SAFETY DATA SHEET

SECTION 1- IDENTIFICATION

1.1 Product Identifier

Product Name: **GAF 2-Part Roofing Adhesive Part B**

1.2 Relevant identified uses of the substance or mixture and uses advised against:

General Use — Low pressure polyurethane roof tile adhesive, Side-B Component, for PROFESSIONAL USE ONLY

Company name GAF
1 Campus Drive
Parsippany, NJ 07054 USA
1-800–766–3411

1.3 Emergency telephone numbers:

In the U.S.A	CHEMTREC (24 hours) 1-800-424-9300
International	CHEMTREC (24 hours) 1-703-527-3887

SECTION 2- HAZARDS IDENTIFICATION

2.1 Classification of substance or mixture

Product definition: Mixture

Classification:
Acute Toxicity (oral): Category 4.
Serious Eye Damage/Irritation: Category 1.
Skin Corrosion/Irritation: Category 1B.
Specific Target Organ Toxicity (single exposure): Category 1.
Specific Target Organ Toxicity (repeated exposure): Category 1

2.2 Label elements

Labeling (Regulation (EC) No 1272/2008)
Hazard Symbols:

Signal Word: DANGER

Hazard Statements:

H302	Harmful if swallowed
H314	Causes severe skin burns and eye damage
H370	Causes damage to organs: liver, nervous system, kidney/urinary tract
H371	May cause damage to organs: cardiovascular system
H372	Causes damage to organs through prolonged or repeated exposure: liver
H373	May cause damage to organs through prolonged or repeated exposure: endocrine system

Prevention:

P260	Do not breathe dust/fume/gas/mist/vapours/spray
P264	Wash thoroughly after handling
P270	Do not eat, drink, or smoke when using this product
P280	Wear eye/face protection

Response:

P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P302+P361+P353	IF ON SKIN: Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P308+P311	IF exposed: Call a POISON CENTER or doctor/physician

Disposal:

P501 Dispose of contents/container in accordance with applicable local/regional/national/international regulations.

2.3 Hazards otherwise not classified

May cause chemical gastrointestinal burns.
14% of the mixture consists of ingredients of unknown acute oral toxicity

SECTION 3-COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances
Not applicable

3.2 Mixtures
Chemical characterization (preparation):

% by Weight	Ingredient	CAS No.
60-70*	Proprietary Polyol Blend	Trade Secret
10-30*	1,1,1,2- Tetrafluoroethane	811-97-2
1-10*	Aliphatic Hydrocarbon	Trade Secret
1-10*	Diethyltoluenediamine	68479-98-1
1-10*	Diethylene Glycol	111-46-6
1-10*	Poly(oxypropylene)diamine	9046-10-0
0.1-5*	Nitrogen	7727-37-9

The specific chemical identity and/or exact percentage (concentration) if this composition has been withheld as a trade secret.

SECTION 4- FIRST AID MEASURES

4.1 Description of first aid measures
Inhalation: Remove person to fresh air. Get medical attention.
Eye: Immediately flush eyes with large amounts of water for at least 15 minutes, holding the eyes open with fingers and occasionally lifting the upper and lower lids. Use lukewarm water if possible. If present and easy to do, remove contact lenses. If irritation persists, get medical attention.
Skin: Flush skin with large amounts of water while removing contaminated clothing. Gently wipe product from skin with a damp cloth and continue rinsing for 15 minutes. Wash clothing before reuse. Call a physician if irritation persists.
Ingestion: If swallowed, do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical advice/attention.

4.2 Most important symptoms and effects, both acute and delayed
See Section 11.1. Information on toxicological effects.

4.3 Notes to the physician
If case of an accident or if you feel unwell, seek medical advice immediately (show label or SDS if possible). Exposure may increase myocardial irritability. Do not administer sympathomimetic drugs unless absolutely necessary.

SECTION 5- FIRE FIGHTING MEASURES

5.1 Extinguishable media
Suitable methods of extinction: Use dry chemical, carbon dioxide, alcohol resistant foams and water spray
Unsuitable methods of extinction: None

5.2 Special hazards arising from the substance or mixture
Cylinders may explode due to the buildup of pressure when exposed to extreme heat. Highly toxic gases may be generated by thermal decomposition or combustion. Overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent or may be delayed. Hazardous decomposition products: Carbon monoxide, Carbon dioxide, Aldehydes, Oxides of Nitrogen.

5.3 Advice for firefighters
Keep upwind of fire. Wear full fire-fighting turn-out gear (full Bunker gear) and respiratory protection (SCBA). Use water spray to keep fire-exposed containers cool.

