ADDENDUM NO. 2

COUNTY OF KAUA'I
DEPARTMENT OF WATER

PLANS, BID PROPOSAL, SPECIFICATIONS
CONTRACT AND BOND
FOR

JOB NO. 17-10, WP2020 #KW-07
Rehabilitate Paua Valley Tank No. 1, 0.5 MG Concrete
Kekaha Water System
Kekaha, Kaua'i, Hawai'i

NOTICE TO PROSPECTIVE PROPOSERS

This addendum is hereby made a part of the PLANS, BID PROPOSAL, SPECIFICATIONS, CONTRACT AND BOND for the subject project and it shall amend the said contract documents in the following respects:

Item 1
Department's Responses to Questions / Comments / Material Substitutions.

End of Addendum No. 2

If there are any questions, please contact Mr. Dustin Moises by email at dmoises@kauaiwater.org .

Bryan Wienand, P.E.
Manager and Chief Engineer
October 3, 2019

ACKNOWLEDGEMENT OF RECEIPT OF ADDENDUM NO. 2

Receipt Acknowledged:

Organization	Received by
Date	Title

(Please sign and return this acknowledgement.)

ADDENDUM NO. 2

Item 1: Department's Responses to Questions / Comments / Material Substitutions

Q: Material Substitution Request for Section SP-10 – Liquid-Applied Roofing System (Item 10.14-D) (Reference Attachment 1):

ALT Gobal R120 PMMASystem
ALT Primer 276
ALT R290 Paste
ALT R230 THIXO resin
ALT R230 Resin
ALT Fleece Reinforcement
ALT RS291 Textured Finish
ALT Finish 288 Resin

A: The proposed roofing system is an acceptable substitution for the system specified.

Q: Material Substitution Request for Section SP-9 – Protective Coatings (Item 9.15 Coating Systems) (Reference Attachment 2):

Gaco LM-60 Two Component Elastomeric Polyurethane Membrane

A: The proposed interior coating substitution is acceptable.

IFB Job No. 17-10, WP2020 #KW-07 Addendum No. 2 Attachment 1

Subject: REQUEST FOR SUBSTITUTION

Dept Contracts Officer
County of Kauai, Dept. of Water
4398 Pua Loke Street
Lihue, HI 96766

Project Title: Rehabilitate Paua Valley Tank No. 1 0.5 MG Concrete Kekaha Water System

In accordance with the GENERAL REQUIREMENTS, I hereby submit for substitution one (1) set of technical brochures and statement of variances for your review an approval of the item(s) shown below.

Job No.: 17-10, WP2020. Project No. KW-07

SECTION/ ITEM	SPECIFIED BRAND	SUBSITUTE OR ALTERNATE BRAND	VARIANT FEATURES
SP 10 Liquid Applied Roofing System	Soprema Alsan RS PMMA System	ALT Global R230 PMMA System	NONE
10.41 Section D	RS 276	ALT Primer 276	NONE
	RS Paste	ALT R290 Paste	NONE
	RS 230 Flash	ALT R230 THIXO resin	NONE
	RS 230 Field	ALT R230 Resin	NONE
	RS Fleece	ALT Fleece Reinforcement	NONE
	RS 289 Surfacing Aggregate	ALT RS 291 Textured Finish	NONE
	RS Colored quartz	ALT Finish 288 Resin	NONE

I further certify that my request for substitution of the above item(s) has no other variant features and complies with the plans and specifications for the subject project.

SIGNATURE

END OF SECTION

September 27, 2019

Mr. John Walsh
Walsh & Company
P.O. Box 30102
Honolulu, Hawaii 96820

Re: Job No.: 17-10, WP2020 Project No. KW-07
Rehabilitate Paua Valley Tank No. 1, 0.5 MG Concrete
Kekaha Water System
Kaui'I, Hawai'i
ALT Global Waterproofing/Surfacing Assembly

Dear Mr. Walsh:

Regarding your inquiry, the following roofing assembly is acceptable to ALT for the above project:

	Coverage rates
• Acceptable prepared substrate	
• ALT Primer as required by substrate	0.037 kg/ft^2
• ALT R230 Flashing Membrane	
○ ALT R230 THIXO Resin	0.19 kg/ft^2
○ ALT Fleece reinforcement	-
○ ALT R230 THIXO Resin	0.14 kg/ft^2
• ALT R230 Roof Membrane	
○ ALT R230 Resin	0.19 kg/ft^2
○ ALT Fleece reinforcement	-
○ ALT R230 Resin	0.14 kg/ft^2
• ALT RS291 Textured Finish (Where Required)	0.14 kg/ft^2

If installed in accordance with ALT standard guide specifications and details, the above referenced waterproofing system will qualify for a 20-year NDL waterproofing warranty.

Sincerely,

ALT Global, LLC.
Technical Department

ALT Global, LLC
12 Dwight Place, Fairfield, NJ 07004
Tel: (973) 287-6158 • Fax: (973) 287-6168
Email: solutions@ALTglobal.com

ALT Primer 276 Resin

Product Data Sheet

Description
ALT Primer 276 Resin is a high performance thixotropic poly methyl-methacrylate (PMMA) two-component, rapid-curing, resin primer.

Product Use
ALT Primer 276 Resin is a rigid primer used as a primer/sealer for concrete, masonry, wood, and other substrates. ALT Primer 276 promotes adhesion and is in conjunction with ALT roofing, waterproofing and traffic surfacing systems.

Packaging
ALT Primer 276 is supplied in 10-kg re-sealable drums with locking rings.

Coverage Rate (approximate)
Smooth substrates: 0.037 kg/sf (0.40 kg/m^2)
Fine grained substrates: 0.046 kg/sf (0.50 kg/m^2)
Rough substrates: 0.074 kg/sf (0.80 kg/m^2)

Gross yield/10-kg unit: 269 ft^2 (25 m^2) @ 0.4 kg/m^2

See recommendations for specific applications. Yields will vary depending upon system selected and the smoothness and absorbency of substrate.

Storage
Always store in cool and dry location. Do not store in direct sunlight or in temperatures below 32°F(0°C) or above 77°F(25°C). Approximate shelf life is 6-months when left sealed, unmixed and with proper storage.

Application Conditions
This product is recommended for use at substrate and ambient temperatures between 37°F (3°C) and 95°F (35°C).

Note: The clean and fully cured primer can be coated after a minimum of approximately 30-45 minutes up to a maximum of 6-months. If the surface of the primer becomes dirty or contaminated or left exposed to the elements for more than 12-hours, thoroughly clean the in-place and cured primer with ALT Activator. ALT Activator should be allowed a minimum of 20-minutes evaporation time after application, and over-coated within 60-minutes of application.

Mixing & Catalyzing
Thoroughly mix the entire drum of resin for 2-3 minutes before each use, and prior to pouring off resin into a second container if batch mixing. Catalyze only the amount of material that can be used within 10-15 minutes. Add pre-measured catalyst to the resin component, stir for 2-minutes using a slow-speed mechanical agitator or stirring stick and apply to substrate. The amount of catalyst added is based on the weight of the resin used.

catalyst required per 1-kg of resin used					
6% Catalyst 37°F to 50°F (3°C to 10°C)		4% Catalyst 50°F to 68°F (10°C to 20°C)		2% Catalyst 68°F to 95°F (20°C to 35°C)	
g	kg	g	kg	g	kg
60	.06	40	.04	20	.02

Working Times (at 68°F (20°C)
- Pot Life: approx. 10 to 15-minutes
- Rainproof: approx. 30-minutes
- Next Coat: approx. 30-minutes
- Fully Cured: approx. 2-hours

The times noted above are approximate, provided as a guideline, and may vary. Actual set times and cure should be established in the field based on actual field conditions.

Tool Cleaning
When work is interrupted or completed, tools must be thoroughly cleaned with ALT Activator before the resin hardens.

Safety Recommendations
Refer to product Safety Data Sheet (SDS) prior to use or handling.

Disposal
Catalyzed and cured resin may be disposed of in standard landfills. Uncured resin is considered a hazardous material and must be handled as such, in accordance with local, state and federal regulations.

Ordering Information
ALT Primer 276 Resin (clear)
- **Item #:** 113-000-005U 10-kg can

ALT Primer 276 Resin (white)
- **Item #:** 113-910-005U 10-kg can

ALT Global, LLC, 12 Dwight Place, Fairfield, NJ 07004 TEL: (973) 287-6158 • FAX: (973) 287-6168
Internet: www.ALTglobal.com • Email: solutions@ALTglobal.com

Application Guidelines

Handling

Keep away from open fire, flame or any ignition source. Vapors may form explosive mixture with air. Avoid skin and eye contact with this material. Avoid breathing fumes. Do not eat, drink or smoke in area of application. Refer to product Safety Data Sheet (SDS) for additional information pertaining to this product and prior to use or handling.

Personal Protection Equipment

Workers should wear appropriate clothing to protect from accidental skin contact. When mixing or applying this product workers must use butyl rubber or nitrile gloves. Safety glasses with side shields are required for eye protection.

In enclosed spaces, use local exhaust ventilation to maintain worker exposure below TLV. If the airborne concentration poses a health hazard, become irritating or exceeds recommended limits, use a NIOSH approved respirator in accordance with OSHA Respirator Protection requirements under 29 CFR 1910.134. The specific type of respirator will depend on the airborne concentrations. A filtering face piece or dusk mask is not acceptable for use with this product if TLV filtering levels have been exceeded.

Surface Preparation

All substrates must be clean, dry, free of oil, grease, curing compounds, release agents, laitance, gross irregularities, loose, unsound or foreign material such as moss, algae growth, dirt, ice, snow, water or any other condition that would be detrimental to adhesion of resin to the substrate. Mask perimeter and top edge of the area to be primed and flashed to provide clean lines and prevent over-painting of resins. Remove and re-apply masking before resin cures and as required between coats. Apply ALT primer to substrate as required. Refer to ALT "Substrate Preparation & Priming Guidelines" for specific recommendations and requirements. Contact ALT Technical Department for recommendations regarding specific applications.

Application

After mixing, apply resin to clean and prepared substrate at the required consumption using ALT approved rollers or brushes. The resin should be spread evenly onto the surface. See individual system specifications for specific guidelines regarding application of primer, membrane, topcoat and/or surfacing.

Remarks/Comments

The information provided regarding application of ALT Global products is based on extensive development work, as well as many years of experience, and is given to the best of our knowledge. However, due to the diverse conditions encountered in building construction, it is necessary for the contractor to test the product for its suitability in any given case. We reserve the right to make alterations in keeping with technical developments or improvements.

ALT R290 Paste

Product Data Sheet

Description
ALT R290 Paste is a high performance two-component, rapid-curing, flexible acrylic thixotropic resin.

Product Use
ALT R290 Paste is used for horizontal and vertical leveling, patching and repairs to substrates in conjunction with ALT non-traffic bearing membrane system applications.

Colors
ALT R290 Paste is supplied in standard RAL No. 7032 light grey color.

Packaging
ALT R290 Paste is supplied in 5-kg & 10-kg re-sealable drums with locking rings.

Coverage Rate
Recommended consumption is approximately 0.14 kg/ft^2 (1.5 kg/m^2) for each 0.039 inch (1-mm) of depth.

Note: ALT R290 Paste 5-kg drum yields approx.0.125 ft^3 & 10-kg drum yields approx. 0.25 ft^3.

See recommendations for specific applications. Yields will vary depending upon system selected and the smoothness and absorbency of substrate.

Storage
Always store in cool and dry location. Do not store in direct sunlight or in temperatures below 32°F(0°C) or above 77°F(25°C). Approximate shelf life is 6-months when left sealed, unmixed and with proper storage.

Application Conditions
The normal recommended temperature range for use of this product is (ambient and substrate) between 37°F (3°C) and 95°F (35°C).

