self-contained breathing apparatus should be worn to protect against toxic and irritating vapors.

Section 6: Accidental Release Measures

Personal precautions, protective equipment, and emergency procedures:	Clear area. Ensure adequate ventilation. Wear suitable personal protective clothing and equipment.
Environmental precautions:	Do not discharge into drains/surface waters/groundwater
Methods and material for containment and cleanup:	Absorb with sawdust, etc., and shovel into container. Waste material should be disposed of under conditions which meet federal, state, and local environmental regulations.



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Section 7: Handling and Storage

Precautions for safe handling:	Store between 65°F and 85°F out of sunlight. Relieve pressure slowly when opening container. Under no circumstances should empty drums be burned or cut open with an electric or gas torch.
Conditions for safe storage, including any incompatibilities:	Keep tightly sealed.

Section 8: Exposure Controls and PPE

Exposure Limits

Component:	Type	Value
1,1,1,3,3-Pentafluoropropane (CF ₃ CH ₂ CHF ₂ or HFC-245fa)	TWA	300ppm recommended
Tertiary Amine Catalysts ¹	TWA	None established
Trans-1,2-Dichloroethylene	TWA	200ppm

¹Not listed as a carcinogen (NTA, IARC, OSHA)

Exposure Controls

Respiratory Protection:	The specific respirator selected must be based on contamination levels of this material found in the workplace and the working limits of the respirator. A supplied air, full-face mask, positive pressure or continuous flow respirator or a supplied air hood is required when airborne concentrations are unknown or exceed threshold limit values. A positive pressure, self-contained breathing apparatus can be used in emergencies or other unusual situations. Full-face air purifying respirators equipped with organic vapor cartridges can be used in certain situations, <i>see OSHA standard 29CFR 1910.134</i> . All equipment must be NIOSH approved and maintained.
Hand, eye, skin, body protection:	Wear goggles or chemical safety glasses and chemically resistant rubber or plastic gloves. Avoid eye and skin contact. Eye wash system and showers should be available.

Section 9: Physical and Chemical Properties

Basic chemical and physical properties

Appearance:	Liquid	Flammability:	N/A
Color:	Amber	Upper/lower flammability or explosive limits:	N/A
Odor:	Ethereal odor	Vapor pressure:	N/A
Odor threshold:	N/A	Vapor density:	N/A
pH:	N/A	Relative density:	1.2g/mL
Melting pt/freezing pt:	<32°F	Solubility(ies):	Slightly soluble in water
Boiling pt/boiling range:	60°F	Partition coefficient (n-octanol/water):	N/A
Flash point:	>200°F	Auto-ignition temperature:	>500°F
Evaporation rate:	Slower than ether	Decomposition temperature:	>500°F



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Section 10: Stability and Reactivity

Chemical stability:	Stable
Possibility of hazardous reactions:	N/A
Conditions to avoid:	Temperatures over 85°F
Incompatible materials:	Isocyanates and other chemicals that react with hydroxyl groups.
Hazardous decomposition products:	When burned, CO, CO ₂ , NO _x aliphatic fragments, halogens, halogen acids, and possibly carbonyl halides.

Section 11: Toxicological Information

Acute toxicity:	May cause skin irritation
Chronic toxicity:	Not available
Likely routes of exposure:	Skin
Symptoms related to physical, chemical and toxicological characteristics:	May cause skin irritation
Delayed and immediate effects and chronic effects from short and long-term exposure:	May cause skin irritation; avoid contact with eyes
Numerical toxicity measures:	Not available

Section 12: Ecological Information

Ecotoxicity:	Not a marine pollutant
Persistence and degradability:	No known significant effects
Bioaccumulative potential:	Does not bioaccumulate
Mobility in soil:	

Section 13: Disposal

Waste disposal:	R component drums can be sent to drum reconditioners or disposed of as ordinary industrial waste in compliance with pertinent regulations
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Section 14: Transport

UN number:	Not regulated
UN Proper shipping name:	Not regulated
Transport Hazard class(es):	Not regulated
Packing group, if applicable:	Not regulated
Marine pollutant (YorN):	N
Special precautions:	None



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Section 15: Regulatory

Relevant safety, health, and environmental regulations

Inventory Status:	All components TSCA listed
US Regulations:	No ingredients listed
US Superfund Amendments and Reauthorization Act (SARA) Title III Section 313 information:	No ingredients listed

Section 16: Other

SDS Preparation Date:	06/26/2014
Revision Date:	10/27/2017

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Section 1: Identification

Product Identifier

Trade Name: B-10-013
Chemical Name: Polyurethane Resin
Recommended Use: Component for the manufacture of Polyurethanes
Restrictions on Use:

Chemical Manufacturer Information

Name:	NCFI Polyurethanes	Phone:	(800) 346-8229
Address:	1515 Carter St Mount Airy, NC 27030	Fax:	(336) 789-9586
Website:	www.NCFI.com	Emergency Phone:	CHEMTREC: 800-424-9300

Section 2: Hazard Identification

Classification of the substance or mixture:

GHS Classification:	
• Skin irritation, Category 3	• Eye irritation, Category 2

GHS Labeling:



Warning

Hazard Statements:	
• May cause skin irritation	• May cause eye irritation
• May cause respiratory irritation	

Precautionary Statements:	
• Do not breathe fume/gas/mist/vapors/spray	• Wear protective gloves/eye protection/face protection
• IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.	• IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
• IF ON SKIN: Wash with plenty of soap and water	

Other Hazards:



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Section 3: Composition

Hazardous Components

Type of product: Mixture

CAS#	Weight %	Name
102687-65-0	8%	Trans-1-Chloro-3,3,3-trifluoropropene ($\text{CF}_3\text{HC}=\text{CHCl}$ or HFO-1233zd)
Proprietary	<4	Tertiary amine catalysts
58479-98-1	2%	Diethylenetoluene Diamine

Section 4: First Aid Measures

Inhalation:	Move to fresh air if symptoms develop. If breathing is difficult, give oxygen and call physician.
Eye Contact:	Flush with water for at least 15 minutes. See a physician if irritation develops.
Ingestion:	Do not induce vomiting unless told to do so by a medical professional.
Most Important symptoms and effects, acute and delayed:	May cause skin or eye irritation upon contact. Avoid breathing vapors. The dense vapors can displace and reduce breathing air in confined or unventilated spaces causing asphyxiation. Overexposure may cause tremors, confusion, irritation, and may result in cardiac sensitization.
Indication of immediate medical attention and special treatment, if applicable:	N/A
Skin Contact:	Wash with soap and water at first opportunity.

Section 5: Fire-Fighting Measures

Suitable extinguishing media:	Water, dry chemicals, CO_2
Unsuitable extinguishing media:	None
Special hazards arising from the chemical:	Overheated containers may rupture due to pressure produced by $\text{CF}_3\text{HC}=\text{CHCl}$. $\text{CF}_3\text{HC}=\text{CHCl}$ burns to form acids and noxious gases.
Precautions for fire-fighters:	A self-contained breathing apparatus should be worn to protect against toxic and irritating vapors.

Section 6: Accidental Release Measures

Personal precautions, protective equipment, and emergency procedures:	Clear area. Ensure adequate ventilation. Wear suitable personal protective clothing and equipment.
Environmental precautions:	Do not discharge into drains/surface waters/groundwater
Methods and material for containment and cleanup:	Absorb with sawdust, etc., and shovel into container. Waste material should be disposed of under conditions which meet federal, state, and local environmental regulations.