SECTION 6- ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Wear personal protective equipment recommended in Section 8. Isolate the hazard area and deny entry to unnecessary and unprotected personnel. 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.

6.2 Environmental precautions
Avoid dispersal of spilled material or run-off and prevent contact with soil and entry into drains, sewers or waterways.

6.3 Methods and materials for containment and cleaning up
Cover drains and contain spill. Cover spilled material with a large quantity of inert absorbent. Collect material and place into an approved, open-head metal container. Clean contaminated area with soap and water.

6.4 Reference to other sections
For indications about waste treatment, see Section 13

SECTION 7- HANDLING AND STORAGE

7.1 Precautions for safe handling
For industrial or professional use only. Observe label precautions. Do not breathe dust/fume//gas/mist/vapors/spray. Wear all appropriate protective equipment specified in Section 8. Keep containers closed when not in use.
Advice on protection against fire and explosion
Chemicals under pressure. Exposure to high temperatures can cause containers to rupture or explode.

7.2 Conditions for safe storage, including any incompatibilities
Store in a dry, well-ventilated area and away from incompatible materials (see Section 10.5). Do not store at temperatures above 95°F (35°C) or below 45°F (7.2°C). Do not expose the cylinders to open flame or temperatures above 122°F (50°C); storage at elevated temperatures can cause the container to rupture. Excessive heat can cause premature aging of components resulting in a shorter shelf life. Protect containers from physical abuse. Always store the containers in the upright position.

SECTION 8- EXPOSURE CONTROLS/ PERSONAL PROTECTION

8.1 Control Parameters

Ingredient	CAS Number	OSHA-PEL	ACGIH-TLV	Other
Diethylene Glycol	111-46-6			WEEL 10 mg/kg (50 ppm) AIHA TWA 10 mg/m^3
1,1,1,2 Tetrafluoroethane	811-97-2			WEEL 1,000 ppm AIHA TWA 4240 mg/m^3
Nitrogen	7727-37-9			Limit value not established
Diethyltoluenediamine	68479-98-1			Chemical Manufacturer: TWA 0.02 ppm (0.13 mg/ m$^{3)}$

8.2 Exposure controls:
Engineering Controls: Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or control dust/fume/gas/mist/vapors/spray. If ventilation is not adequate, use respiratory protection equipment.

Eye/face Protection: Recommend full face shield and indirect vented goggles

Hand Protection: Use chemically resistant gloves (i.e. Nitrile gloves). Nitrile/butadiene rubber, butyl rubber, polyethylene, PVC (vinyl), or neoprene gloves are also effective. Glove selection should take into account potential body reactions to certain materials and manufacturer's instructions for use. Break through time of selected gloves must be greater than the intended use period.

Other Protective Equipment: Use clothing that protects against dermal exposure. Appropriate protective clothing varies depending on the potential for exposure. To ensure proper skin protection, wear PPE in such a manner that no skin is exposed.

Respiratory Protection: An exposure assessment may be needed to decide if a respirator is required**.** If a respiratory is needed, use respirators as part of a full respiratory protection program. Based on the results of the exposure assessment, select from the following respirator type (s) to reduce inhalation exposure: Half face piece or full face piece air-purifying respirator suitable for organic vapors and

particulates. Half face piece or full face piece supplied-air respirator. For questions about suitability for a specific application, consult with your respirator manufacturer.

Hygiene Measures: An eye wash station or portable eye wash station should be in the area. Wash hands thoroughly after use, before eating, drinking or using the lavatory. Employees/Users should be educated and trained in the safe use and handling of this product.

SECTION 9- PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties	
General Physical Form	Liquid. Forms an off-white to yellowish froth when released from the container
Odor	Slight fluorocarbon odor
Odor Threshold	No data available
pH	No data available
Melting Point/Freezing Point	No data available
Initial Boiling Point and Boiling Range	0°F
Flash Point	>=200°F
Evaporation Rate	No data available
Flammability	No applicable
Lower Flammability/Explosive Limit	Not available
Upper Flammability/Explosive Limit	Not available
Vapor Pressure	85.7 psi @ 70°F
Vapor Density	No data available
Relative Density/Specific Gravity	~ 1.1 @ 25°C (Water = 1)
Solubility	Water: moderate
Partition coefficient: n-octanol/water	No data available
Auto-ignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	No data available
Oxidizing Properties	Not available
VOC Content (calculated minus exempt compounds)	Calculated at around 2 g/L, calculated SCAQMD rule 443.1 2 g/L when mixed as intended with Part A, calculated SCAQMD rule 443.1

SECTION 10- STABILITY AND REACTIVITY

10.1 Reactivity
This material may be reactive with certain agents under certain conditions- see remaining headings in this section.