Mixing & Catalyzing
Thoroughly mix the entire drum of resin for 2-3 minutes before each use, and prior to portioning off resin into a second container if batch mixing. Catalyze only the amount of material that can be used within 20 minutes. Add pre-measured catalyst to the resin component, stir for 2-minutes using a slow-speed mechanical agitator or stir stick, and apply to substrate. The amount of catalyst added is based on the weight of the resin used.

catalyst required per 1-kg of resin used					
6% Catalyst 37°F to 50°F (3°C to 10°C)		4% Catalyst 50°F to 68°F (10°C to 20°C)		2% Catalyst 68°F to 95°F (20°C to 35°C)	
g	kg	g	kg	g	kg
60	.06	40	.04	20	.02

Working Times (at 68°F (20°C)
- Pot Life: approx. 20 to 30-minutes
- Rainproof: approx. 30-minutes
- Next Coat: approx. 1-hour
- Fully Cured: approx. 3-hours

The times noted above are approximate, provided as a guideline, and may vary. Actual set times and cure should be established in the field based on actual field conditions.

Tool Cleaning
When work is interrupted or completed, tools must be thoroughly cleaned with ALT Activator before the resin hardens.

Safety Recommendations
Refer to product Safety Data Sheet (SDS) prior to use or handling.

Disposal
Catalyzed and cured resin may be disposed of in standard landfills. Uncured resin is considered a hazardous material and must be handled as such, in accordance with local, state and federal regulations.

Ordering Information
ALT R290 Paste

#147-732-026U	5.00 kg drum
#147-732-005U	10.00 kg drum

ALT Global, LLC, 12 Dwight Place, Fairfield, NJ 07004 TEL: (973) 287-6158 • FAX. (973) 287-6168
Internet: www.ALTglobal.com • Email: solutions@ALTglobal.com

Application Guidelines

Handling

Keep away from open fire, flame or any ignition source. Vapors may form explosive mixture with air. Avoid skin and eye contact with this material. Avoid breathing fumes. Do not eat, drink or smoke in area of application. Refer to product Safety Data Sheet (SDS) for additional information pertaining to this product and prior to use or handling.

Personal Protection Equipment

Workers should wear appropriate clothing to protect from accidental skin contact. When mixing or applying this product workers must use butyl rubber or nitrile gloves. Safety glasses with side shields are required for eye protection.

In enclosed spaces, use local exhaust ventilation to maintain worker exposure below TLV. If the airborne concentration poses a health hazard, become irritating or exceeds recommended limits, use a NIOSH approved respirator in accordance with OSHA Respirator Protection requirements under 29 CFR 1910.134. The specific type of respirator will depend on the airborne concentrations. A filtering face piece or dusk mask is not acceptable for use with this product if TLV filtering levels have been exceeded.

Surface Preparation

All substrates must be clean, dry, free of oil, grease, curing compounds, release agents, laitance, gross irregularities, loose, unsound or foreign material such as moss, algae growth, dirt, ice, snow, water or any other condition that would be detrimental to adhesion of resin to the substrate. Apply ALT primer to substrate as required. Refer to ALT "Substrate Preparation & Priming Guidelines" for specific recommendations and requirements. Contact ALT Global Technical Department for recommendations regarding specific applications.

Application

After mixing, apply ALT R290 Paste to clean and prepared substrate at the required consumption using a trowel and/or brush. The paste should be spread evenly onto the surface at a recommended consumption of approximately 0.14 kg/ft^2 (1.5 kg/m^2) for each 1-mm of depth. After troweling the resin in place finish the surface by smoothing out with an ALT approved roller or brush.

See individual system specifications for specific guidelines regarding application of topcoats and/or surfacing. Refer to ALT "Guidelines for Substrate Leveling, Patching & Repair" Technical Data Sheet for combining ALT R290 Paste resin with kiln-dried quartz silica to create a modified repair mortar for leveling, patching and repairs.

Remarks/Comments

The information provided regarding application of ALT Global products is based on extensive development work, as well as many years of experience, and is given to the best of our knowledge. However, due to the diverse conditions encountered in building construction, it is necessary for the contractor to test the product for its suitability in any given case. We reserve the right to make alterations in keeping with technical developments or improvements.

ALT R230 Thixo Resin (Standard Grade)

Product Data Sheet

Product Description
ALT R230 THIXO Resin is a high performance two-component, fast-curing, poly methyl-methacrylate (PMMA) resin used in roofing and waterproofing membranes.

Product Use
ALT R230 THIXO Resin is combined with catalyst and ALT Fleece reinforcement to form a monolithic, self-flashing and self-adhering reinforced flashing membrane for a variety of new construction, refurbishment, and recovery roofing and waterproofing applications.

Colors
ALT R230 THIXO Resin is supplied in standard RAL No. 7032 light grey color. Other standard and non-standard colors available on request.

Packaging
ALT R230 THIXO Resin is supplied in 5-kg & 10-kg re-sealable drums.

Membrane Coverage Rate (approximate)
Smooth substrates:	0.23 kg/ft^2 (2.5 kg/m^2)
Normal substrates:	0.31 kg/ft^2 (3.3 kg/m^2)
Fine grained substrates:	0.36 kg/ft^2 (3.8 kg/m^2)
Rough substrates:	0.40 kg/ft^2 (4.3 kg/m^2)

Gross yield/ 5-kg unit:+/-16 ft^2 (1.5 m^2) @ 3.3 kg/m^2
Gross yield/10-kg unit:+/-32.5 ft^2 (3.0 m^2) @ 3.3 kg/m^2

See recommendations for specific applications. Yields will vary depending upon system selected and the smoothness and absorbency of substrate.

Storage
Always store in cool and dry location. Do not store in direct sunlight or in temperatures below 32°F(0°C) or above 77°F(25°C). Approximate shelf life is 6-months when left sealed, unmixed and with proper storage.

Application Conditions
The normal recommended temperature range for application of this product is (ambient and substrate) between 37°F (3°C) and 95°F (35°C).

Mixing & Catalyzing
Thoroughly mix the entire drum of resin for 2-3 minutes. Remix before each use, and prior to pouring off resin into a second container if batch mixing. Catalyze only the amount of material that can be used within 15-20 minutes. Add pre-measured catalyst to resin component and stir for 2-minutes using a slow-speed mechanical agitator or stirring stick.

catalyst required per 1-kg of resin used					
4% Catalyst 37°F to 50°F (3°C to 10°C)		3% Catalyst 50°F to 68°F (10°C to 20°C)		2% Catalyst 68°F to 95°F (20°C to 35°C)	
g	kg	g	kg	g	kg
40	.04	30	.03	20	.02

Working Times (at 68°F (20°C)
- Pot Life: approx. 20 to 30-minutes
- Rainproof: approx. 30-minutes
- Next Coat: approx. 1-hour
- Fully Cured: approx. 3-hours

The times noted above are approximate, provided as a guideline, and may vary. Actual set times and cure should be established in the field based on actual field conditions.

Tool Cleaning
When work is interrupted or completed, tools must be thoroughly cleaned with ALT Activator before the resin hardens.

Disposal
Catalyzed and cured resin may be disposed of in standard landfills. Uncured resin is considered a hazardous material and must be handled as such, in accordance with local, state and federal regulations.

Ordering Information
ALT R230 THIXO Resin – *Standard Light Grey Color**
#116-732-026U standard grade 5.0 kg drum
#116-732-005U standard grade 10.0 kg drum

**Note: ALT R230 THIXO Resin is pre-pigmented at the factory*

Application Guidelines

Handling

Keep away from open fire, flame or any ignition source. Vapors may form explosive mixture with air. Avoid skin and eye contact with this material. Avoid breathing fumes. Do not eat, drink or smoke in area of application. Refer to product Safety Data Sheet (SDS) for additional information pertaining to this product and prior to use or handling.

Personal Protection Equipment

Workers should wear appropriate clothing to protect from accidental skin contact. When mixing or applying this product workers must use butyl rubber or nitrile gloves. Safety glasses with side shields are required for eye protection.

In enclosed spaces, use local exhaust ventilation to maintain worker exposure below TLV. If the airborne concentration poses a health hazard, become irritating or exceeds recommended limits, use a NIOSH approved respirator in accordance with OSHA Respirator Protection requirements under 29 CFR 1910.134. The specific type of respirator will depend on the airborne concentrations. A filtering face piece or dusk mask is not acceptable for use with this product if TLV filtering levels have been exceeded.

Surface Preparation

All substrates must be clean, dry, free of oil, grease, curing compounds, release agents, laitance, gross irregularities, loose, unsound or foreign material such as moss, algae growth, dirt, ice, snow, water or any other condition that would be detrimental to adhesion of resin to the substrate. Mask perimeter and top edge of the area to be primed and flashed to provide clean lines and prevent over-painting of resins. Remove and re-apply masking before resin cures and as required between coats. Apply ALT primer to substrate as required. Refer to ALT "Substrate Preparation & Priming Guidelines" for specific recommendations and requirements. Contact ALT Global Technical Department for recommendations regarding specific applications.

Application

Step 1: After mixing, apply resin to substrate at a rate of 0.14 to 0.31 kg/ft^2 (1.5 to 3.3 kg/m^2) using ALT approved rollers, brushes or notched squeegee. The Resin should be spread evenly onto the surface.

Step 2: Roll ALT Fleece reinforcement directly into the resin, avoiding any folds and wrinkles. Use a roller to work the resin into the fleece, saturating from the bottom up. The fleece should darken in appearance, with no white spots (white spots are indications of unsaturated fleece or lack of adhesion) showing. When required peel back fleece and apply additional resin onto the substrate, then slowly roll the fleece back into the resin, using care to remove any air pockets. It is important to correct these faults before the resin cures, or additional repairs may be required later.

Step 3: Apply an even coat of resin over top of the in-place fleece at a rate of 0.09 kg/ft^2 (1.0 kg/m^2) using ALT approved rollers. Use caution not to spread resin too thin.

Surfacing

ALT Global offers a wide variety of optional surfacing treatments for aesthetic, anti-slip or mechanical wear. See individual system specifications for specific guidelines regarding application of topcoats and/or surfacing.

Remarks/Comments

The information provided regarding application of ALT Global products is based on extensive development work, as well as many years of experience, and is given to the best of our knowledge. However, due to the diverse conditions encountered in building construction, it is necessary for the contractor to test the product for its suitability in any given case. We reserve the right to make alterations in keeping with technical developments or improvements.

ALT R230 Resin (Standard Grade)

Product Data Sheet

Product Description
ALT R230 Resin is a high performance two-component, fast-curing, poly methyl-methacrylate (PMMA) resin used in roofing and waterproofing membranes.

Product Use
ALT R230 Resin is combined with catalyst and ALT Fleece reinforcement to form a monolithic, self-flashing and self-adhering reinforced membrane for a variety of new construction, refurbishment, and recovery roofing and waterproofing applications.

Colors
ALT R230 Resin is supplied in standard RAL No. 7032 light grey. Other standard and non-standard colors available on request.

Packaging
ALT R230 Resin is supplied in 10-kg and 25-kg re-sealable drums.

Membrane Coverage Rate (approximate)

Smooth substrates:	0.23 kg/ft^2 (2.5 kg/m^2)
Normal substrates:	0.31 kg/ft^2 (3.3 kg/m^2)
Fine grained substrates:	0.36 kg/ft^2 (3.8 kg/m^2)
Rough substrates:	0.40 kg/ft^2 (4.3 kg/m^2)

Gross yield/10-kg unit:+/-32.5ft^2 (3.0 m^2) @ 3.3 kg/m^2
Gross yield/25-kg unit:+/-81.5ft^2 (7.5 m^2) @ 3.3 kg/m^2

See recommendations for specific applications. Yields will vary depending upon system selected and the smoothness and absorbency of substrate.

Storage
Always store in cool and dry location. Do not store in direct sunlight or in temperatures below 32°F(0°C) or above 77°F(25°C). Approximate shelf life is 6-months when left sealed, unmixed and with proper storage.

Application Conditions
This product is recommended for use at substrate and ambient temperatures between 37°F (3°C) and 95°F (35°C).

Mixing & Catalyzing
Thoroughly mix the entire drum of resin for 2-3 minutes. Remix before each use, and prior to pouring off resin into a second container if batch mixing. Catalyze only the amount of material that can be used within 15-20 minutes. Add pre-measured catalyst to resin component and stir for 2-minutes using a slow-speed mechanical agitator or stirring stick.

catalyst required per 1-kg of resin used					
4% Catalyst 37°F to 50°F (3°C to 10°C)		3% Catalyst 50°F to 68°F (10°C to 20°C)		2% Catalyst 68°F to 95°F (20°C to 35°C)	
g	kg	g	kg	g	kg
40	.04	30	.03	20	.02

Working Times (at 68°F (20°C)
- Pot Life: approx. 20 to 30-minutes
- Rainproof: approx. 30-minutes
- Next Coat: approx. 1-hour
- Fully Cured: approx. 3-hours

The times noted above are approximate, provided as a guideline, and may vary. Actual set times and cure should be established in the field based on actual field conditions.