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Section 7: Handling and Storage

Precautions for safe handling:	Store between 65°F and 85°F out of sunlight. Relieve pressure slowly when opening container. Under no circumstances should empty drums be burned or cut open with an electric or gas torch.
Conditions for safe storage, including any incompatibilities:	Keep tightly sealed.

Section 8: Exposure Controls and PPE

Exposure Limits

Component:	Type	Value
Trans-1-Chloro-3,3,3-trifluoropropene ¹ (CF ₃ HC=CHCl or HFO-1233zd)		300ppm recommended
Tertiary Amine Catalysts ¹	TWA	None established
Diethylenetoluene Diamine ¹		None established

¹Not listed as a carcinogen (NTA, IARC, OSHA)

Exposure Controls

Respiratory Protection:	The specific respirator selected must be based on contamination levels of this material found in the workplace and the working limits of the respirator. A supplied air, full-face mask, positive pressure or continuous flow respirator or a supplied air hood is required when airborne concentrations are unknown or exceed threshold limit values. A positive pressure, self-contained breathing apparatus can be used in emergencies or other unusual situations. Full-face air purifying respirators equipped with organic vapor cartridges can be used in certain situations, <i>see OSHA standard 29CFR 1910.134</i> . All equipment must be NIOSH approved and maintained.
Hand, eye, skin, body protection:	Wear goggles or chemical safety glasses and chemically resistant rubber or plastic gloves. Avoid eye and skin contact. Eye wash system and showers should be available.

Section 9: Physical and Chemical Properties

Basic chemical and physical properties

Appearance:	Liquid	Flammability:	N/A
Color:	Brown	Upper/lower flammability or explosive limits:	N/A
Odor:	Ethereal odor	Vapor pressure:	N/A
Odor threshold:	N/A	Vapor density:	N/A
pH:	N/A	Relative density:	1.17g/mL
Melting pt/freezing pt:	<32°F	Solubility(ies):	Slightly soluble in water
Boiling pt/boiling range:	66°F	Partition coefficient (n-octanol/water):	N/A
Flash point:	>200°F	Auto-ignition temperature:	>500°F
Evaporation rate:	Slower than ether	Decomposition temperature:	>500°F



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Section 10: Stability and Reactivity

Chemical stability:	Stable
Possibility of hazardous reactions:	N/A
Conditions to avoid:	Temperatures over 85°F
Incompatible materials:	Isocyanates and other chemicals that react with hydroxyl groups.
Hazardous decomposition products:	When burned, CO, CO ₂ , NO _x aliphatic fragments, halogens, halogen acids, and possibly carbonyl halides.

Section 11: Toxicological Information

Acute toxicity:	May cause skin irritation
Chronic toxicity:	Not available
Likely routes of exposure:	Skin
Symptoms related to physical, chemical and toxicological characteristics:	May cause skin irritation
Delayed and immediate effects and chronic effects from short and long-term exposure:	May cause skin irritation; avoid contact with eyes
Numerical toxicity measures:	Not available

Section 12: Ecological Information

Ecotoxicity:	Not a marine pollutant
Persistence and degradability:	No known significant effects
Bioaccumulative potential:	Does not bioaccumulate
Mobility in soil:	

Section 13: Disposal

Waste disposal:	R component drums can be sent to drum reconditioners or disposed of as ordinary industrial waste in compliance with pertinent regulations
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Section 14: Transport

UN number:	Not regulated
UN Proper shipping name:	Not regulated
Transport Hazard class(es):	Not regulated
Packing group, if applicable:	Not regulated
Marine pollutant (YorN):	N
Special precautions:	None



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Section 15: Regulatory

Relevant safety, health, and environmental regulations

Inventory Status:	All components TSCA listed
US Regulations:	No ingredients listed
US Superfund Amendments and Reauthorization Act (SARA) Title III Section 313 information:	No ingredients listed

Section 16: Other

SDS Preparation Date:	06/26/2014
Revision Date:	10/27/2017

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Section 1: Identification

Product Identifier

Trade Name: B-11-016 G&M series
Chemical Name: Polyurethane Resin
Recommended Use: Component for the manufacture of Polyurethanes
Restrictions on Use:

Chemical Manufacturer Information

Name: NCFI Polyurethanes
Address: 1515 Carter St Mount Airy, NC 27030
Website: www.NCFI.com
Phone: (800) 346-8229
Fax: (336) 789-9586
Emergency Phone: CHEMTREC: 800-424-9300

Section 2: Hazard Identification

Classification of the substance or mixture:

GHS Classification:	
• Skin irritation, Category 3	• Eye irritation, Category 2

GHS Labeling:



Warning

Hazard Statements:	
• May cause skin irritation	• May cause eye irritation
• May cause respiratory irritation	

Precautionary Statements:	
• Do not breathe fume/gas/mist/vapors/spray	• Wear protective gloves/eye protection/face protection
• IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.	• IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
• IF ON SKIN: Wash with plenty of soap and water	

Other Hazards:



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Section 3: Composition

Hazardous Components

Type of product: Mixture

CAS#	Weight %	Name
460-73-1	12%	1,1,1,3,3-Pentafluoropropane (CF ₃ CH ₂ CHF ₂ or HFC-245fa)
Proprietary	<4	Tertiary amine catalysts
156-60-5	<4	Trans-1,2-Dichloroethylene

Section 4: First Aid Measures

Inhalation:	Move to fresh air if symptoms develop. If breathing is difficult, give oxygen and call physician.
Eye Contact:	Flush with water for at least 15 minutes. See a physician if irritation develops.
Ingestion:	Do not induce vomiting unless told to do so by a medical professional.
Most Important symptoms and effects, acute and delayed:	May cause skin or eye irritation upon contact. Avoid breathing vapors. The dense vapors can displace and reduce breathing air in confined or unventilated spaces causing asphyxiation. Overexposure may cause tremors, confusion, irritation, and may result in cardiac sensitization.
Indication of immediate medical attention and special treatment, if applicable:	N/A
Skin Contact:	Wash with soap and water at first opportunity.

Section 5: Fire-Fighting Measures

Suitable extinguishing media:	Water, dry chemicals, CO ₂
Unsuitable extinguishing media:	None
Special hazards arising from the chemical:	Overheated containers may rupture due to pressure produced by CF ₃ CH ₂ CHF ₂ . CF ₃ CH ₂ CHF ₂ burns to form acids and noxious gases.
Precautions for fire-fighters:	A self-contained breathing apparatus should be worn to protect against toxic and irritating vapors.

Section 6: Accidental Release Measures

Personal precautions, protective equipment, and emergency procedures:	Clear area. Ensure adequate ventilation. Wear suitable personal protective clothing and equipment.
Environmental precautions:	Do not discharge into drains/surface waters/groundwater
Methods and material for containment and cleanup:	Absorb with sawdust, etc., and shovel into container. Waste material should be disposed of under conditions which meet federal, state, and local environmental regulations.



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Section 7: Handling and Storage

Precautions for safe handling:	Store between 65°F and 85°F out of sunlight. Relieve pressure slowly when opening container. Under no circumstances should empty drums be burned or cut open with an electric or gas torch.
Conditions for safe storage, including any incompatibilities:	Keep tightly sealed.