10.2 Chemical stability
Stable under normal conditions of use and recommended storage conditions. See Section 7 for storage recommendations.

10.3 Possibility of hazardous reactions
Exposure to elevated temperatures can cause containers to rupture or explode. Chemicals are under pressure.

10.4 Conditions to avoid
Avoid heat and flames.

10.5 Incompatible materials
Strong acids and strong oxidizing agents

10.6 Hazardous decomposition products
None known.
Refer to section 5.2 for hazardous decomposition products during combustion

SECTION 11- TOXICOLOGICAL INFORMATION

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, , because an ingredient may be present below the threshold for labeling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

11.1. Information on Toxicological effects

Signs and Symptoms of Exposure based on test data and/or information on the components, this material may produce the following health effects:

Inhalation:
May cause additional health effects (see below)

Skin Contact:
May be harmful in contact with skin. Corrosive (Skin Burns): Signs/symptoms may include localized redness, swelling, itching, intense pain, blistering, ulceration, and tissue destruction.

Eye Contact:
Corrosive (Eye Burns): Signs/symptoms may include cloudy appearance of the cornea, chemical burns, severe pain, tearing, ulcerations, significantly impaired vision or complete loss of vision.

Ingestion:
Harmful if swallowed. Gastrointestinal Corrosion: Signs/symptoms may include severe mouth, throat and abdominal pain; nausea; vomiting; and diarrhea; blood in the feces and/or vomitus may also be seen.

Additional Health Effects:

Single exposure may cause target organ effects:
Liver effects: Signs/symptoms may include loss of appetite, weight loss, fatigue, weakness, abdominal tenderness and jaundice.

Neurological Effects: Signs/symptoms may include personality changes, lack of coordination, sensory loss, tingling or numbness of the extremities, weakness, tremors, and/or changes in blood pressure and heart rate.

Kidney/Bladder Effects: Signs/symptoms may include changes in urine production, abdominal or lower back pain, increased protein in urine, increased blood urea nitrogen (BUN), blood in urine, and painful urination.

Single exposure, above recommended guidelines, may cause:
Cardiac Sensitization**:** Signs/symptoms may include irregular heartbeat (arrhythmia), faintness, chest pain, and may be fatal.

Prolonged or repeated exposure may cause target organ effects:
Liver Effects: Signs/symptoms may include loss of appetite, weight loss, fatigue, weakness, abdominal tenderness and jaundice.

Endocrine Effects: Signs/symptoms may include disruption of gonadal, thyroid, adrenal, or pancreatic function; changes in hormone production; alterations in circulating hormone levels; and/or changes in tissue response to hormones.

Toxicological Data
If the component is disclosed in section 3 but does not appear in a table below, either no data are available for that endpoint or the data is not sufficient for classification.

Name	Route	Species	Value
Overall product	Dermal		No data available; calculated > 5,000 mg/kg
Overall product	Inhalation- Dust/Mist (4 hours)		No data available; calculated ATE > 12.5 mg/l
Overall product	Ingestion		No data available; calculated ATE 300 - 2,000 mg/kg
Polyol Blend	Dermal	Rat	LD50 > 2,000 mg/kg
Polyol Blend	Inhalation- Dust/Mist (4 hours)	Rat	LC50 > 50 mg/l
Polyol Blend	Ingestion	Rat	LD50 4,600 mg/kg
1,1,1,2-Tetrafluroethane	Inhalation- Gas (4 hours)	Rat	LC50> 359,300 ppm
Poly(oxypropylene)diamine	Dermal	Rabbit	LD50> 1,000 mg/kg
Poly(oxypropylene)diamine	Ingestion	Rat	LD50 >= 475 mg/kg
Diethylene Glycol	Ingestion	Human	LD50 estimated to be 300-2,000 mg/kg
Diethylene Glycol	Dermal	Rabbit	LD50 13,300 mg/kg
Diethylene Glycol	Inhalation- Dust/Mist (4 hours)	Rat	LC50>4,6mg/l
Nitrogen	Dermal		LD50 estimated to be >5,000 mg/kg
Nitrogen	Inhalation-Gas		LC50 estimated to be >50,000 ppm
Nitrogen	Ingestion		LD50 estimated to be >5,000 mg/kg
Diethyltoluenediamine	Dermal	Rat	LD50 > 2,000 mg/kg
Diethyltoluenediamine	Inhalation- Dust/Mist	Rat	LC50 > 0.61 mg/l
Diethyltoluenediamine	Ingestion	Rat	LD50 472 mg/kg