Tool Cleaning
When work is interrupted or completed, tools must be thoroughly cleaned with ALT Activator before the resin hardens.

Disposal
Catalyzed and cured resin may be disposed of in standard landfills. Uncured resin is considered a hazardous material and must be handled as such, in accordance with local, state and federal regulations.

Ordering Information
ALT R230 Resin – *Standard Light Grey Color**
#145-732-005U standard grade 10.0 kg drum
#145-732-010U standard grade 25.0 kg drum

**Note: ALT R230 Resin is pre-pigmented at the factory*

Application Guidelines

Handling

Keep away from open fire, flame or any ignition source. Vapors may form explosive mixture with air. Avoid skin and eye contact with this material. Avoid breathing fumes. Do not eat, drink or smoke in area of application. Refer to product Safety Data Sheet (SDS) for additional information pertaining to this product and prior to use or handling.

Personal Protection Equipment

Workers should wear appropriate clothing to protect from accidental skin contact. When mixing or applying this product workers must use butyl rubber or nitrile gloves. Safety glasses with side shields are required for eye protection.

In enclosed spaces, use local exhaust ventilation to maintain worker exposure below TLV. If the airborne concentration poses a health hazard, become irritating or exceeds recommended limits, use a NIOSH approved respirator in accordance with OSHA Respirator Protection requirements under 29 CFR 1910.134. The specific type of respirator will depend on the airborne concentrations. A filtering face piece or dusk mask is not acceptable for use with this product if TLV filtering levels have been exceeded.

Surface Preparation

All substrates must be clean, dry, free of oil, grease, curing compounds, release agents, laitance, gross irregularities, loose, unsound or foreign material such as moss, algae growth, dirt, ice, snow, water or any other condition that would be detrimental to adhesion of resin to the substrate. Mask perimeter and top edge of the area to be primed and flashed to provide clean lines and prevent over-painting of resins. Remove and re-apply masking before resin cures and as required between coats. Apply ALT primer to substrate as required. Refer to ALT "Substrate Preparation & Priming Guidelines" for specific recommendations and requirements. Contact ALT Global Technical Department for recommendations regarding specific applications.

Application

Step 1: After mixing, apply resin to substrate at a rate of 0.14 to 0.31 kg/ft^2 (1.5 to 3.3 kg/m^2) using ALT approved rollers, brushes or notched squeegee. The Resin should be spread evenly onto the surface.

Step 2: Roll ALT Fleece reinforcement directly into the resin, avoiding any folds and wrinkles. Use a roller to work the resin into the fleece, saturating from the bottom up. The fleece should darken in appearance, with no white spots (white spots are indications of unsaturated fleece or lack of adhesion) showing. When required peel back fleece and apply additional resin onto the substrate, then slowly roll the fleece back into the resin, using care to remove any air pockets. It is important to correct these faults before the resin cures, or additional repairs may be required later.

Step 3: Apply an even coat of resin over top of the in-place fleece at a rate of 0.09 kg/ft^2 (1.0 kg/m^2) using ALT approved rollers. Use caution not to spread resin too thin.

Surfacing

ALT Global offers a wide variety of optional surfacing treatments for aesthetic, anti-slip or mechanical wear. See individual system specifications for specific guidelines regarding application of topcoats and/or surfacing.

Remarks/Comments

The information provided regarding application of ALT Global products is based on extensive development work, as well as many years of experience, and is given to the best of our knowledge. However, due to the diverse conditions encountered in building construction, it is necessary for the contractor to test the product for its suitability in any given case. We reserve the right to make alterations in keeping with technical developments or improvements.

ALT Fleece Reinforcement

Product Data Sheet

Product Description
ALT Fleece is non-woven, chopped strand polyester fabric reinforcement.

Product Uses
ALT Fleece is used in ALT cold fluid-applied reinforced membrane systems to improve tear strength, puncture resistance, and crack bridging capabilities while maintaining membrane uniformity.

Packaging
ALT Fleece reinforcement is available in a variety of standard nominal widths.

Coverage
Allow for 2" (5 cm) overlap at side laps, 4" overlap at end laps, 4" overlap at all flashings and an additional 5% for waste.

Storage
Always store in cool and dry location. Store upright to avoid deforming rolls and creasing fabric. Shelf life indefinite with proper storage.

Physical Properties

Property	ALT Fleece	
Color	White	
Physical state	Solid	
Nominal thickness	30 - 40 mils	
Weight (g/m²)	110	
Tensile Strength @ break (N/50mm)	≥130 Long.	≥150 Transv.
Elongation %	≥50 Long.	≥70 Transv.
Tear resistance	20>daN	
Puncture Strength	24>daN	
Permeability	-	
Water absorption	<1%	

Handling
Refer to product Safety Data Sheet (SDS) prior to use or handling.

Disposal
ALT Fleece reinforcement may be disposed of in standard landfills. Refer to product Safety Data Sheet (SDS) for additional information, and prior to use or handling.

Ordering Information:

ALT Fleece Reinforcement - Standard Sizes
All standard widths x 164 feet (50 m) long

Item No.:	Roll Widths		~ Gross ft² (m²)	~ Net ft² (m²)
126-105U	41.3-inch	(105 cm)	564 (52)	536 (50)
126-070U	27.5-inch	(70 cm)	376 (35)	348 (32)
126-052U	20.6-inch	(52.5 cm)	283 (26)	255 (24)
126-035U	13.8-inch	(35 cm)	188 (17)	160 (15)
126-026U	10.5-inch	(27 cm)	140 (13)	112 (10)
126-020U	8-inch	(20 cm)	113 (10)	85 (8)
126-015U	6-inch	(15 cm)	82 (8)	-
126-010U	4-inch	(10 cm)	55 (5)	-

ALT Fleece Reinforcement - Flashing Kit Only
All flashing kit widths x 20 feet (6 m) long

Item No.:	Roll Width		~ Gross ft² (m²)	~ Net ft² (m²)
127-026U	13.8-inch	(35 cm)	23 (2)	-

*indicates non-stock special order sizes

DISCLAIMER

NO WARRANTY, EXPRESS OR IMPLIED, IS MADE IN THIS DOCUMENT. THE PRODUCT IS NOT CLAIMED TO BE MERCHANTABLE OR FIT FOR ANY PARTICULAR PURPOSE. User and certified ALT Global system applicators determine suitability only. See individual ALT Global product data sheets, SDS sheets, guide specifications and details for complete information regarding the suitability, application and handling of ALT Global products.

ALT Global, LLC, 12 Dwight Place, Fairfield, NJ 07004 TEL: (973) 267-6158 • FAX. (973) 267-6168
Internet: www.ALTglobal.com • Email: solutions@ALTglobal.com

ALT RS291 Textured Finish

Product Data Sheet

Description
ALT RS291 Textured Finish is a high performance two-component, rapid-curing, flexible, methacrylate resin with integrally mixed aggregate.

Product Use
ALT RS291 Textured Finish is a non-reinforced deck coating and surfacing material used on qualifying roofs, cantilever balconies, walkways and traffic areas.

Colors
ALT RS291 Textured Finish is supplied in a variety of standard colors including RAL1001 Beige, RAL7031 Blue Grey, RAL7032 Light Grey, RAL7043 Traffic Grey, RAL8004 Terracotta, RAL9017 Traffic Black, and RAL9010 White. Other standard and non-standard colors are available on request.

Packaging
ALT RS291 Textured Finish is supplied in 15-kg re-sealable drums with locking rings.

Coverage Rates (0.8 to 1.8 kg/m^2 approximate)
Light duty (pedestrian only): – 0.8 kg/m^2
Medium duty: 0.8 – 1.2 kg/m^2
Standard Duty: 1.2 – 1.8 kg/m^2

Gross yield/15-kg unit:+/-202 ft^2 (18.8 m^2) @ 0.8 kg/m^2
Gross yield/15-kg unit:+/-135 ft^2 (12.5 m^2) @ 1.2 kg/m^2
Gross yield/15-kg unit:+/- 90 ft^2 (8.3 m^2) @ 1.8 kg/m^2

See recommendations for specific applications. Yields will vary depending upon the intended use, substrate roughness, void content and depth of application.

Storage
Always store in cool and dry location. Do not store in direct sunlight or in temperatures below 32°F(0°C) or above 77°F(25°C). Approximate shelf life is 6-months when left sealed, unmixed and with proper storage.

Application Conditions
The product can be applied at substrate and ambient temperatures between 37°F (3°C) and 95°F (35°C).

Mixing & Catalyzing
Thoroughly mix the entire drum of resin for 2-3 minutes before each use, and prior to portioning off resin into a second container if batch mixing. Catalyze only the amount of material that can be used within 15 minutes. Add pre-measured catalyst to the resin component, stir for 2-minutes using a slow-speed mechanical agitator, ensuring to mix material at bottom and sides of container. Ideally, change material into second clean and dry bucket, and thoroughly mix resin-mortar for 1-minute additional before apply to substrate. The amount of catalyst added is based on the weight of the resin used.

ALT Catalyst required per 1-kg of resin used					
4% Catalyst 37°F to 50°F (3°C to 10°C)		3% Catalyst 50°F to 68°F (10°C to 20°C)		2% Catalyst 68°F to 95°F (20°C to 35°C)	
g	kg	g	kg	g	kg
40	.04	30	.03	20	.02

Working Times (at 68°F (20°C)
- Pot Life: approx. 10-minutes
- Rainproof: approx. 20-minutes
- Next Coat: approx. 45-minutes
- Fully Cured: approx. 2-hours

The times noted above are approximate, provided as a guideline, and may vary. Actual set times and cure should be established in the field based on actual field conditions.

Tool Cleaning
When work is interrupted or completed, tools must be thoroughly cleaned with ALT Activator before the resin hardens.

Safety Recommendations
Refer to product Safety Data Sheet (SDS) prior to use or handling.

Disposal
Catalyzed and cured resin may be disposed of in standard landfills. Uncured resin is considered a hazardous material and must be handled as such, in accordance with local, state and federal regulations.

Ordering Information
ALT RS291 Textured Finish
#184-###-005U 15.00 kg drum

ALT Global, LLC, 12 Dwight Place, Fairfield, NJ 07004 TEL: (973) 287-6158 • FAX: (973) 287-6168
Internet: www.ALTglobal.com • Email: solutions@ALTglobal.com

Application Guidelines

Handling

Keep away from open fire, flame or any ignition source. Vapors may form explosive mixture with air. Avoid skin and eye contact with this material. Avoid breathing fumes. Do not eat, drink or smoke in area of application. Refer to product Safety Data Sheet (SDS) for additional information pertaining to this product and prior to use or handling.

Personal Protection Equipment

Workers should wear appropriate clothing to protect from accidental skin contact. When mixing or applying this product workers must use butyl rubber or nitrile gloves. Safety glasses with side shields are required for eye protection.

In enclosed spaces, use local exhaust ventilation to maintain worker exposure below TLV. If the airborne concentration poses a health hazard, become irritating or exceeds recommended limits, use a NIOSH approved respirator in accordance with OSHA Respirator Protection requirements under 29 CFR 1910.134. The specific type of respirator will depend on the airborne concentrations. A filtering face piece or dusk mask is not acceptable for use with this product if TLV filtering levels have been exceeded.

Surface Preparation

All substrates must be clean, dry, free of oil, grease, curing compounds, release agents, laitance, gross irregularities, loose, unsound or foreign material such as moss, algae growth, dirt, ice, snow, water or any other condition that would be detrimental to adhesion of resin to the substrate. Apply ALT Primer to substrate as required. Refer to ALT "Substrate Preparation & Priming Guidelines" for additional information and requirements. Contact ALT Global Technical Department for recommendations regarding specific applications.