Section 8: Exposure Controls and PPE

Exposure Limits

Component:	Type	Value
1,1,1,3,3-Pentafluoropropane (CF ₃ CH ₂ CHF ₂ or HFC-245fa)	TWA	300ppm recommended
Tertiary Amine Catalysts ¹	TWA	None established
Trans-1,2-Dichloroethylene	TWA	200ppm

¹Not listed as a carcinogen (NTA, IARC, OSHA)

Exposure Controls

Respiratory Protection:	The specific respirator selected must be based on contamination levels of this material found in the workplace and the working limits of the respirator. A supplied air, full-face mask, positive pressure or continuous flow respirator or a supplied air hood is required when airborne concentrations are unknown or exceed threshold limit values. A positive pressure, self-contained breathing apparatus can be used in emergencies or other unusual situations. Full-face air purifying respirators equipped with organic vapor cartridges can be used in certain situations, <i>see OSHA standard 29CFR 1910.134</i> . All equipment must be NIOSH approved and maintained.
Hand, eye, skin, body protection:	Wear goggles or chemical safety glasses and chemically resistant rubber or plastic gloves. Avoid eye and skin contact. Eye wash system and showers should be available.

Section 9: Physical and Chemical Properties

Basic chemical and physical properties

Appearance:	Liquid	Flammability:	N/A
Color:	Green	Upper/lower flammability or explosive limits:	N/A
Odor:	Ethereal odor	Vapor pressure:	N/A
Odor threshold:	N/A	Vapor density:	N/A
pH:	N/A	Relative density:	1.23g/mL
Melting pt/freezing pt:	<32°F	Solubility(ies):	Slightly soluble in water
Boiling pt/boiling range:	60°F	Partition coefficient (n-octanol/water):	N/A
Flash point:	>200°F	Auto-ignition temperature:	>500°F
Evaporation rate:	Slower than ether	Decomposition temperature:	>500°F



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Section 10: Stability and Reactivity

Chemical stability:	Stable
Possibility of hazardous reactions:	N/A
Conditions to avoid:	Temperatures over 85°F
Incompatible materials:	Isocyanates and other chemicals that react with hydroxyl groups.
Hazardous decomposition products:	When burned, CO, CO ₂ , NO _x aliphatic fragments, halogens, halogen acids, and possibly carbonyl halides.

Section 11: Toxicological Information

Acute toxicity:	May cause skin irritation
Chronic toxicity:	Not available
Likely routes of exposure:	Skin
Symptoms related to physical, chemical and toxicological characteristics:	May cause skin irritation
Delayed and immediate effects and chronic effects from short and long-term exposure:	May cause skin irritation; avoid contact with eyes
Numerical toxicity measures:	Not available

Section 12: Ecological Information

Ecotoxicity:	Not a marine pollutant
Persistence and degradability:	No known significant effects
Bioaccumulative potential:	Does not bioaccumulate
Mobility in soil:	

Section 13: Disposal

Waste disposal:	R component drums can be sent to drum reconditioners or disposed of as ordinary industrial waste in compliance with pertinent regulations
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Section 14: Transport

UN number:	Not regulated
UN Proper shipping name:	Not regulated
Transport Hazard class(es):	Not regulated
Packing group, if applicable:	Not regulated
Marine pollutant (YorN):	N
Special precautions:	None



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Section 15: Regulatory

Relevant safety, health, and environmental regulations

Inventory Status:	All components TSCA listed
US Regulations:	No ingredients listed
US Superfund Amendments and Reauthorization Act (SARA) Title III Section 313 information:	No ingredients listed

Section 16: Other

SDS Preparation Date:	06/26/2014
Revision Date:	10/27/2017

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Section 1: Identification

Product Identifier

Trade Name: B-11-017 G&M series
Chemical Name: Polyurethane Resin
Recommended Use: Component for the manufacture of Polyurethanes
Restrictions on Use:

Chemical Manufacturer Information

Name:	NCFI Polyurethanes	Phone:	(800) 346-8229
Address:	1515 Carter St Mount Airy, NC 27030	Fax:	(336) 789-9586
Website:	www.NCFI.com	Emergency Phone:	CHEMTREC: 800-424-9300

Section 2: Hazard Identification

Classification of the substance or mixture:

GHS Classification:	
• Skin irritation, Category 3	• Eye irritation, Category 2

GHS Labeling:



Warning

Hazard Statements:	
• May cause skin irritation	• May cause eye irritation
• May cause respiratory irritation	

Precautionary Statements:	
• Do not breathe fume/gas/mist/vapors/spray	• Wear protective gloves/eye protection/face protection
• IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.	• IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
• IF ON SKIN: Wash with plenty of soap and water	

Other Hazards:



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Section 3: Composition

Hazardous Components

Type of product: Mixture

CAS#	Weight %	Name
460-73-1	12%	1,1,1,3,3-Pentafluoropropane (CF ₃ CH ₂ CHF ₂ or HFC-245fa)
Proprietary	<4	Tertiary amine catalysts
156-60-5	<4	Trans-1,2-Dichloroethylene

Section 4: First Aid Measures

Inhalation:	Move to fresh air if symptoms develop. If breathing is difficult, give oxygen and call physician.
Eye Contact:	Flush with water for at least 15 minutes. See a physician if irritation develops.
Ingestion:	Do not induce vomiting unless told to do so by a medical professional.
Most Important symptoms and effects, acute and delayed:	May cause skin or eye irritation upon contact. Avoid breathing vapors. The dense vapors can displace and reduce breathing air in confined or unventilated spaces causing asphyxiation. Overexposure may cause tremors, confusion, irritation, and may result in cardiac sensitization.
Indication of immediate medical attention and special treatment, if applicable:	N/A
Skin Contact:	Wash with soap and water at first opportunity.

Section 5: Fire-Fighting Measures

Suitable extinguishing media:	Water, dry chemicals, CO ₂
Unsuitable extinguishing media:	None
Special hazards arising from the chemical:	Overheated containers may rupture due to pressure produced by CF ₃ CH ₂ CHF ₂ . CF ₃ CH ₂ CHF ₂ burns to form acids and noxious gases.
Precautions for fire-fighters:	A self-contained breathing apparatus should be worn to protect against toxic and irritating vapors.

Section 6: Accidental Release Measures

Personal precautions, protective equipment, and emergency procedures:	Clear area. Ensure adequate ventilation. Wear suitable personal protective clothing and equipment.
Environmental precautions:	Do not discharge into drains/surface waters/groundwater
Methods and material for containment and cleanup:	Absorb with sawdust, etc., and shovel into container. Waste material should be disposed of under conditions which meet federal, state, and local environmental regulations.



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Section 7: Handling and Storage

Precautions for safe handling:	Store between 65°F and 85°F out of sunlight. Relieve pressure slowly when opening container. Under no circumstances should empty drums be burned or cut open with an electric or gas torch.
Conditions for safe storage, including any incompatibilities:	Keep tightly sealed.

Section 8: Exposure Controls and PPE

Exposure Limits

Component:	Type	Value
1,1,1,3,3-Pentafluoropropane (CF ₃ CH ₂ CHF ₂ or HFC-245fa)	TWA	300ppm recommended
Tertiary Amine Catalysts ¹	TWA	None established
Trans-1,2-Dichloroethylene	TWA	200ppm

¹Not listed as a carcinogen (NTA, IARC, OSHA)

Exposure Controls

Respiratory Protection:	The specific respirator selected must be based on contamination levels of this material found in the workplace and the working limits of the respirator. A supplied air, full-face mask, positive pressure or continuous flow respirator or a supplied air hood is required when airborne concentrations are unknown or exceed threshold limit values. A positive pressure, self-contained breathing apparatus can be used in emergencies or other unusual situations. Full-face air purifying respirators equipped with organic vapor cartridges can be used in certain situations, <i>see OSHA standard 29CFR 1910.134</i> . All equipment must be NIOSH approved and maintained.
Hand, eye, skin, body protection:	Wear goggles or chemical safety glasses and chemically resistant rubber or plastic gloves. Avoid eye and skin contact. Eye wash system and showers should be available.