Skin Corrosion/Irritation

Name	Species	Value
1,1,1,2-Tetrafluroethane	Rabbit	No significant irritation
Polyol Blend	Rabbit	No significant irritation
Diethylene Glycol	Rabbit	Mild irritation
Poly(oxypropylene)diamine	Rabbit	Corrosive
Diethyltoluenediamine	Rabbit	No significant irritation
Nitrogen	Professional Judgement	No significant irritation

Serious Eye Damage/Irritation

Name	Species	Value
1,1,1,2-Tetrafluroethane	Rabbit	No significant irritation
Polyol Blend	Rabbit	Mild Irritant
Poly(oxypropylene)diamine	Rabbit	Corrosive
Diethyltoluenediamine	Rabbit	Severe Irritation
Diethylene Glycol	Rabbit	Mild Irritant
Nitrogen	Professional Judgement	No significant irritation

Skin Sensitization

Name	Species	Value
Poly(oxypropylene)diamine	Guinea Pig	Not Sensitizing
Diethyltoluenediamine	Human	Some positive data exist, but the data are not sufficient for classification

Respiratory Sensitization

For the component(s) either no data are currently available or the data are not sufficient for classification

Germ Cell Mutagenicity

Name	Route	Value
Poly(oxypropylene)diamine	In vitro	Not mutagenic
Poly(oxypropylene)diamine	In vivo	Not mutagenic
Diethyltoluenediamine	In vitro	Some positive data exist, but the data are not sufficient for classification
Diethyltoluenediamine	In vivo	Some positive data exist, but the data are not sufficient for classification

Carcinogenicity

Name	Route	Species	Value
Diethyltoluenediamine	Ingestion	Rat	Some positive data exist, but the data are not sufficient for classification

Reproductive Toxicity

For the component/components, either no data are currently available or the data are not sufficient for classification

Target Organ(s)

Specific Target Organ Toxicity- single exposure

Name	Route	Target organ	Value	Species	Test Result	Exposure Duration
1,1,1,2-Tetrafluroethane	Inhalation	Cardiac sensitization	May cause damage to organs	Dog	NOAEL 40,000 ppm	5 minutes
Poly(oxypropylene)diamine	Inhalation	Respiratory Irritation	May cause respiratory irritation		NOAEL Not Available	
Diethylene Glycol	Ingestion	Liver/nervous system/kidney and/or bladder	Causes damage to organs	Human	NOAEL Not Available	Poisoning and/or abuse
Diethylene Glycol	Ingestion	Central nervous system depression	May cause drowsiness or dizziness	Human	NOAEL Not Available	Poisoning and/or abuse

Specific Target Organ Toxicity- repeated exposure

Name	Route	Target organ	Value	Species	Test Result	Exposure Duration
Diethyltoluenediamine	Ingestion	Liver	Causes damage to organs through prolonged or repeated exposure	Rat	LOAEL 0.4 mg/kg/day	24 Months
Diethyltoluenediamine	Ingestion	Endocrine system	May cause damage to organs through prolonged or repeated exposure	Rat	NOAEL 1.4 mg/kg/day	24 Months
Diethyltoluenediamine	Ingestion	Kidney/and or bladder	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 2.8 mg/kg/day	24 Months
Diethyltoluenediamine	Ingestion	Eyes	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 1.4 mg/kg/day	24 Months
Diethyltoluenediamine	Ingestion	Heart | skin | bone, teeth, nails, and/or hair | hematopoietic system | immune system | muscles | nervous system | respiratory system	All data are negative	Rat	NOAEL 3.5 mg/kg/day	24 Months

Aspiration Hazard

Name	Value
Poly(oxypropylene)diamine	Some positive data exist, but the data are not sufficient for classification

SECTION 12- ECOLOGICAL INFORMATION

Ecotoxicological information
Please contact the address or phone number listed on the first page of the SDS for additional toxicological information on this material and/or its components.

Chemical fate information
Please contact the address or phone number listed on the first page of the SDS for additional toxicological information on this material and/or its components.

SECTION 13- DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods

DISPOSAL PROCEDURES:
1) Do not puncture or incinerate cylinder tanks while under pressure.
2) After cylinders are empty, they must be vented.
CAUTION: Tanks will still be under pressure. Eye protection and impervious gloves MUST be worn during the procedure. With tank valve in opposite position of use, slowly open the tank valve, point tank AWAY from face and allow excess chemical to drain into a lined trash can and pressure to completely vent.
CAUTION: Empty tank could contain potential vapor toxicity hazard. Provide adequate ventilation or respiratory protection (consult SDS).
3) Once cylinder is empty and vented, carefully puncture the friable disc on the top of the cylinder.
4) DISPOSE OF EMPTY CYLINDERS AND EXCESS CHEMICAL ACCORDING TO APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.