Application

Tape out the area of work in a checkerboard fashion using duct tape or fiber reinforced masking tape. After mixing, apply resin to clean and prepared substrate at the required consumption using a roller. The Resin should be spread evenly onto the surface at a uniform depth using a roller or notched squeegee. After spreading the resin, use an ALT approved roller pre-wet with ALT RS291 Textured Finish resin roll resin in one direction, then roll in the cross direction to obtain a uniform finish. Before resin begins to cure, remove all masking tape.

Remarks/Comments

The information provided regarding application of ALT Global products is based on extensive development work, as well as many years of experience, and is given to the best of our knowledge. However, due to the diverse conditions encountered in building construction, it is necessary for the contractor to test the product for its suitability in any given case. We reserve the right to make alterations in keeping with technical developments or improvements.

ALT Finish 288 Resin (pre-pigmented)

Product Data Sheet

Description
ALT Finish 288 Resin is a UV stabilized color pigmented high performance two-component, rapid-curing, resilient poly methyl-methacrylate based acrylic finish.

Product Use
ALT Finish 288 Resin is used as an aesthetic topcoat and sealer in conjunction with ALT roofing, waterproofing and surfacing systems. ALT Finish 288 may be applied as a smooth color topcoat, with broadcast aggregate, or mixed with ALT A-S Additive to provide a slip-resistant surface.

Colors
ALT Finish 288 is available in an unlimited range of custom colors and available as stock colors as follows:

RAL 7032 Light Grey	RAL 9010 White	RAL 6021 Light Patina

Contact ALT Global Technical Department regarding specific colors and color matching capabilities. Custom colors are available on request subject to special order quantity and pricing.

Packaging
ALT Finish 288 Resin is supplied in 10-kg re-sealable drums with locking rings.

Coverage Rates (approximate)

Application	Consumption	Ft^2/unit
0.4 – 0.8mm aggregate:	0.06 kg/ft^2 (0.7 kg/m^2)	154
0.7 – 1.2mm aggregate:	0.07 kg/ft^2 (0.8 kg/m^2)	134
Smooth surfaces:	0.05 kg/ft^2 (0.6 kg/m^2)	179
A-S Additive application:	0.04 kg/ft^2 (0.5 kg/m^2)	215

See recommendations for specific applications. Yields will vary depending upon the selected system along with shape, size, smoothness & absorbency of the aggregate and substrate.

Storage
Always store in cool and dry location. Do not store in direct sunlight or in temperatures below 32°F(0°C) or above 77°F(25°C). Approximate shelf life is 6-months when left sealed, unmixed and with proper storage.

Application Conditions
This product is recommended for use at substrate and ambient temperatures between 37°F (3°C) and 95°F (35°C).

Mixing & Catalyzing
Thoroughly mix the entire drum of resin for 2-3 minutes before each use, and prior to pouring-off resin into a second container if batch mixing. Catalyze only the amount of material that can be used within 10-15 minutes. Add pre-measured catalyst to the resin component, stir for 2-minutes using a slow-speed mechanical agitator or stir stick, and apply to substrate. The amount of catalyst added is based on the weight of the resin used.

ALT Catalyst required per 1-kg of resin used					
6% Catalyst 37°F to 50°F (3°C to 10°C)		4% Catalyst 50°F to 68°F (10°C to 20°C)		2% Catalyst 68°F to 95°F (20°C to 35°C)	
g	kg	g	kg	g	kg
60	.06	40	.04	20	.02

Working Times (at 68°F (20°C)
- Pot Life: approx. 10 to 15-minutes
- Rainproof: approx. 30-minutes
- Next Coat: approx. 1-hour
- Fully Cured: approx. 3-hours

The times noted above are approximate, provided as a guideline, and may vary. Actual set times and cure should be established in the field based on actual field conditions.

Tool Cleaning
When work is interrupted or completed, tools must be thoroughly cleaned with ALT Activator before the resin hardens.

Safety Recommendations
Refer to product Safety Data Sheet (SDS) prior to use or handling.

Disposal
Catalyzed and cured resin may be disposed of in standard landfills. Uncured resin is considered a hazardous material and must be handled as such, in accordance with local, state and federal regulations.

Ordering Information
ALT Finish 288 Resin
#123-###-005U 10.00 kg drum
(Note: Substitute ### with appropriate RAL color code)

ALT Global, LLC, 12 Dwight Place, Fairfield, NJ 07004 TEL: (973) 287-6158 • FAX: (973) 287-6168
Internet: www.ALTglobal.com • Email: solutions@ALTglobal.com

Application Guidelines

Handling
Keep away from open fire, flame or any ignition source. Vapors may form explosive mixture with air. Avoid skin and eye contact with this material. Avoid breathing fumes. Do not eat, drink or smoke in area of application. Refer to product Safety Data Sheet (SDS) for additional information pertaining to this product and prior to use or handling.

Personal Protection Equipment
Workers should wear appropriate clothing to protect from accidental skin contact. When mixing or applying this product workers must use butyl rubber or nitrile gloves. Safety glasses with side shields are required for eye protection.

In enclosed spaces, use local exhaust ventilation to maintain worker exposure below TLV. If the airborne concentration poses a health hazard, become irritating or exceeds recommended limits, use a NIOSH approved respirator in accordance with OSHA Respirator Protection requirements under 29 CFR 1910.134. The specific type of respirator will depend on the airborne concentrations. A filtering face piece or dusk mask is not acceptable for use with this product if TLV filtering levels have been exceeded.

Surface Preparation
All substrates must be clean, dry, free of oil, grease, curing compounds, release agents, laitance, gross irregularities, loose, unsound or foreign material such as moss, algae growth, dirt, ice, snow, water or any other condition that would be detrimental to adhesion of resin to the substrate. Mask perimeter and top edge of the area to be primed and flashed to provide clean lines and prevent over-painting of resins. Remove and re-apply masking before resin cures and as required between coats. Apply ALT primer to substrate as required. Refer to ALT "Substrate Preparation & Priming Guidelines" for specific recommendations and requirements. Contact ALT Global Technical Department for recommendations regarding specific applications.

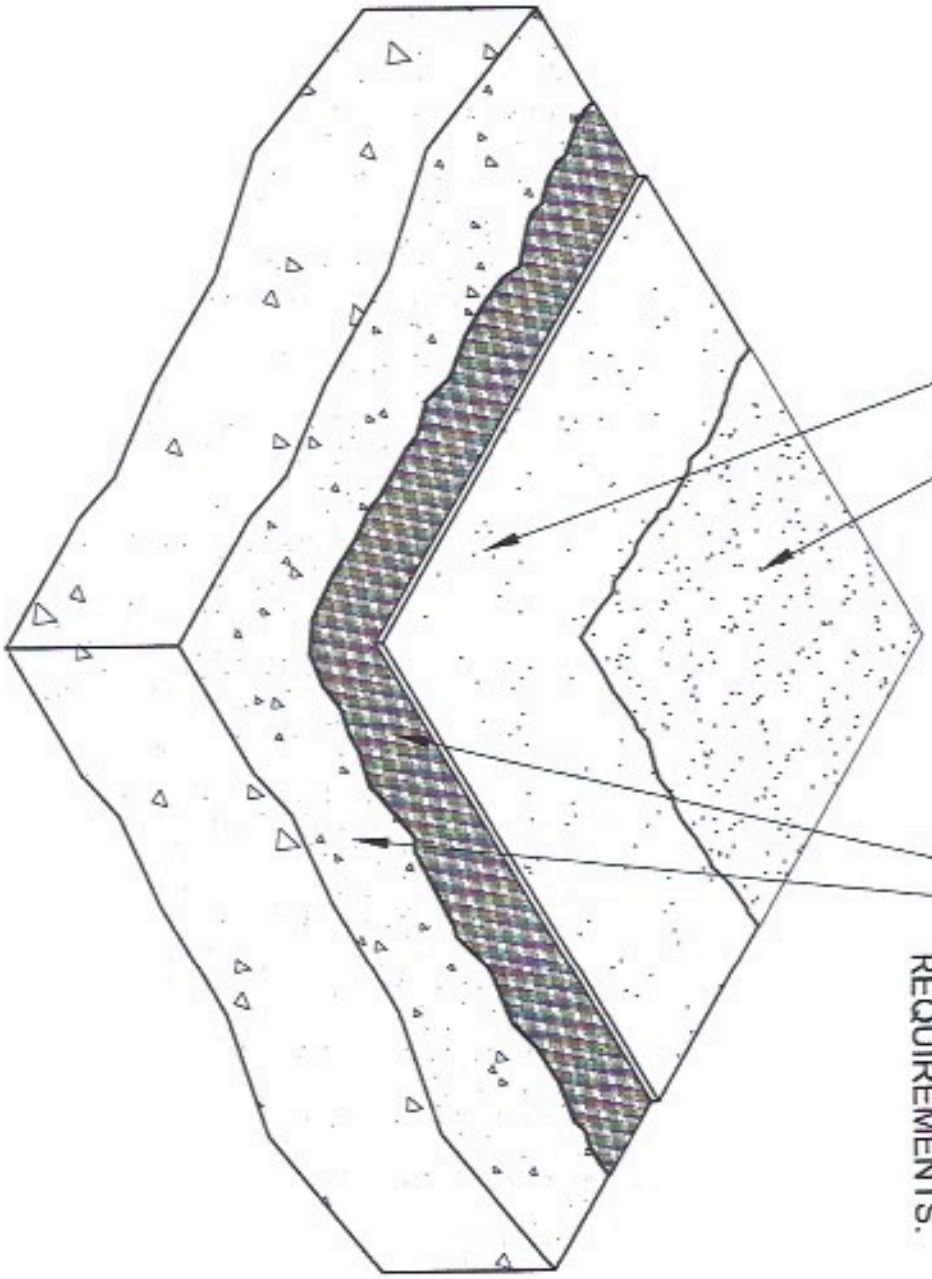
Work Interruptions
ALT Finish 288 Resin should be applied within 12-hours of the ALT membrane application whenever possible. If work is interrupted for more than 12-hours, use ALT Activator to clean and reactivate the in-place ALT membrane. ALT Activator should be wiped on the in-place membrane, allowed 20-minutes evaporation time, and over-coated within 60-minutes of application. ALT Activator should only be applied over an area that can be over-coated within a 60-minute period. Re-apply ALT Activator as required to assure proper reactivation of all transition areas.

Application
After mixing and catalyzing apply resin to clean and prepared substrate at the required consumption using ALT approved rollers, brushes and squeegee. On large areas, the resin should be spread evenly onto the surface using a squeegee and back-rolled to remove puddles. See individual system specifications for specific guidelines regarding application of topcoats and/or surfacing.

Surfacing
ALT offers a wide variety of optional surfacing treatments for aesthetic, anti-slip or mechanical wear. See individual system specifications for specific guidelines regarding application of topcoats and/or surfacing.

ALT Anti-Slip Additive
When a relatively light duty anti-skid substrate is required, ALT Anti-Slip Additive can be mixed with ALT Finish 288 and applied over completed membrane surfaces. Refer to the ALT Anti-Slip Additive product data sheet for specific recommendations for mixing and use. Contact ALT Global Technical Department for recommendations regarding specific applications.

Remarks/Comments
The information provided regarding application of ALT Global products is based on extensive development work, as well as many years of experience, and is given to the best of our knowledge. However, due to the diverse conditions encountered in building construction, it is necessary for the contractor to test the product for its suitability in any given case. We reserve the right to make alterations in keeping with technical developments or improvements.