Section 9: Physical and Chemical Properties

Basic chemical and physical properties

Appearance:	Liquid	Flammability:	N/A
Color:	Green	Upper/lower flammability or explosive limits:	N/A
Odor:	Ethereal odor	Vapor pressure:	N/A
Odor threshold:	N/A	Vapor density:	N/A
pH:	N/A	Relative density:	1.23g/mL
Melting pt/freezing pt:	<32°F	Solubility(ies):	Slightly soluble in water
Boiling pt/boiling range:	60°F	Partition coefficient (n-octanol/water):	N/A
Flash point:	>200°F	Auto-ignition temperature:	>500°F
Evaporation rate:	Slower than ether	Decomposition temperature:	>500°F



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Section 10: Stability and Reactivity

Chemical stability:	Stable
Possibility of hazardous reactions:	N/A
Conditions to avoid:	Temperatures over 85°F
Incompatible materials:	Isocyanates and other chemicals that react with hydroxyl groups.
Hazardous decomposition products:	When burned, CO, CO ₂ , NO _x aliphatic fragments, halogens, halogen acids, and possibly carbonyl halides.

Section 11: Toxicological Information

Acute toxicity:	May cause skin irritation
Chronic toxicity:	Not available
Likely routes of exposure:	Skin
Symptoms related to physical, chemical and toxicological characteristics:	May cause skin irritation
Delayed and immediate effects and chronic effects from short and long-term exposure:	May cause skin irritation; avoid contact with eyes
Numerical toxicity measures:	Not available

Section 12: Ecological Information

Ecotoxicity:	Not a marine pollutant
Persistence and degradability:	No known significant effects
Bioaccumulative potential:	Does not bioaccumulate
Mobility in soil:	

Section 13: Disposal

Waste disposal:	R component drums can be sent to drum reconditioners or disposed of as ordinary industrial waste in compliance with pertinent regulations
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Section 14: Transport

UN number:	Not regulated
UN Proper shipping name:	Not regulated
Transport Hazard class(es):	Not regulated
Packing group, if applicable:	Not regulated
Marine pollutant (YorN):	N
Special precautions:	None



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Section 15: Regulatory

Relevant safety, health, and environmental regulations

Inventory Status:	All components TSCA listed
US Regulations:	No ingredients listed
US Superfund Amendments and Reauthorization Act (SARA) Title III Section 313 information:	No ingredients listed

Section 16: Other

SDS Preparation Date:	06/26/2014
Revision Date:	10/27/2017

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Section 1: Identification

Product Identifier

Trade Name: B-11-033
Chemical Name: Polyurethane Resin
Recommended Use: Component for the manufacture of Polyurethanes
Restrictions on Use:

Chemical Manufacturer Information

Name:	NCFI Polyurethanes	Phone:	(800) 346-8229
Address:	1515 Carter St Mount Airy, NC 27030	Fax:	(336) 789-9586
Website:	www.NCFI.com	Emergency Phone:	CHEMTREC: 800-424-9300

Section 2: Hazard Identification

Classification of the substance or mixture:

GHS Classification:	
• Skin irritation, Category 3	• Eye irritation, Category 2

GHS Labeling:



Warning

Hazard Statements:	
• May cause skin irritation	• May cause eye irritation
• May cause respiratory irritation	

Precautionary Statements:	
• Do not breathe fume/gas/mist/vapors/spray	• Wear protective gloves/eye protection/face protection
• IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.	• IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
• IF ON SKIN: Wash with plenty of soap and water	

Other Hazards:



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Section 3: Composition

Hazardous Components

Type of product: Mixture

CAS#	Weight %	Name
102687-65-0	12-15%	Trans-1-Chloro-3,3,3-trifluoropropene ($\text{CF}_3\text{HC}=\text{CHCl}$ or HFO-1233zd)
Proprietary	2 – 5%	Tertiary amine catalysts
Proprietary	< 0.5%	Organometallic catalyst

Section 4: First Aid Measures

Inhalation:	Move to fresh air if symptoms develop. If breathing is difficult, give oxygen and call physician.
Eye Contact:	Flush with water for at least 15 minutes. See a physician if irritation develops.
Ingestion:	Do not induce vomiting unless told to do so by a medical professional.
Most Important symptoms and effects, acute and delayed:	May cause skin or eye irritation upon contact. Avoid breathing vapors. The dense vapors can displace and reduce breathing air in confined or unventilated spaces causing asphyxiation. Overexposure may cause tremors, confusion, irritation, and may result in cardiac sensitization.
Indication of immediate medical attention and special treatment, if applicable:	N/A
Skin Contact:	Wash with soap and water at first opportunity.

Section 5: Fire-Fighting Measures

Suitable extinguishing media:	Water, dry chemicals, CO_2
Unsuitable extinguishing media:	None
Special hazards arising from the chemical:	Overheated containers may rupture due to pressure produced by $\text{CF}_3\text{HC}=\text{CHCl}$. $\text{CF}_3\text{HC}=\text{CHCl}$ burns to form acids and noxious gases.
Precautions for fire-fighters:	A self-contained breathing apparatus should be worn to protect against toxic and irritating vapors.

Section 6: Accidental Release Measures

Personal precautions, protective equipment, and emergency procedures:	Clear area. Ensure adequate ventilation. Wear suitable personal protective clothing and equipment.
Environmental precautions:	Do not discharge into drains/surface waters/groundwater
Methods and material for containment and cleanup:	Absorb with sawdust, etc., and shovel into container. Waste material should be disposed of under conditions which meet federal, state, and local environmental regulations.



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Section 7: Handling and Storage

Precautions for safe handling:	Store between 65°F and 85°F out of sunlight. Relieve pressure slowly when opening container. Under no circumstances should empty drums be burned or cut open with an electric or gas torch.
Conditions for safe storage, including any incompatibilities:	Keep tightly sealed.

Section 8: Exposure Controls and PPE

Exposure Limits

Component:	Type	Value
Trans-1-Chloro-3,3,3-trifluoropropene ¹ (CF ₃ HC=CHCl or HFO-1233zd)	TWA	300ppm recommended
Tertiary Amine Catalysts ¹		None established
Organometallic catalysts ¹		None established

¹Not listed as a carcinogen (NTA, IARC, OSHA)

Exposure Controls

Respiratory Protection:	The specific respirator selected must be based on contamination levels of this material found in the workplace and the working limits of the respirator. A supplied air, full-face mask, positive pressure or continuous flow respirator or a supplied air hood is required when airborne concentrations are unknown or exceed threshold limit values. A positive pressure, self-contained breathing apparatus can be used in emergencies or other unusual situations. Full-face air purifying respirators equipped with organic vapor cartridges can be used in certain situations, <i>see OSHA standard 29CFR 1910.134</i> . All equipment must be NIOSH approved and maintained.
Hand, eye, skin, body protection:	Wear goggles or chemical safety glasses and chemically resistant rubber or plastic gloves. Avoid eye and skin contact. Eye wash system and showers should be available.