SECTION 14- TRANSPORTATION

Note: Transportation information is for reference only. Customer is urged to consult 49 CFR 100-177, IMDG, IATA, EC, United Nations TDG and WHMIS (Canada) TDG information manuals for detailed regulations and exceptions covering specific container sizes, packaging materials and methods of shipping.

	Containers Greater Than 1000 cu. cm. (1 liter)
Ground	UN3500 Chemicals Under Pressure n.o.s. (1,1,1,2-Tetrafluoroethane, Nitrogen) 2.2 (Non-Flammable Gas Label)
Air	UN3500 Chemicals Under Pressure n.o.s. (1,1,1,2-Tetrafluoroethane, Nitrogen) 2.2 (Non-Flammable Gas Label) Packing Instruction (Cargo & Passenger) 218
Water	UN3500 Chemicals Under Pressure n.o.s. (1,1,1,2-Tetrafluoroethane, Nitrogen) 2.2 (Non-Flammable Gas Label)

SECTION 15- REGULATORY

15.1 Safety, health, and environmental regulations/legislations specific for the substance or mixture

U.S. Federal Regulations:
OSHA Hazard Communication Standard: This material is classified as hazardous in accordance with OSHA 29 CFR 1910-1200
TSCA Status: All components of this product are listed on the Toxic Substance Control Act (TSCA) Inventory.
This material contains a chemical which requires export notification under TSCA Section 12(b):Diethyltoluenediamine (CAS #68479-98-1) Regulation: TSCA 4 Test Rule Chemicals. Status: Applicable

Superfund Amendments and Reauthorization Act (SARA)

SARA Section 311/312 Hazard Categories:
Fire Hazard- No Pressure Hazard-Yes Reactivity Hazard- Yes Immediate Hazard- Yes Delayed Hazard- Yes
SARA 313 Information: No components of the product are subject to reporting levels established by Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986.
SARA 302/304 Extremely Hazardous Substance: No components of the product exceed the threshold (de minimis) reporting levels established by these sections of the Title III of SARA.
SARA 302/304 Emergency Planning & Notification: No components of the product exceed the threshold (de minimis) report levels established by these sections of the Title III of SARA.
Comprehensive Response Compensation and Liability Act (CERCLA): None of the substances in this product are contained in levels that exceed the threshold (de minimis) reporting levels established by CERCLA
Clean Air Act (CAA) – This product does not have any components listed as a Hazardous Air Pollutant (HAP) designated in CAA Section 112 (b). This product does not contain any Class 1 or Class 2 Ozone depletors.
Clean Water Act (CWA) – This products does not have any components listed as a Hazardous Substance under the CWA. None of the chemicals in these products are listed as Priority Pollutants under the CWA. None of the chemicals listed in these products are listed as Toxic Pollutants under the CWA.

U.S. State Regulations:
California Prop 65, Safe Drinking Water and Toxic Enforcement Act of 1986: This product contains trace amount of substances known to the State of California to cause cancer or other reproductive harm.

Other U.S. State Inventories:
Diethylene glycol (CAS#111-46-6) is listed on the following State Hazardous Substance Inventories, Right-to-Know lists and/or Air Quality/air Pollutants lists: MN, PA
1,1,1,2- Tetrafluoroethane (CAS #811-97-2) is listed on the following State Hazardous Substance Inventories, Right-to-Know lists and/or Air Quality/Air Pollutants lists: ME, WI

SECTION 16- OTHER

Issue date	05-15-2016
Version #	1
NFPA ratings	Health: 3 Flammability: 1 Physical hazard: 1
Disclaimer	This information relates to the specific material designated and may not be valid for such material used on combination with any other materials or in any process. Such information is to the best of our knowledge and belief accurate and reliable as of the date compiled. However, **no representation, warranty or guarantee**, expressed or implied, **is made** as to its accuracy, reliability, or completeness. GAF cannot anticipate all conditions under which this information and product, or the products of other manufacturers in combination with this product, may be used. It is the user's responsibility to satisfy himself as to the suitability and completeness of such information for his particular use. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release. **We do not accept liability** for any loss or damage that may occur from the use of this information. Nothing herein shall be construed as a recommendation for uses which infringe valid patents or as extending a license of valid patents.
Revision Information	NA