ALT GLOBAL	**ALT R230 MEMBRANE ROOF ASSEMBLY SURFACING OPTION 2 (NON-INSULATED)**			DRAWING NO.: **R-1B**
REVISION: 0	ISSUE DATE: 10-15-2014	SCALE: N.T.S.	DRAWN BY: ALT Global	AR_01A

IFB Job No. 17-10, WP2020 #KW-07 Addendum No. 2 Attachment 2

SUBSTITUTION REQUEST FORM

Project: Job No. 17-10, WP2020 Project No. KW-07 Rehabilitate Paua Valley Tank No. 1, Kekaha

To: Mr. Dustin Moises, Procurement Officer

Date: 8/14/19

From: Schad Woods, Strategic BP Hawaii

swoods@strategicbp.com, (808) 497-0239

Re: Request for Product Substitution

Section Title: SP-9 Protective Coatings

Article/Paragraph: 9.15 Coating Systems

Proposed substitution: Gaco LM-60 Two Component Elastomeric Polyurethane Membrane
Currently Specified: Sika 7600, CIM 1061 two component urethane

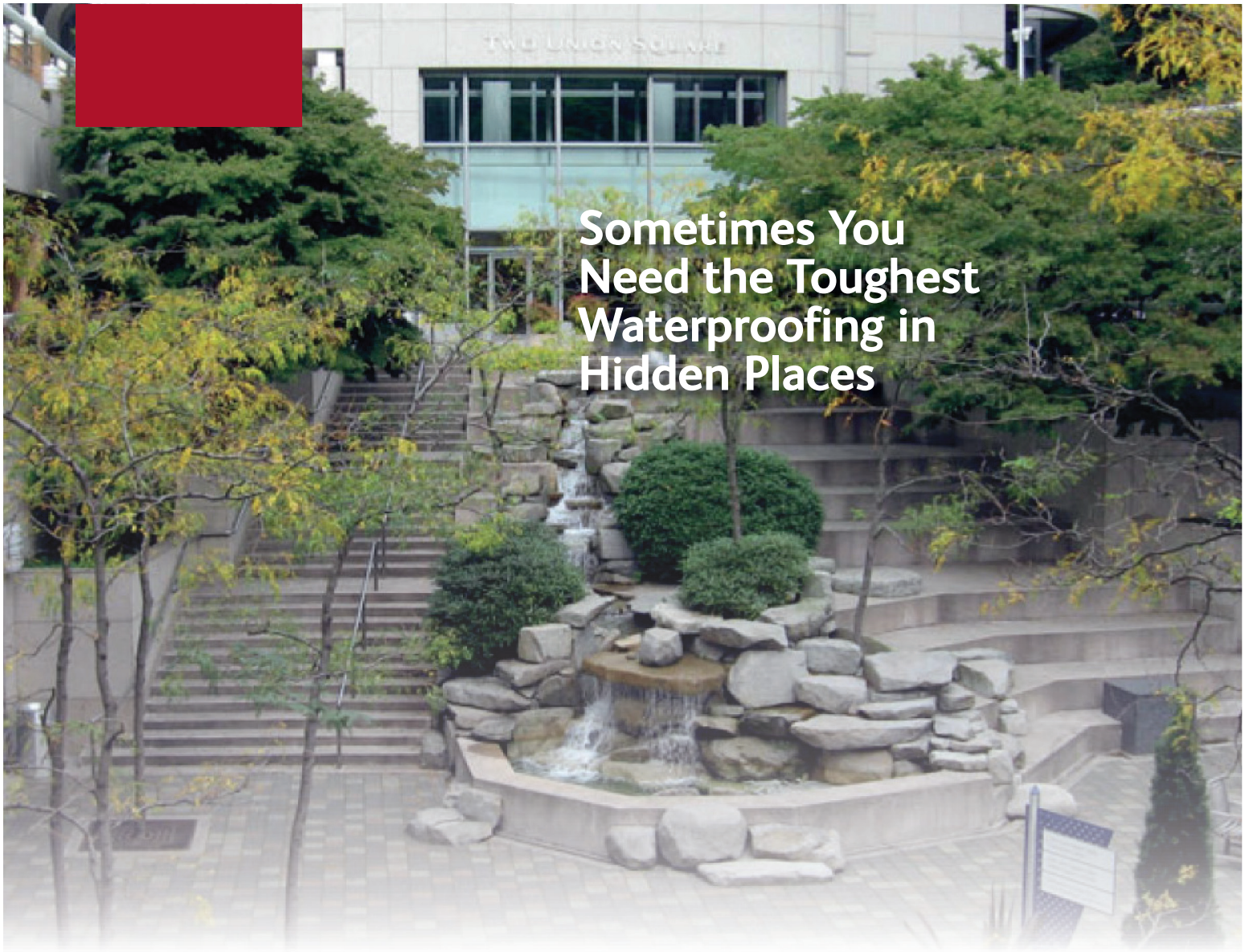
Differences between proposed substitution and specified product:

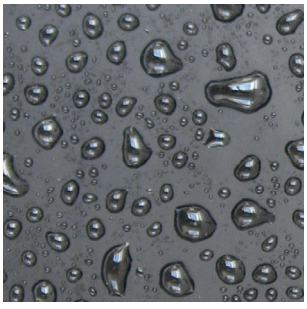
Physical properties of Gaco LM-60 (tensile strength, elongation, adhesion,) exceed or are comparable. LM-60 is less water permeable than those specified (.0012 perms, vs .03). All products are two component polyurethane meeting NSF Standard 61 for use in potable water tanks.

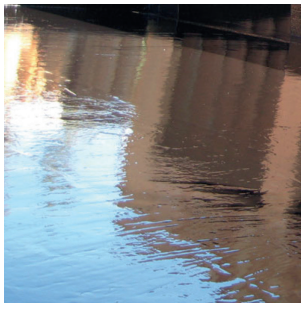
Supporting Data Attached: ☐ Drawings X Product Data ☐ Samples ☐ Tests
☐ Sustainability (**[MA-CHPS][LEED v4]**) Criteria

Attachments:

Gaco LM-60 Data and Brochure, LM-60 SDS







GacoFlex™

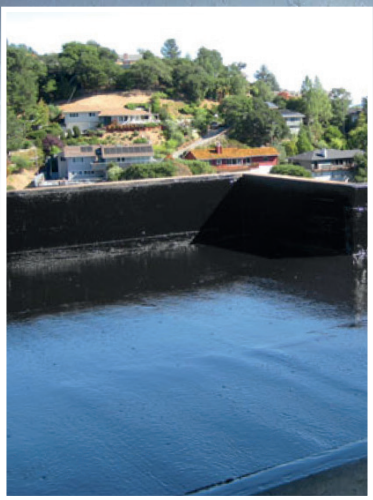
LM60 Cold Applied Waterproofing Membrane

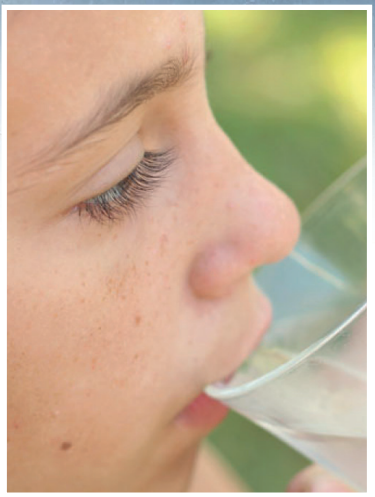
100% Pure Polyurethane
Potable Water Approved

800 331 0196
gaco.com

GacoFlex LM60 is 100% pure polyurethane. When properly applied, it will create a seamless membrane that will provide unsurpassed waterproofing performance and a longer life cycle than many other materials. GacoFlex LM60 is recommended for us in IRMA roofing systems and on between slab and below grade structures. LM60 is solvent free and super-compliant; it is NSF/ANSI 61 Certfified for use in waterproofing potable water tanks.

Innovative Polyurethane Technology





100% Pure Polyurethane

GacoFlex LM60 is a two-component,100% pure polyurethane. When properly applied, it will create a seamless impermeable elastomeric membrane that will waterproof and performs well for a long product life.

Solvent Free and No Odor

GacoFlex LM60 is solvent free and super-compliant so there is no odor, making it ideal for use on and around occupied buildings or where other trades are present.

Single Application

GacoFlex LM60 can be applied to concrete, metal and plywood in a single application by squeegee, trowel, brush or spray, eliminating future problem areas such as seams and allowing contractors to quickly move on to the next project.

Potable Water Approved

GacoFlex LM60 is NSF/ANSI 61 Certified for use in waterproofing potable water tanks.

NSF is an independent, accredited organization that tests, audits and certifies products and systems and develops public health standards and certifications that help protect food, water, consumer products and the environment.

45-Year Proven Track Record

GacoFlex LM60 has been successfully used for over 45 years to waterproof both horizontal and vertical surfaces on millions of square feet of the most sophisticated and aesthetically demanding buildings.

Property	ASTM Test	Value
Tensile Strength	D412	240 ± 10 psi
Elongation	D412	300%
Solids (By Volume)	—	100%
Water Vapor Permeability	E96	.012 Perm In.
Water Absorption 21 Days R.T.	D471	1% Max.
Low Temperature	D746	Pass @ -50˚F (-45˚C)
Hardness, Shore A	C836	77 Shore A min. @ 70˚F (21˚C)

GacoFlex LM60

Providing a Versatility of Applications Limited Only by the Scope of Imagination

Between Slab or Below-Grade Structures

Between slab and below grade applications have one thing in common – once the job is completed, the waterproofing membrane is hidden from view. In such applications, it is critical that the waterproofing membrane be tough and durable enough to function without maintenance for many years. Tried and tested for over 45 years, GacoFlex LM60 does not shrink or crack and has proven its reliability again and again in challenging applications.

GacoFlex LM60H is for use on horizontal and low slope surfaces in a below grade or between slab configuration. LM60 is self-leveling and is applied by notched trowel or squeegee in one coat, or if thinned it may be applied by spray in two coats. Once cured, LM60 is then covered with a protection course and a wear course.

GacoFlex LM60V is thixotropic in consistency and will cling to vertical surfaces including foundation walls without runoff at the normal application rate. It may be applied with a notched trowel in one coat, or if thinned it may be applied by spray in two coats.

GacoFlex LM60H and LM60V are formulated for compatibility so overlaps between vertical and horizontal surfaces provide the same exceptional waterproofing, making LM60 the ideal choice for use on structures of curving and sloping shapes.

IRMA® Roofing Systems

GacoFlex LM60 is ideal for use on flat or low-sloped concrete or plywood roof decks as part of an Inverted Roof Membrane Assembly (IRMA). Once GacoFlex LM60 is applied and cured, the membrane is covered with extruded polystyrene board to provide thermal insulation and protect the membrane from damage. Both the insulation and the membrane are then protected from damage with a layer of rock, pavers or cementitious material bonded to the board insulation.

The IRMA roofing system performs well under water immersion conditions and reduces thermal shock of the membrane and roof deck.

Green Roofs / Garden Roof

The most important element of any roof, particularly a green – or garden – roof, is the one that keeps the building dry. A GacoFlex LM60 membrane not only provides the exceptional waterproofing needed under soil and plants in a roof top garden, as an added bonus LM60 is potable water approved, making roof water runoff safe for people, pets and wildlife.

Please refer to Gaco Specifications available at gaco.com for detailed installation instructions.

Gaco is Firestone Building Products brand.

Gaco Western

SINCE 1955

Product Data Sheet:

GacoFlex LM-60
May 2012
Supersedes 10/11

GACOFLEX® LM-60
LIQUID APPLIED POLYURETHANE ELASTOMERIC MEMBRANE

DESCRIPTION: GacoFlex LM-60 is a 100% solids liquid applied two component coating that cures into a water resistant polyurethane elastomeric membrane.

LM-60H is designed for application on horizontal and low slope surfaces, at the rate of at least four gallons per 100 square feet (15.14 l / 9.3 m^2), to yield a 1/16" (.16 cm) thick membrane. LM-60V is designed for the same application rate and yield on vertical surfaces.

USAGE: Intended primarily for use as a high build waterproofing membrane over concrete, metal and plywood.

GacoFlex LM-60 has NSF ANSI Standard 61 approval to line potable water storage tanks 10,000 gallons and over, including when GacoFlex E-5320 is used as a primer.

For non-potable water facilities where pH is less than 6.5 an acid resistant version of LM-60 is available for use.

CONSISTENCY: LM-60H & LM-60V are thixotropic. LM-60H ranges between 25,000 to 40,000 centipoises at 75°F (24°C). LM-60V ranges between 100,000 to 160,000 centipoises at 75°F (24°C).

COLOR: Black.

APPLIED PRODUCT DATA

WEATHERABILITY: GacoFlex LM-60 has excellent durability up to 180°F (82°C). LM-60 must be top coated or have roofing granules applied for exterior exposure, LM-60 will crack and become brittle in exterior applications if not protected.