Section 9: Physical and Chemical Properties

Basic chemical and physical properties

Appearance:	Liquid	Flammability:	N/A
Color:	Light Brown	Upper/lower flammability or explosive limits:	N/A
Odor:	Ethereal odor	Vapor pressure:	N/A
Odor threshold:	N/A	Vapor density:	N/A
pH:	N/A	Relative density:	1.20g/mL
Melting pt/freezing pt:	<32°F	Solubility(ies):	Slightly soluble in water
Boiling pt/boiling range:	66°F	Partition coefficient (n-octanol/water):	N/A
Flash point:	>200°F	Auto-ignition temperature:	>500°F
Evaporation rate:	Slower than ether	Decomposition temperature:	>500°F



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Section 10: Stability and Reactivity

Chemical stability:	Stable
Possibility of hazardous reactions:	N/A
Conditions to avoid:	Temperatures over 85°F
Incompatible materials:	Isocyanates and other chemicals that react with hydroxyl groups.
Hazardous decomposition products:	When burned, CO, CO ₂ , NO _x aliphatic fragments, halogens, halogen acids, and possibly carbonyl halides.

Section 11: Toxicological Information

Acute toxicity:	May cause skin irritation
Chronic toxicity:	Not available
Likely routes of exposure:	Skin
Symptoms related to physical, chemical and toxicological characteristics:	May cause skin irritation
Delayed and immediate effects and chronic effects from short and long-term exposure:	May cause skin irritation; avoid contact with eyes
Numerical toxicity measures:	Not available

Section 12: Ecological Information

Ecotoxicity:	Not a marine pollutant
Persistence and degradability:	No known significant effects
Bioaccumulative potential:	Does not bioaccumulate
Mobility in soil:	

Section 13: Disposal

Waste disposal:	R component drums can be sent to drum reconditioners or disposed of as ordinary industrial waste in compliance with pertinent regulations
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Section 14: Transport

UN number:	Not regulated
UN Proper shipping name:	Not regulated
Transport Hazard class(es):	Not regulated
Packing group, if applicable:	Not regulated
Marine pollutant (YorN):	N
Special precautions:	None



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Section 15: Regulatory

Relevant safety, health, and environmental regulations

Inventory Status:	All components TSCA listed
US Regulations:	No ingredients listed
US Superfund Amendments and Reauthorization Act (SARA) Title III Section 313 information:	No ingredients listed

Section 16: Other

SDS Preparation Date:	04/04/2017
Revision Date:	10/27/2017

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Section 1: Identification

Product Identifier

Trade Name: B-11-035
Chemical Name: Polyurethane Resin
Recommended Use: Component for the manufacture of Polyurethanes
Restrictions on Use:

Chemical Manufacturer Information

Name:	NCFI Polyurethanes	Phone:	(800) 346-8229
Address:	1515 Carter St Mount Airy, NC 27030	Fax:	(336) 789-9586
Website:	www.NCFI.com	Emergency Phone:	CHEMTREC: 800-424-9300

Section 2: Hazard Identification

Classification of the substance or mixture:

GHS Classification:	
• Skin irritation, Category 3	• Eye irritation, Category 2

GHS Labeling:



Warning

Hazard Statements:	
• May cause skin irritation	• May cause eye irritation
• May cause respiratory irritation	

Precautionary Statements:	
• Do not breathe fume/gas/mist/vapors/spray	• Wear protective gloves/eye protection/face protection
• IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.	• IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
• IF ON SKIN: Wash with plenty of soap and water	

Other Hazards:



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Section 3: Composition

Hazardous Components

Type of product: Mixture

CAS#	Weight %	Name
102687-65-0	< 10%	Trans-1-Chloro-3,3,3-trifluoropropene ($\text{CF}_3\text{HC}=\text{CHCl}$ or HFO-1233zd)
Proprietary	2 – 5%	Tertiary amine catalysts
Proprietary	< 0.5%	Organometallic catalyst

Section 4: First Aid Measures

Inhalation:	Move to fresh air if symptoms develop. If breathing is difficult, give oxygen and call physician.
Eye Contact:	Flush with water for at least 15 minutes. See a physician if irritation develops.
Ingestion:	Do not induce vomiting unless told to do so by a medical professional.
Most Important symptoms and effects, acute and delayed:	May cause skin or eye irritation upon contact. Avoid breathing vapors. The dense vapors can displace and reduce breathing air in confined or unventilated spaces causing asphyxiation. Overexposure may cause tremors, confusion, irritation, and may result in cardiac sensitization.
Indication of immediate medical attention and special treatment, if applicable:	N/A
Skin Contact:	Wash with soap and water at first opportunity.

Section 5: Fire-Fighting Measures

Suitable extinguishing media:	Water, dry chemicals, CO_2
Unsuitable extinguishing media:	None
Special hazards arising from the chemical:	Overheated containers may rupture due to pressure produced by $\text{CF}_3\text{HC}=\text{CHCl}$. $\text{CF}_3\text{HC}=\text{CHCl}$ burns to form acids and noxious gases.
Precautions for fire-fighters:	A self-contained breathing apparatus should be worn to protect against toxic and irritating vapors.

Section 6: Accidental Release Measures

Personal precautions, protective equipment, and emergency procedures:	Clear area. Ensure adequate ventilation. Wear suitable personal protective clothing and equipment.
Environmental precautions:	Do not discharge into drains/surface waters/groundwater
Methods and material for containment and cleanup:	Absorb with sawdust, etc., and shovel into container. Waste material should be disposed of under conditions which meet federal, state, and local environmental regulations.



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Section 7: Handling and Storage

Precautions for safe handling:	Store between 65°F and 85°F out of sunlight. Relieve pressure slowly when opening container. Under no circumstances should empty drums be burned or cut open with an electric or gas torch.
Conditions for safe storage, including any incompatibilities:	Keep tightly sealed.

Section 8: Exposure Controls and PPE

Exposure Limits

Component:	Type	Value
Trans-1-Chloro-3,3,3-trifluoropropene ¹ (CF ₃ HC=CHCl or HFO-1233zd)	TWA	300ppm recommended
Tertiary Amine Catalysts ¹		None established
Organometallic catalysts ¹		None established

¹Not listed as a carcinogen (NTA, IARC, OSHA)

Exposure Controls

Respiratory Protection:	The specific respirator selected must be based on contamination levels of this material found in the workplace and the working limits of the respirator. A supplied air, full-face mask, positive pressure or continuous flow respirator or a supplied air hood is required when airborne concentrations are unknown or exceed threshold limit values. A positive pressure, self-contained breathing apparatus can be used in emergencies or other unusual situations. Full-face air purifying respirators equipped with organic vapor cartridges can be used in certain situations, <i>see OSHA standard 29CFR 1910.134</i> . All equipment must be NIOSH approved and maintained.
Hand, eye, skin, body protection:	Wear goggles or chemical safety glasses and chemically resistant rubber or plastic gloves. Avoid eye and skin contact. Eye wash system and showers should be available.