CHEMICAL RESISTANCE: Excellent resistance to water immersion, good salt and alkali resistance. Excellent hydrolytic stability up to 150°F (66°C). LM-60AR version has good acid resistance (refer to the LM-60AR PDS for more information).

TENSILE:	ASTM D-412	
	Strength:	240 ± 10 psi (1.65 ± .07 MPa)
	Elongation:	300% ± 20
	Permanent Set at Break:	10% Max.
HARDNESS:	ASTM C836 Shore A Using type 00 hardness gauge	77 Shore A min. @ 70°F (21°C)

ADHESION:	ASTM C836 Peel strength	11 lbf/inch (avg.)
TEAR RESISTANCE:	ASTM D-624 Die C Lb./In.Min.	30 (5.4 kg(f) / cm)
WATER ABSORPTION:	ASTM D-471 21 Days R.T.	1% Max.
WATER VAPOR PERMEABILITY:	ASTM E-96 Procedure BW 100% R.H. Difference	0.012 Perm Inches
LOW TEMPERATURE BRITTLENESS:	ASTM D-746	Pass @ -50°F (-45°C)

PACKAGED PRODUCT DATA

PACKAGE:	Four gallon (15.14 l) kit; 3¾ gallons (14.19 l) Polyol (Part A) in 5 gallon (18.92 l) container, plus one quart (.95 l) Iso (Part B) supplied separately.	
COVERAGE:	Mil Square Feet per Gallon: Applied Coverage:	1600 (39.2 m^2 / l /.02 mm) 4 Gals./100 Sq. Ft. (15.14 l / 9.3 m^2) to yield 1/16" (0.16 cm) thickness.
SOLIDS:	Volume	100%
V.O.C.:	None.	
TOXICITY:	GacoFlex LM-60 Part B is an isocyanate prepolymer. When mixed with the polyol side (Part A) use adequate ventilation, avoid breathing vapors or spray mist and prolonged or repeated contact with skin. When spraying use a particulate matter mask, an approved organic matter cartridge respirator or fresh air mask. LM-60 is certified by the National Sanitation Foundation to conform to the requirements of NSF Standard 61 - Drinking Water System Components - Health Effects for tanks 10,000 gallons and over without the use of GacoFlex E-5320 primer, and tanks 30,000 gallons and over when GacoFlex E-5320 is used as a primer.	
FLASH POINT:	ASTM D-56 (Closed Cup)	Above 200°F (93°C)
ADHESION:	Excellent adhesion to clean, dry, plywood and concrete. Primers may be required for other surfaces. See below for specific primer.	
STORAGE STABILITY:	One year at 50° to 80°F (10° to 27°C).	
THINNER:	GacoFlex T-5111 or T-5112. Normally not required, but may be thinned up to 10% by volume if necessary. GacoFlex LM-60 can be thinned when used in conjunction with potable water projects. Thinning more than 10% will exceed VOC requirements.	

APPLICATION

PRIMER:	Metals	GacoFlex E-5320 or E-5388
	Plywood	None Required
	Galvanized Steel	GacoFlex E-5320, E-5388 or U-5677
	Concrete	GacoFlex U-5677 & E-5320 or GacoFlex E-5481

MIXING INSTRUCTIONS: Stir the polyol side (Part A) to suspend any settled pigment. Completely empty the iso (Part B) container into the polyol side (Part A) and power mix for five minutes, scraping the pail side several times.

Use a power mixer that will thoroughly agitate the mix (electric or compressed air powered). A Jiffy Mixer PS21 has been found to work well with LM-60H or LM-60V.

Combine fifteen volumes of polyol (Part A) with one volume of iso (Part B) for quantities less than four gallons. Power mixing is mandatory for quantities over two gallons. Extreme care is required to mix in materials on the side and bottom of the mixing container.

POT LIFE: One hour at 70° to 80°F (21°C to 27°C). Can be extended to three hours by thinning with T-5112 (up to 10%).

APPLICATION: For non-potable water applications: Trowel or squeegee as mixed. (Prime concrete surfaces with U-5677 & E-5320). Use a 5/16" x 5/16" V notched trowel or notched squeegee for application to 60 mil (1.52 mm) thickness. LM-60H is self-leveling on horizontal surfaces. LM-60V must be flat troweled to a smooth finish since it will not self level at a normal application.

Contact Gaco Western for spray application information and for more information on potable water applications.

Refer to specification for protection course or covering requirements. Use caution when backfilling or covering to avoid damage to the polyurethane membrane.

WARNING – LM-60 in direct contact with aged or new SBS and EPDM sheet membranes could cause their swelling and deterioration through time due to the strong solvency of the process oil in LM-60.

For specific Safety and Health information please refer to Material Safety Data Sheet.

SECTION 1: IDENTIFICATION

1.1 PRODUCT IDENTIFIER

Product Name: GacoFlex® LM60 - Part A

Product Code: LM60V, LM60VAR, LM60V-K1A, LM60V-K4A

1.2 RECOMMENDED USE OF CHEMICAL AND RESTRICTIONS ON USE

Product Use: Architectural Coating and Waterproofing

Use this product in accordance with all local, regional, national and international regulations.

1.3 DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

Name/Address: Gaco Western LLC
1245 Chapman Dr.
Waukesha, WI, 53186-5942
USA

Telephone Number: 800-331-0196 / **International**: 001-800-331-0196

Email: sds@gaco.com

Website: www.gaco.com

1.4 EMERGENCY TELEPHONE NUMBER

For Chemical Emergency
Spill, Leak, Fire, Exposure, or Incident
Within USA and Canada: 1-800-424-9300
Outside USA and Canada: +1-703-527-3887 (collect calls accepted)

SECTION 2: HAZARD(S) IDENTIFICATION

2.1 CLASSIFICATION OF THE CHEMICAL

Hazard class:

HAZARD CLASSIFICATION	CATEGORY
Sensitization – Skin	1B

2.2 LABEL ELEMENTS

Hazard pictogram: GHS07

Signal word: Warning

Hazard statement: May cause an allergic skin reaction.

Prevention: Avoid breathing dust/fume/gas/mist/vapors/spray.
Contaminated work clothing must not be allowed out of the workplace.
Wear protective gloves

Response: Specific treatment (see Section 8 on this label).
If on skin: Wash with plenty of water.
Wash contaminated clothing before reuse.
If skin irritation or a rash occurs: Get medical advice/attention.

Storage: Store in a well-ventilated place. Keep container tightly closed.

Disposal: Dispose of contents and container in accordance with all local, regional, national and international regulations.

2.3 ADDITIONAL INFORMATION

Main symptoms: Prolonged exposure may cause chronic effects. May cause allergic skin reaction. Dermatitis. Rash.

Hazards not otherwise specified: None Known

<1 % of the mixture consists of ingredient(s) of unknown acute toxicity

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 MIXTURES

Material	CAS No.	Weight %*
Limestone	1317-65-3	15-40%
Bituminous coal	Not available	7-13%
Carbon Black	1333-86-4	7-13%
Silica, quartz (dust)	14808-60-7	0.1-1.0%
1,4-Benzenediamine, N,N'-mixed Ph and tolyl derivs.	68953-84-4	0.1-1.0%

*The exact percentage (concentration) of composition has been withheld as a trade secret in accordance with paragraph (i) of §1910.1200.

SECTION 4: FIRST-AID MEASURES

4.1 DESCRIPTION OF THE FIRST AID MEASURES

General information: Ensure that medical personnel are aware of the materials(s) involved, and take precautions to protect themselves.

Inhalation: Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact: Remove contaminated clothing immediately and wash skin with soap and water. Wash contaminated clothing before reuse. In case of eczema or other skin disorders: Seek medical attention and bring along these instructions.

Eye contact: Rinse eyes with water. Get medical attention if irritation develops and persists.

Ingestion: Rinse mouth. Get medical attention if symptoms occur.

4.2 MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED

Prolonged exposure may cause chronic effects.
May cause allergic skin reaction. Dermatitis. Rash.

4.3 INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENTS NEEDED

Note to physicians: Treat symptomatically.

Specific treatments: In case of accident or if you feel unwell, seek medical advice (show the label or SDS where possible).

SECTION 5: FIRE-FIGHTING MEASURES

5.1 EXTINGUISHING MEDIA

General hazards: No unusual fire or explosion hazard.

Suitable extinguishing media: Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2)

Unsuitable extinguishing media: Do not use water jet as an extinguisher as this will spread the fire.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE

Specific hazards: During fire, gases hazardous to health may be formed.

Products of combustion: May include, and are not limited to: oxides of carbon.

5.3 Special protective equipment and precautions for fire-fighters (PPE)

Special protective equipment for fire-fighters:
Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Special fire-fighting procedures: Keep upwind of fire. Move containers from fire area if you can do it without risk.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Keep unnecessary personnel away. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Local authorities should be advised if significant spillages cannot be contained.

6.2 METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING - UP

Methods for containment: Contain and/or absorb spill with inert material (e.g. sand, vermiculite), then place in a suitable container. Do not flush to sewer or allow to enter waterways. Use appropriate Personal Protective Equipment (PPE).

Methods for cleaning-up: Stop the flow of material, if this is without risk. Dike far ahead of spill for later disposal. Following product recovery, flush area with water. For waste disposal, see Section 13 of the SDS.

Large spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.

Small spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.
Never return spills to original containers for re-use.

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

SECTION 7: HANDLING AND STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING

Precautions for Safe handling:	Observe good industrial hygiene practices.
General hygiene advice:	Ensure that medical personnel are aware of the materials(s) involved, and take precautions to protect themselves.

7.2 CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

Safe storage:	Store away from incompatible materials.
Specific use:	Architectural Coating and Waterproofing
Technical measures:	No specific recommendations.
Incompatible materials:	None known, avoid strong oxidizing agents.
Safe packaging material:	No specific recommendations.
Precautions:	Use personal protective recommended in Section 8 of the SDS.
Safe handling advice:	Observe good industrial hygiene practices.
Suitable storage conditions:	Store away from incompatible materials.
Handling-technical measures:	No specific recommendations.
Local and general ventilation:	Provide adequate ventilation.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 CONTROL PARAMETERS

Control parameters: Follow standard monitoring procedures.

Exposure limits:

Limestone

NIOSH REL: TWA 10 mg/m3 (total) TWA 5 mg/m3 (resp)
OSHA PEL: TWA 15 mg/m3 (total) TWA 5 mg/m3 (resp)
ACGIH TLV: 2 mg/m3 (resp)

Bituminous coal (dust)

NIOSH
REL: TWA 1 mg/m3 [measured according to MSHA method (CPSU)]
REL: TWA 0.9 mg/m3 [measured according to ISO/CEN/ACGIH criteria]
See Appendix C (Coal Dust and Coal Mine Dust)
OSHA
PEL†: TWA 2.4 mg/m3 [respirable, < 5% SiO2]
PEL†: TWA (10 mg/m3)/(%SiO2 + 2) [respirable, > 5% SiO2]
See Appendix C (Mineral Dusts)

The Mine Safety and Health Administration (MSHA) PEL for respirable coal mine dust with < 5% silica is 2.0 mg/m3, or (10 mg/m3) / (% respirable quartz + 2) for coal dust with > 5% silica.

Carbon Black

NIOSH REL: TWA 3.5 mg/m3 Ca TWA = 0.1 mg PAHs/m3 [Carbon black in presence of polycyclic aromatic hydrocarbons (PAHs)] See Appendix A See Appendix C
OSHA PEL: TWA 3.5 mg/m3
ACGIH TLV: TWA 3.5 mg/m3

8.2 EXPOSURE CONTROLS

Engineering measures to reduce exposure:

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

8.3 INDIVIDUAL PROTECTIVE MEASURES

General:	Use personal protective equipment as required.
Eye protection:	If contact is likely, safety glasses with side shields are recommended.
Hand protection:	Wear appropriate chemical resistant gloves.
Respiratory protection:	In case of insufficient ventilation, wear suitable respiratory equipment.
Skin and body protection:	Wear appropriate chemical resistant clothing.
Hygiene measures:	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.
Thermal hazards:	Wear appropriate thermal protective clothing, when necessary.

Environmental exposure controls: Environmental manager must be informed of all major releases.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Glossy Black Liquid
Color:	Black
Form:	Liquid
Odor:	Oily smell
Odor Threshold:	Not applicable
Physical State:	Liquid
pH (at 20°C):	Not applicable
Melting Point/Freezing Point:	Not applicable
Initial Boiling Point and Boiling Range:	Not applicable
Flash Point:	>200°F/>93°C
Evaporation Rate:	Not applicable
Flammability (solid, gaseous):	Not Flammable
Lower Flammability/Explosive Limit:	Not applicable
Upper Flammability/Explosive Limit:	Not applicable
Evaporation rate:	Not applicable
Vapor Pressure (mm Hg @38°C):	Not applicable
Vapor Density:	Not applicable
Density (lb/gal):	11.33
Relative Density/Specific Gravity:	1.36
Solubility in water/miscibility:	Not soluble in water
Partition coefficient: n-octanol/water:	Not applicable
Auto-ignition Temperature:	Not applicable
Decomposition Temperature:	Not applicable
Viscosity (at 25°C) g/L:	135,000 cpu
Oxidizing Properties:	Not an oxidizer
Explosive Properties:	Not applicable
VOC:	<10 g/L (<0.083 lb/gal)

Solvent content - Organic: Not applicable
Solvent content - Water: Not applicable
Solvent content - Solids: 100%
Other information: Not applicable
Incompatibilities: None known, avoid strong oxidizing agents.

SECTION 10: STABILITY AND REACTIVITY

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

10.2 CHEMICAL STABILITY
Chemical stability: Material is stable under normal conditions.
Materials to avoid: The product is stable and non-reactive under normal conditions of use, storage and transport.

10.3 POSSIBILITY OF HAZARDOUS REACTIONS
Hazardous reactions: No dangerous reaction known under conditions of normal use.

10.4 CONDITIONS TO AVOID Contact with incompatible materials.

10.5 INCOMPATIBLE MATERIALS None known, avoid strong oxidizing agents.

10.6 HAZARDOUS DECOMPOSITION PRODUCTS
Hazardous decomposition products: No hazardous decomposition products are known.
Hazardous polymerization: Does not occur.

Other information: Not applicable.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 INFORMATION ON TOXICOLOGICAL EFFECTS

Acute toxicity: May cause an allergic skin reaction. Dermatitis. Rash.
Likely routes of exposure: Skin contact. Eye contact. Inhalation.
Eye: Direct contact with eyes may cause temporary irritation.
Skin: May cause an allergic skin reaction. Dermatitis. Rash.
Ingestion: Not an expected route of exposure. Expected to be a low ingestion hazard.
Inhalation: Not an expected route of exposure. No adverse effects due to inhalation are expected.

Calculated overall chemical acute toxicity values for this formulation:

Calculated overall Chemical Acute Toxicity Values		
LC50 (inhalation)	**LD50 (oral)**	**LD50 (dermal)**
>5 mg/kg (dust and mist)	>2000 mg/kg	>2000 mg/kg

11.2 DELAYED, IMMEDIATE, AND CHRONIC EFFECTS OF SHORT- AND LONG-TERM EXPOSURE

Skin corrosion/irritation: Based on available data, this product is not expected to cause skin corrosion or irritation. Prolonged skin contact may cause dryness, redness, or cracking.
Serious eye damage/irritation: Based on available data, this product is not expected to cause serious eye damage or irritation. Direct contact with eyes may cause temporary

irritation.

Respiratory sensitization: Based on available data, this product is not expected to cause respiratory sensitization.

Skin sensitization: May cause an allergic skin reaction. Dermatitis. Rash.

Symptoms and target organs: Prolonged exposure may cause chronic effects. May cause allergic skin reaction. Dermatitis. Rash.

Chronic health effects: No chronic health effects known.

Carcinogenicity: This product is not classified as a carcinogen. Due to the form of the product, exposure to the potentially carcinogenic components is not expected.

Material	OSHA(O)	ACGIH(G)	NTP(N)	IARC(I)
Carbon Black	Not listed	A3	Not listed	2B
Silica, quartz (dust)	Not listed	A2	K	1

SOURCE AGENCY CARCINOGEN CLASSIFICATIONS:

OSHA (O) =Occupational Safety and Health Administration
Ca/Yes = Expected to be carcinogenic
not listed = Not expected to be carcinogenic

ACGIH (G) =American Conference of Governmental Industrial Hygienists
A1 =Confirmed human carcinogen
A2 =Suspected human carcinogen
A3 =Animal carcinogen
A4 =Not classifiable as a human carcinogen
A5 =Not suspected as a human carcinogen
not listed = Not expected to be carcinogenic

NTP (N) =National Toxicology Program
K =Known to be a carcinogen
R = Reasonably anticipated to be a carcinogen
not listed = Not expected to be carcinogenic

IARC (I) =International Agency for Research on Cancer
1 =Carcinogenic to humans
2A =Probably carcinogenic to humans
2B =Possibly carcinogenic to humans
3 =Not classifiable as to its carcinogenicity to humans
4 =Probably not carcinogenic to humans
not listed = Not expected to be carcinogenic

Mutagenicity: No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Reproductive Toxicity: This product is not expected to cause reproductive or developmental effects.

Specific Target Organ Toxicity (STOT):

Single Exposure: Not classified as an STOT - Single Exposure.

Repeated Exposure: Not classified as an STOT - Repeated Exposure.

Aspiration Toxicity: Based on available data, this product is not expected to cause aspiration toxicity.

Other Information: Not applicable.

SECTION 12: ECOLOGICAL INFORMATION

12.1 ECOTOXICITY

Ecotoxicity: The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Acute aquatic toxicity: The product is not classified as acutely environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Chronic toxicity: The product is not classified as having a chronic environmental hazard. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Environmental effects: The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

12.2 PERSISTENCE AND DEGRADABILITY

Persistence/biodegradability: The product contains substances which are not expected to be readily biodegradable.

12.3 BIOACCUMULATIVE POTENTIAL

Bioaccumulation: No data available.

12.4 MOBILITY

Mobility: No data available.

Mobility in soil: No data available.
Mobility in non-soil: No data available.

12.5 OTHER ADVERSE EFFECTS
Ozone layer: No data available.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 WASTE TREATMENT METHODS
Disposal method: This material must be disposed of in accordance with all local, state, provincial, and federal regulations.
Contaminated packaging: Since emptied containers may retain product residue, follow label warnings even after container is emptied. Dispose of contents and container in accordance with all local, regional, national and international regulations.
EU codes: The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Residual waste: Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Disposal instructions: Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents and container in accordance with all local, regional, national and international regulations.
Waste codes: The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Other disposal recommendations: None

SECTION 14: TRANSPORT INFORMATION

DOT Non-Bulk
Not classified as Dangerous Goods for Transport

DOT Bulk
Not classified as Dangerous Goods for Transport

IMDG
Not classified as Dangerous Goods for Transport

ICAO/IATA
Not classified as Dangerous Goods for Transport

Reportable quantity: Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material

SECTION 15: REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/ LEGISLATIONS SPECIFIC FOR THE CHEMICAL

US Federal Regulations:

U.S. OSHA (Occupational Safety and Health Administration) Specifically Regulated Substances (29 CFR

1910.1001-1050)

No components of this product are present at concentration greater than or equal to 0.1% and are identified as a carcinogen or potential carcinogen by OSHA.

SARA/CERCLA reporting requirements:

No components of this product are found at concentrations greater than or equal to 0.1% and are subject to the SARA/CERCLA reporting requirements.

State Right-to-Know Regulations

The following components of this product are found at concentrations greater than or equal to 0.1%, subject to state Right-to-Know reporting requirements; or are found at any concentration and are listed under California Proposition 65.

Material	California Proposition 65	Massachusetts Right-to-Know	Minnesota Employee Right-to-Know	New Jersey Community Environmental Hazard Right-to-Know	New Jersey Right-to-Know Substance	Pennsylvania Right-to-Know	Rhode Island Right-to-Know
Limestone	Not listed	Listed	Listed	Not listed	Listed	Listed	Not listed
Carbon Black	Cancer	Listed	Listed	Not listed	Not listed	Listed	Not listed
Silica, quartz (dust)	Not listed	Listed	Listed	Listed	Listed	Listed	Not listed
4-Vinylcyclohexene	Cancer	Listed	Listed	Not listed	Listed	Listed	Not listed
1,3-Butadiene	Cancer	Listed	Listed	Not listed	Listed	Listed	Listed

Global Inventories:

Notification status:	
US - TSCA	All substances are listed
Canada -DSL	All substances are listed
Canada - NDSL	No substances are listed
EU - EINECS	Not all substances are listed
EU - ELINCS	No substances are listed
EU - NLP	At least 1 substance is listed
Australia – AICS	All substances are listed
China - EICSC	All substances are listed
Japan - ENCS	All substances are listed
Korea - KECI	Not all substances are listed
Taiwan - NECI	All substances are listed
New Zealand - NZIoC	Not all substances are listed
Philippine - PICCS	All substances are listed

EU - REACH Status:

A registration number is not available for substances in this mixture as the substances are exempted from registration, the annual tonnage does not require a registration or the registration is envisioned for a later registration deadline.

CANADA – WHMIS (Workplace Hazardous Materials Information System) Classification:

D2A, D2B

MEXICO:

Hazard Classification: 2-1-0

Carcinogen Status: No data available.

SECTION 16: OTHER INFORMATION

HMIS (Hazardous Materials Identification System) rating:

Health:	**2***
Flammability:	**1**
Physical:	**0**

NFPA 704 (National Fire Protection Association) rating:

Health	**2**
Fire	**1**
Reactivity	**0**

Legend:

DOT	US Department of Transportation
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods
ACGIH	American Conference of Governmental Industrial Hygienists
NTP	National Toxicology Program
IARC	International Agency for Research on Cancer
PPE	Personal Protective Equipment
RCRA	Resource Conservation and Recovery Act
CAA	Clean Air Act
SARA	Superfund Amendments and Reauthorization Act
EPCRA	Emergency Planning and Community Right-to-Know Act
WHMIS	Workplace Hazardous Materials Information System
EU	European Union
REACH	Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
TSCA	US Toxic Substances Control Act (TSCA)
DSL	Canada Domestic Substance List (DSL)
NDSL	Canada Non-Domestic Substance List (NDSL)
EINECS	European Inventory of Existing Commercial Chemical Substances (EINECS)
ELINCS	European List of Notified Chemical Substances (ELINCS)
NLP	European list of No-longer Polymers (NLP)
AICS	Australian Inventory of Chemical Substances (AICS)
EICSC	China Existing Chemical Inventory - IECSC
ENCS	Japanese Existing and New Chemical Substances Inventory(ENCS)
KECI	Korea Existing Chemicals Inventory(KECI)
NECI	Taiwan National Existing Chemical Inventory (NECI)
NZIoC	New Zealand Inventory of Chemicals (NZIoC)
PICCS	Philippine Inventory of Chemicals and Chemical Substances (PICCS)
HMIS	Hazardous Materials Identification System
NFPA	National Fire Protection Association (NFPA)

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Disclaimer: We believe the statements, technical information and recommendations contained herein are reliable, but they are given without warranty or guarantee of any kind. The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for the user's own particular use.
Prepared by: Gaco Western LLC

End of Safety Data Sheet

SECTION 1: IDENTIFICATION

1.1 PRODUCT IDENTIFIER

Product Name: GacoFlex® LM60 - Part B

Product Code: LM60B, LM60B-Q, LM60B-8Z, LM60B-55

1.2 RECOMMENDED USE OF CHEMICAL AND RESTRICTIONS ON USE

Product Use: Architectural Coating and Waterproofing

Use this product in accordance with all local, regional, national and international regulations.