Section 9: Physical and Chemical Properties

Basic chemical and physical properties

Appearance:	Liquid	Flammability:	N/A
Color:	Light Brown	Upper/lower flammability or explosive limits:	N/A
Odor:	Ethereal odor	Vapor pressure:	N/A
Odor threshold:	N/A	Vapor density:	N/A
pH:	N/A	Relative density:	1.20g/mL
Melting pt/freezing pt:	<32°F	Solubility(ies):	Slightly soluble in water
Boiling pt/boiling range:	66°F	Partition coefficient (n-octanol/water):	N/A
Flash point:	>200°F	Auto-ignition temperature:	>500°F
Evaporation rate:	Slower than ether	Decomposition temperature:	>500°F



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Section 10: Stability and Reactivity

Chemical stability:	Stable
Possibility of hazardous reactions:	N/A
Conditions to avoid:	Temperatures over 85°F
Incompatible materials:	Isocyanates and other chemicals that react with hydroxyl groups.
Hazardous decomposition products:	When burned, CO, CO ₂ , NO _x aliphatic fragments, halogens, halogen acids, and possibly carbonyl halides.

Section 11: Toxicological Information

Acute toxicity:	May cause skin irritation
Chronic toxicity:	Not available
Likely routes of exposure:	Skin
Symptoms related to physical, chemical and toxicological characteristics:	May cause skin irritation
Delayed and immediate effects and chronic effects from short and long-term exposure:	May cause skin irritation; avoid contact with eyes
Numerical toxicity measures:	Not available

Section 12: Ecological Information

Ecotoxicity:	Not a marine pollutant
Persistence and degradability:	No known significant effects
Bioaccumulative potential:	Does not bioaccumulate
Mobility in soil:	

Section 13: Disposal

Waste disposal:	R component drums can be sent to drum reconditioners or disposed of as ordinary industrial waste in compliance with pertinent regulations
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Section 14: Transport

UN number:	Not regulated
UN Proper shipping name:	Not regulated
Transport Hazard class(es):	Not regulated
Packing group, if applicable:	Not regulated
Marine pollutant (Y or N):	N
Special precautions:	None



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Section 15: Regulatory

Relevant safety, health, and environmental regulations

Inventory Status:	All components TSCA listed
US Regulations:	No ingredients listed
US Superfund Amendments and Reauthorization Act (SARA) Title III Section 313 information:	No ingredients listed

Section 16: Other

SDS Preparation Date:	03/24/2017
Revision Date:	10/27/2017

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Section 1: Identification

Product Identifier

Trade Name: B-11-036
Chemical Name: Polyurethane Resin
Recommended Use: Component for the manufacture of Polyurethanes
Restrictions on Use:

Chemical Manufacturer Information

Name:	NCFI Polyurethanes	Phone:	(800) 346-8229
Address:	1515 Carter St Mount Airy, NC 27030	Fax:	(336) 789-9586
Website:	www.NCFI.com	Emergency Phone:	CHEMTREC: 800-424-9300

Section 2: Hazard Identification

Classification of the substance or mixture:

GHS Classification:	
• Skin irritation, Category 3	• Eye irritation, Category 2

GHS Labeling:



Warning

Hazard Statements:	
• May cause skin irritation	• May cause eye irritation
• May cause respiratory irritation	

Precautionary Statements:	
• Do not breathe fume/gas/mist/vapors/spray	• Wear protective gloves/eye protection/face protection
• IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.	• IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
• IF ON SKIN: Wash with plenty of soap and water	

Other Hazards:



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Section 3: Composition

Hazardous Components

Type of product: Mixture

CAS#	Weight %	Name
102687-65-0	5-15%	Trans-1-Chloro-3,3,3-trifluoropropene ($\text{CF}_3\text{HC}=\text{CHCl}$ or HFO-1233zd)
156-60-5	< 3%	Trans-1,2-Dichloroethylene
Proprietary	3 – 6%	Tertiary amine catalysts
Proprietary	< 0.5%	Organometallic catalyst

Section 4: First Aid Measures

Inhalation:	Move to fresh air if symptoms develop. If breathing is difficult, give oxygen and call physician.
Eye Contact:	Flush with water for at least 15 minutes. See a physician if irritation develops.
Ingestion:	Do not induce vomiting unless told to do so by a medical professional.
Most Important symptoms and effects, acute and delayed:	May cause skin or eye irritation upon contact. Avoid breathing vapors. The dense vapors can displace and reduce breathing air in confined or unventilated spaces causing asphyxiation. Overexposure may cause tremors, confusion, irritation, and may result in cardiac sensitization.
Indication of immediate medical attention and special treatment, if applicable:	N/A
Skin Contact:	Wash with soap and water at first opportunity.

Section 5: Fire-Fighting Measures

Suitable extinguishing media:	Water, dry chemicals, CO_2
Unsuitable extinguishing media:	None
Special hazards arising from the chemical:	Overheated containers may rupture due to pressure produced by $\text{CF}_3\text{HC}=\text{CHCl}$. $\text{CF}_3\text{HC}=\text{CHCl}$ burns to form acids and noxious gases.
Precautions for fire-fighters:	A self-contained breathing apparatus should be worn to protect against toxic and irritating vapors.

Section 6: Accidental Release Measures

Personal precautions, protective equipment, and emergency procedures:	Clear area. Ensure adequate ventilation. Wear suitable personal protective clothing and equipment.
Environmental precautions:	Do not discharge into drains/surface waters/groundwater
Methods and material for containment and cleanup:	Absorb with sawdust, etc., and shovel into container. Waste material should be disposed of under conditions which meet federal, state, and local environmental regulations.



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Section 7: Handling and Storage

Precautions for safe handling:	Store between 65°F and 85°F out of sunlight. Relieve pressure slowly when opening container. Under no circumstances should empty drums be burned or cut open with an electric or gas torch.
Conditions for safe storage, including any incompatibilities:	Keep tightly sealed.

Section 8: Exposure Controls and PPE

Exposure Limits

Component:	Type	Value
Trans-1-Chloro-3,3,3-trifluoropropene ¹ (CF ₃ HC=CHCl or HFO-1233zd)	TWA	300ppm recommended
Tertiary Amine Catalysts ¹		None established
Organometallic catalysts ¹		None established

¹Not listed as a carcinogen (NTA, IARC, OSHA)

Exposure Controls

Respiratory Protection:	The specific respirator selected must be based on contamination levels of this material found in the workplace and the working limits of the respirator. A supplied air, full-face mask, positive pressure or continuous flow respirator or a supplied air hood is required when airborne concentrations are unknown or exceed threshold limit values. A positive pressure, self-contained breathing apparatus can be used in emergencies or other unusual situations. Full-face air purifying respirators equipped with organic vapor cartridges can be used in certain situations, <i>see OSHA standard 29CFR 1910.134</i> . All equipment must be NIOSH approved and maintained.
Hand, eye, skin, body protection:	Wear goggles or chemical safety glasses and chemically resistant rubber or plastic gloves. Avoid eye and skin contact. Eye wash system and showers should be available.

Section 9: Physical and Chemical Properties

Basic chemical and physical properties

Appearance:	Liquid	Flammability:	N/A
Color:	Dark Blue	Upper/lower flammability or explosive limits:	N/A
Odor:	Ethereal odor	Vapor pressure:	N/A
Odor threshold:	N/A	Vapor density:	N/A
pH:	N/A	Relative density:	1.20g/mL
Melting pt/freezing pt:	<32°F	Solubility(ies):	Slightly soluble in water
Boiling pt/boiling range:	66°F	Partition coefficient (n-octanol/water):	N/A
Flash point:	>200°F	Auto-ignition temperature:	>500°F
Evaporation rate:	Slower than ether	Decomposition temperature:	>500°F



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Section 10: Stability and Reactivity

Chemical stability:	Stable
Possibility of hazardous reactions:	N/A
Conditions to avoid:	Temperatures over 85°F
Incompatible materials:	Isocyanates and other chemicals that react with hydroxyl groups.
Hazardous decomposition products:	When burned, CO, CO ₂ , NO _x aliphatic fragments, halogens, halogen acids, and possibly carbonyl halides.

Section 11: Toxicological Information

Acute toxicity:	May cause skin irritation
Chronic toxicity:	Not available
Likely routes of exposure:	Skin
Symptoms related to physical, chemical and toxicological characteristics:	May cause skin irritation
Delayed and immediate effects and chronic effects from short and long-term exposure:	May cause skin irritation; avoid contact with eyes
Numerical toxicity measures:	Not available

Section 12: Ecological Information

Ecotoxicity:	Not a marine pollutant
Persistence and degradability:	No known significant effects
Bioaccumulative potential:	Does not bioaccumulate
Mobility in soil:	

Section 13: Disposal

Waste disposal:	B component drums can be sent to drum reconditioners or disposed of as ordinary industrial waste in compliance with pertinent regulations
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Section 14: Transport

UN number:	Not regulated
UN Proper shipping name:	Not regulated
Transport Hazard class(es):	Not regulated
Packing group, if applicable:	Not regulated
Marine pollutant (Y or N):	N
Special precautions:	None



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Section 15: Regulatory

Relevant safety, health, and environmental regulations

Inventory Status:	All components TSCA listed
US Regulations:	No ingredients listed
US Superfund Amendments and Reauthorization Act (SARA) Title III Section 313 information:	No ingredients listed

Section 16: Other

SDS Preparation Date:	05/08/2017
Revision Date:	10/23/2018

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Section 1: Identification

Product Identifier

Trade Name: B-11-037
Chemical Name: Polyurethane Resin
Recommended Use: Component for the manufacture of Polyurethanes
Restrictions on Use:

Chemical Manufacturer Information

Name:	NCFI Polyurethanes	Phone:	(800) 346-8229
Address:	1515 Carter St Mount Airy, NC 27030	Fax:	(336) 789-9586
Website:	www.NCFI.com	Emergency Phone:	CHEMTREC: 800-424-9300

Section 2: Hazard Identification

Classification of the substance or mixture:

GHS Classification:	
• Skin irritation, Category 3	• Eye irritation, Category 2

GHS Labeling:



Warning

Hazard Statements:	
• May cause skin irritation	• May cause eye irritation
• May cause respiratory irritation	

Precautionary Statements:	
• Do not breathe fume/gas/mist/vapors/spray	• Wear protective gloves/eye protection/face protection
• IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.	• IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
• IF ON SKIN: Wash with plenty of soap and water	

Other Hazards:



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Section 3: Composition

Hazardous Components

Type of product: Mixture

CAS#	Weight %	Name
102687-65-0	5-15%	Trans-1-Chloro-3,3,3-trifluoropropene ($\text{CF}_3\text{HC}=\text{CHCl}$ or HFO-1233zd)
156-60-5	< 3%	Trans-1,2-Dichloroethylene
Proprietary	3 – 6%	Tertiary amine catalysts
Proprietary	< 0.5%	Organometallic catalyst

Section 4: First Aid Measures

Inhalation:	Move to fresh air if symptoms develop. If breathing is difficult, give oxygen and call physician.
Eye Contact:	Flush with water for at least 15 minutes. See a physician if irritation develops.
Ingestion:	Do not induce vomiting unless told to do so by a medical professional.
Most Important symptoms and effects, acute and delayed:	May cause skin or eye irritation upon contact. Avoid breathing vapors. The dense vapors can displace and reduce breathing air in confined or unventilated spaces causing asphyxiation. Overexposure may cause tremors, confusion, irritation, and may result in cardiac sensitization.
Indication of immediate medical attention and special treatment, if applicable:	N/A
Skin Contact:	Wash with soap and water at first opportunity.

Section 5: Fire-Fighting Measures

Suitable extinguishing media:	Water, dry chemicals, CO_2
Unsuitable extinguishing media:	None
Special hazards arising from the chemical:	Overheated containers may rupture due to pressure produced by $\text{CF}_3\text{HC}=\text{CHCl}$. $\text{CF}_3\text{HC}=\text{CHCl}$ burns to form acids and noxious gases.
Precautions for fire-fighters:	A self-contained breathing apparatus should be worn to protect against toxic and irritating vapors.

Section 6: Accidental Release Measures

Personal precautions, protective equipment, and emergency procedures:	Clear area. Ensure adequate ventilation. Wear suitable personal protective clothing and equipment.
Environmental precautions:	Do not discharge into drains/surface waters/groundwater
Methods and material for containment and cleanup:	Absorb with sawdust, etc., and shovel into container. Waste material should be disposed of under conditions which meet federal, state, and local environmental regulations.



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Section 7: Handling and Storage

Precautions for safe handling:	Store between 65°F and 85°F out of sunlight. Relieve pressure slowly when opening container. Under no circumstances should empty drums be burned or cut open with an electric or gas torch.
Conditions for safe storage, including any incompatibilities:	Keep tightly sealed.

Section 8: Exposure Controls and PPE

Exposure Limits

Component:	Type	Value
Trans-1-Chloro-3,3,3-trifluoropropene ¹ (CF ₃ HC=CHCl or HFO-1233zd)	TWA	300ppm recommended
Tertiary Amine Catalysts ¹		None established
Organometallic catalysts ¹		None established

¹Not listed as a carcinogen (NTA, IARC, OSHA)

Exposure Controls

Respiratory Protection:	The specific respirator selected must be based on contamination levels of this material found in the workplace and the working limits of the respirator. A supplied air, full-face mask, positive pressure or continuous flow respirator or a supplied air hood is required when airborne concentrations are unknown or exceed threshold limit values. A positive pressure, self-contained breathing apparatus can be used in emergencies or other unusual situations. Full-face air purifying respirators equipped with organic vapor cartridges can be used in certain situations, <i>see OSHA standard 29CFR 1910.134</i> . All equipment must be NIOSH approved and maintained.
Hand, eye, skin, body protection:	Wear goggles or chemical safety glasses and chemically resistant rubber or plastic gloves. Avoid eye and skin contact. Eye wash system and showers should be available.

Section 9: Physical and Chemical Properties

Basic chemical and physical properties

Appearance:	Liquid	Flammability:	N/A
Color:	Light Brown	Upper/lower flammability or explosive limits:	N/A
Odor:	Ethereal odor	Vapor pressure:	N/A
Odor threshold:	N/A	Vapor density:	N/A
pH:	N/A	Relative density:	1.20g/mL
Melting pt/freezing pt:	<32°F	Solubility(ies):	Slightly soluble in water
Boiling pt/boiling range:	66°F	Partition coefficient (n-octanol/water):	N/A
Flash point:	>200°F	Auto-ignition temperature:	>500°F
Evaporation rate:	Slower than ether	Decomposition temperature:	>500°F



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Section 10: Stability and Reactivity

Chemical stability:	Stable
Possibility of hazardous reactions:	N/A
Conditions to avoid:	Temperatures over 85°F
Incompatible materials:	Isocyanates and other chemicals that react with hydroxyl groups.
Hazardous decomposition products:	When burned, CO, CO ₂ , NO _x aliphatic fragments, halogens, halogen acids, and possibly carbonyl halides.

Section 11: Toxicological Information

Acute toxicity:	May cause skin irritation
Chronic toxicity:	Not available
Likely routes of exposure:	Skin
Symptoms related to physical, chemical and toxicological characteristics:	May cause skin irritation
Delayed and immediate effects and chronic effects from short and long-term exposure:	May cause skin irritation; avoid contact with eyes
Numerical toxicity measures:	Not available

Section 12: Ecological Information

Ecotoxicity:	Not a marine pollutant
Persistence and degradability:	No known significant effects
Bioaccumulative potential:	Does not bioaccumulate
Mobility in soil:	

Section 13: Disposal

Waste disposal:	B component drums can be sent to drum reconditioners or disposed of as ordinary industrial waste in compliance with pertinent regulations
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Section 14: Transport

UN number:	Not regulated
UN Proper shipping name:	Not regulated
Transport Hazard class(es):	Not regulated
Packing group, if applicable:	Not regulated
Marine pollutant (Y or N):	N
Special precautions:	None



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Section 15: Regulatory

Relevant safety, health, and environmental regulations

Inventory Status:	All components TSCA listed
US Regulations:	No ingredients listed
US Superfund Amendments and Reauthorization Act (SARA) Title III Section 313 information:	No ingredients listed

Section 16: Other

SDS Preparation Date:	05/08/2017
Revision Date:	10/23/2018

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Section 1: Identification

Product Identifier

Trade Name: B-12-008
Chemical Name: Polyurethane Resin
Recommended Use: Component for the manufacture of Polyurethanes
Restrictions on Use:

Chemical Manufacturer Information

Name:	NCFI Polyurethanes	Phone:	(800) 346-8229
Address:	1515 Carter St Mount Airy, NC 27030	Fax:	(336) 789-9586
Website:	www.NCFI.com	Emergency Phone:	CHEMTREC: 800-424-9300

Section 2: Hazard Identification

Classification of the substance or mixture:

GHS Classification:	
• Skin irritation, Category 3	• Eye irritation, Category 2

Label Elements

Hazardous components which must be listed on label:	
• Tertiary Amine Catalysts	•

GHS Labeling:



WARNING

Hazard Statements:	
• May cause skin irritation	• May cause eye irritation
• May cause respiratory irritation	

Precautionary Statements:	
• Do not breathe fume/gas/mist/vapors/spray	• Wear protective gloves/eye protection/face protection
• IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.	• IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
• IF ON SKIN: Wash with plenty of soap and water	

Other Hazards:



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Section 3: Composition

Hazardous Components

Type of product: Mixture

CAS#	Weight %	Name
Proprietary	< 9	Tertiary amine catalysts

Section 4: First Aid Measures

Inhalation:	Move to fresh air if symptoms develop. If breathing is difficult, give oxygen and call physician.
Eye Contact:	Flush with water for at least 15 minutes. See a physician if irritation develops.
Ingestion:	Do not induce vomiting unless told to do so by a medical professional.
Most Important symptoms and effects, acute and delayed:	May cause skin or eye irritation upon contact. Avoid breathing vapors. The dense vapors can displace and reduce breathing air in confined or unventilated spaces causing asphyxiation. Overexposure may cause tremors, confusion, irritation, and may result in cardiac sensitization.
Indication of immediate medical attention and special treatment, if applicable:	N/A
Skin Contact:	Wash with soap and water at first opportunity.

Section 5: Fire-Fighting Measures

Suitable extinguishing media:	Water, dry chemicals, CO ₂
Unsuitable extinguishing media:	None
Special hazards arising from the chemical:	None
Precautions for fire-fighters:	A self-contained breathing apparatus should be worn to protect against toxic and irritating vapors.

Section 6: Accidental Release Measures

Personal precautions, protective equipment, and emergency procedures:	Clear area. Ensure adequate ventilation. Wear suitable personal protective clothing and equipment.
Environmental precautions:	Do not discharge into drains/surface waters/groundwater
Methods and material for containment and cleanup:	Absorb with sawdust, etc., and shovel into container. Waste material should be disposed of under conditions which meet federal, state, and local environmental regulations.



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Section 7: Handling and Storage

Precautions for safe handling:	Store between 65°F and 85°F out of sunlight. Relieve pressure slowly when opening container.
Conditions for safe storage, including any incompatibilities:	Keep tightly sealed.

Section 8: Exposure Controls and PPE

Exposure Limits

Component:	Type	Value
Tertiary Amine Catalysts ¹	TWA	None established

¹Not listed as a carcinogen (NTA, IARC, OSHA)

Exposure Controls

Respiratory Protection:	The specific respirator selected must be based on contamination levels of this material found in the workplace and the working limits of the respirator. A supplied air, full-face mask, positive pressure or continuous flow respirator or a supplied air hood is required when airborne concentrations are unknown or exceed threshold limit values. A positive pressure, self-contained breathing apparatus can be used in emergencies or other unusual situations. Full-face air purifying respirators equipped with organic vapor cartridges can be used in certain situations, <i>see OSHA standard 29CFR 1910.134</i> . All equipment must be NIOSH approved and maintained.
Hand, eye, skin, body protection:	Wear goggles or chemical safety glasses and chemically resistant rubber or plastic gloves. Avoid eye and skin contact. Eye wash system and showers should be available.

Section 9: Physical and Chemical Properties

Basic chemical and physical properties

Appearance:	Liquid	Flammability:	N/A
Color:	Amber	Upper/lower flammability or explosive limits:	N/A
Odor:	Faint ammonia odor	Vapor pressure:	N/A
Odor threshold:	N/A	Vapor density:	N/A
pH:	N/A	Relative density:	1.13 g/mL
Melting pt/freezing pt:	<32°F	Solubility(ies):	highly soluble in water
Boiling pt/boiling range:	>200°F	Partition coefficient (n-octanol/water):	N/A
Flash point:	>200°F	Auto-ignition temperature:	>500°F
Evaporation rate:	Slower than ether	Decomposition temperature:	>500°F



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Section 10: Stability and Reactivity

Chemical stability:	Stable
Possibility of hazardous reactions:	N/A
Conditions to avoid:	N/A
Incompatible materials:	Isocyanates and other chemicals that react with hydroxyl groups.
Hazardous decomposition products:	When burned, CO, CO ₂ , NO _x aliphatic fragments, halogens, halogen acids, and possibly carbonyl halides.

Section 11: Toxicological Information

Acute toxicity:	May cause skin irritation
Chronic toxicity:	Not available
Likely routes of exposure:	Skin
Symptoms related to physical, chemical and toxicological characteristics:	May cause skin irritation
Delayed and immediate effects and chronic effects from short and long-term exposure:	May cause skin irritation; avoid contact with eyes
Numerical toxicity measures:	Not available

Section 12: Ecological Information

Ecotoxicity:	Not a marine pollutant
Persistence and degradability:	No known significant effects
Bioaccumulative potential:	Does not bioaccumulate
Mobility in soil:	

Section 13: Disposal

Waste disposal:	R component drums can be sent to drum reconditioners or disposed of as ordinary industrial waste in compliance with pertinent regulations
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Section 14: Transport

UN number:	Not regulated
UN Proper shipping name:	Not regulated
Transport Hazard class(es):	Not regulated
Packing group, if applicable:	Not regulated
Marine pollutant (YorN):	N
Special precautions:	None



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Salt Lake City, UT

Section 15: Regulatory

Relevant safety, health, and environmental regulations

Inventory Status:	All components TSCA listed
US Regulations:	No ingredients listed
US Superfund Amendments and Reauthorization Act (SARA) Title III Section 313 information:	No ingredients listed

Section 16: Other

SDS Preparation Date:	07/03/2018
Revision Date:	

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