1.3 DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

Name/Address: Gaco Western LLC
1245 Chapman Dr.
Waukesha, WI, 53186-5942
USA

Telephone Number: 800-331-0196 / **International**: 001-800-331-0196

Email: sds@gaco.com

Website: www.gaco.com

1.4 EMERGENCY TELEPHONE NUMBER

For Chemical Emergency
Spill, Leak, Fire, Exposure, or Incident
Within USA and Canada: 1-800-424-9300
Outside USA and Canada: +1-703-527-3887 (collect calls accepted)

SECTION 2: HAZARD(S) IDENTIFICATION

2.1 CLASSIFICATION OF THE CHEMICAL

Hazard class:

HAZARD CLASSIFICATION	CATEGORY
Acute Toxicity – Inhalation	4
Skin Corrosion/Irritation	2
Eye Damage/Irritation	2A
Sensitization – Skin	1
Sensitization – Respiratory	1
Carcinogenicity	2
STOT SE – Specific Target Organ Toxicity (Single Exposure)	3
STOT RE – Specific Target Organ Toxicity (Repeated Exposure)	2

2.2 LABEL ELEMENTS

Hazard pictogram: GHS07, GHS08

Signal word: Danger

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

Prevention:
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe dust/fume/gas/mist/vapors/spray.
Wash thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing must not be allowed out of the workplace.
Wear protective gloves/protective clothing/eye protection/face protection.
In case of inadequate ventilation, wear respiratory protection.

Response:
Specific treatment (see Section 8 on this label).
If on skin: Wash with plenty of water.
Take off contaminated clothing and wash it before reuse.
If skin irritation or a rash occurs: Get medical advice/attention.
If inhaled: Remove person to fresh air and keep comfortable for breathing.
If experiencing respiratory symptoms: Call a poison/doctor.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.

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

Disposal: Dispose of contents and container in accordance with all local, regional, national and international regulations.

2.3 ADDITIONAL INFORMATION

Main symptoms:
Prolonged exposure may cause chronic effects. Suspected of causing cancer. May cause damage to organs (lungs) through prolonged or repeated (inhalation) exposure. May cause respiratory irritation. Difficulty breathing. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause allergic skin reaction. Dermatitis. Rash. Skin irritation. May cause redness and pain. May cause allergic skin reaction. Dermatitis. Rash. Causes serious eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Animal tests and other research indicate that skin contact with TDI can play a role in causing isocyanate sensitization and respiratory reaction. Lung damage and respiratory sensitization may be permanent.

Hazards not otherwise specified: Harmful to aquatic life with long lasting effects.

0% of the mixture consists of ingredient(s) of unknown acute toxicity

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 MIXTURES

Material	CAS No.	Weight %*
Toluene-diisocyanate, mixture of toluene-2,4-di-isocyanate and toluene-2,6-di-isocyanate (TDI)	26471-62-5	30-60%
2,2,4-Trimethyl-1,3-pentanediol	144-19-4	10-30%

*The exact percentage (concentration) of composition has been withheld as a trade secret in accordance with paragraph (i) of §1910.1200.

SECTION 4: FIRST-AID MEASURES

4.1 DESCRIPTION OF THE FIRST AID MEASURES

General information: If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a physician or poison center immediately.

Skin contact: Wash with plenty of soap and water. Take off contaminated clothing and wash before reuse. In case of eczema or other skin disorders: Seek medical attention and bring along these instructions.

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

Ingestion: Rinse mouth. Get medical attention if symptoms occur.

4.2 MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED

Prolonged exposure may cause chronic effects.
Suspected of causing cancer.
May cause damage to organs (lungs) through prolonged or repeated (inhalation) exposure.
May cause respiratory irritation.
Difficulty breathing. May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause allergic skin reaction. Dermatitis. Rash.
Skin irritation. May cause redness and pain.
May cause allergic skin reaction. Dermatitis. Rash.
Causes serious eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Skin contact with TDI can cause discoloration. Animal tests and other research indicate that skin contact with TDI can play a role in causing isocyanate sensitization and respiratory reaction. This data reinforces the need to prevent direct skin contact with isocyanates.

Diisocyanate vapors or mist at concentrations above the TLV or PEL can irritate (burning sensation) the mucous membranes in the respiratory

tract (nose, throat, lungs) causing runny nose, sore throat, coughing, chest discomfort, shortness of breath, and reduced lung function (breathing obstruction). Persons with a preexisting, nonspecific bronchial hyperreactivity can respond to concentrations below the TLV or PEL with similar symptoms as well as asthma attack or asthma-like symptoms. Exposure well above the TLV or PEL may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). Chemical or hypersensitivity pneumonitis, with flu-like symptoms (e.g. fever, chills) has also been reported. These symptoms can be delayed up to several hours after exposure. These effects are usually reversible.

4.3 INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENTS NEEDED

Note to physicians: Treat symptomatically. Symptoms may be delayed.

Eyes: Stain for evidence of corneal injury. If cornea is burned, instill antibiotic/steroid preparation as needed. Workplace vapors could produce reversible corneal epithelial edema impairing vision.
Skin: This compound is a skin sensitizer. Treat symptomatically as for contact dermatitis or thermal burn.
Ingestion: Treat symptomatically. There is no specific antidote. Inducing vomiting is contraindicated because of the irritating nature of the compound.
Inhalation: Treatment is essentially symptomatic. An individual having a dermal or pulmonary sensitization reaction to this material should be removed from further exposure to any diisocyanate.

Specific treatments: In case of accident or if you feel unwell, seek medical advice (show the label or SDS where possible).

SECTION 5: FIRE-FIGHTING MEASURES

5.1 EXTINGUISHING MEDIA

General hazards: No unusual fire or explosion hazard.

Suitable extinguishing media: Foam, CO2 or dry powder. Water spray may be used if no other available and then in copious quantities. Reaction between water and hot isocyanate may be vigorous. Prevent washings from entering water courses, keep fire exposed containers cool by spraying with water.

Unsuitable extinguishing media: Do not use water jet as an extinguisher as this will spread the fire.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE

Specific hazards: During fire, gases hazardous to health may be formed.

Products of combustion: May include, and are not limited to: carbon oxides (CO, CO2) nitrogen oxides (NO, NO2 etc.) hydrocarbons, isocyanate vapors, and hydrogen cyanide.

5.3 Special protective equipment and precautions for fire-fighters (PPE)

Special protective equipment for fire-fighters:
Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Special fire-fighting procedures: Keep upwind of fire. Move containers from fire area if you can do it without risk.

During a fire, isocyanate vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion. Exposure to heated diisocyanate can be extremely dangerous.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Immediately contact emergency personnel. Evacuate the area. Keep upwind to avoid inhalation of vapors. Clean-up should only be performed by trained personnel. People dealing with major spillages should wear full protective clothing including respiratory protection. Use suitable protective equipment (section 8). Keep unauthorized persons away.

6.2 METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING - UP

Methods for containment: Contain and/or absorb spill with inert material (e.g. sand, vermiculite), then place in a suitable container. Do not flush to sewer or allow to enter waterways. Use appropriate Personal Protective Equipment (PPE).

Methods for cleaning-up: Stop the flow of material, if this is without risk. Dike far ahead of spill for later disposal. Following product recovery, flush area with water. For waste disposal, see Section 13 of the SDS.

If the product is in its solid form: Spilled TDI flakes should be picked up carefully. The area should be vacuum cleaned to remove remaining dust particles completely.
If the product is in its liquid form: Absorb spillages onto sand, earth or any suitable adsorbent material. Leave to react for at least 30 minutes. Do NOT absorb onto sawdust or other combustible materials. Shovel into open-top drums for further decontamination. Wash the spillage area with water. Test atmosphere for TDI vapour. Neutralise small spillages with decontaminant. Remove and dispose of residues. The compositions of liquid decontaminants are : (percentages by weight or volume) :
Decontaminant 1 : *- sodium carbonate : 5 - 10 % *- liquid detergent : 0.2 - 2 % *- water : to make up to 100 %
Decontaminant 2 : *- concentrated ammonia solution : 3 - 8 % *- liquid detergent : 0.2 - 2 % *- water : to make up to 100 %
Decontaminant 1 reacts slower with diisocyanates but is more environmentally friendly than decontaminant 2.
Decontaminant 2 contains ammonia. Ammonia presents health hazards. (See supplier safety information.)

Large spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Prevent product from entering drains.

Small spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.
Never return spills to original containers for re-use.

Environmental precautions: Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases.

SECTION 7: HANDLING AND STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING

Safe handling advice: Observe good industrial hygiene practices.

Do not breath vapors, mists, or dusts. Use adequate ventilation to keep airborne isocyanate levels below the exposure limits. Wear respiratory protection if material is heated, sprayed, used in confined space, or if the exposure limit is exceeded. Warning properties (irritation of the eyes, nose and throat or odor) are NOT adequate to prevent overexposure from inhalation. This material can produce asthmatic sensitization upon either single inhalation exposure to a relatively high concentration or upon repeated inhalation exposures to lower concentrations. Individuals with lung or breathing problems or prior allergic reactions to isocyanates must be exposed to vapor or spray mist. Avoid contact with skin and eyes. Wear appropriate eye and skin protection. Wash thoroughly after handling. Do NOT breathe smoke and gases created by over heating or burning this material. Decomposition products can be highly toxic and irritating. Store in tightly closed containers to prevent moisture contamination. Do NOT reseal if contamination is suspected.

General hygiene advice: Ensure that medical personnel are aware of the materials(s) involved, and take precautions to protect themselves.

7.2 CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

Storage: Store away from incompatible materials.
Minimum: 50°F (10°C)
Maximum: 86°F (30°C)

Specific use: Architectural Coating and Waterproofing

Technical measures: No specific recommendations.

Incompatible materials: Copper, copper alloy and galvanized surfaces. Moisture sensitive.

Safe storage: Store away from incompatible materials. Store in tightly closed containers to prevent moisture contamination. Do NOT reseal if contamination is suspected.

Safe packaging material: No specific recommendations.

Precautions: Use personal protective recommended in Section 8 of the SDS.

Safe handling advice: Observe good industrial hygiene practices.

Suitable storage conditions: Store away from incompatible materials. Store in tightly closed containers to prevent moisture contamination. Do NOT reseal if contamination is suspected.

Handling-technical measures: No specific recommendations.

Local and general ventilation: Provide adequate ventilation.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 CONTROL PARAMETERS

Control parameters: Follow standard monitoring procedures.

Exposure limits:

Toluene-diisocyanate, mixture of toluene-2,4-di-isocyanate and toluene-2,6-di-isocyanate
OSHA: PEL-C ppm: 0.02, PEL-C mg/m3: 0.14

NIOSH: IDLH ppm: 2.5, IDLH Notes: Ca
Notes: CARCINOGEN (Ca); REDUCE EXPOSURE TO LOWEST FEASIBLE CONCENTRATION REL-C mg/m3: 0.2
IDLH mg/m3: 75

8.2 EXPOSURE CONTROLS

Engineering measures to reduce exposure:

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

Provide sufficient air exchange and/or exhaust in work rooms. In all workplaces or parts of the plant where high concentrations of isocyanate aerosols and/or vapors may be generated (e.g. during pressure release, mold venting or when cleaning mixing heads with an air blast), appropriately located exhaust ventilation must be provided in order to prevent occupational exposure limits from being exceeded. The air should be drawn away from the personnel handling the product. The efficiency of the ventilation system must be monitored regularly because of the possibility of blockage. Atmospheric concentrations should be minimized and kept as low as reasonably practicable below the occupational exposure limit.

8.3 INDIVIDUAL PROTECTIVE MEASURES

General: Use personal protective equipment as required.

Animal tests and other research indicate that skin contact with TDI can play a role in causing isocyanate sensitization and respiratory reaction. Lung damage and respiratory sensitization may be permanent.

All applicants who are assigned to an isocyanate work area should undergo a pre-placement medical evaluation. A history or eczema or respiratory allergies such as hay fever, are possible reasons for medical exclusion from isocyanate areas. Applicants who have a history of adult asthma should be restricted from work with isocyanates. A comprehensive annual medical surveillance program should be instituted for all employees who are potentially exposed to diisocyanates. Once a worker has been diagnosed as sensitized to any isocyanate, no further exposure can be permitted.

Eye protection: Wear safety glasses with side shields (or goggles).

Hand protection: Wear appropriate chemical resistant gloves. Nitrile rubber showed excellent resistance. Butyl rubber, neoprene and PVC are also effective.

Respiratory protection: In case of insufficient ventilation, wear suitable respiratory equipment. Airborne TDI concentrations greater than the ACGIH TLV-TWA (TLV) or OSHA PEL-C- (PEL) can occur in inadequately ventilated environments when TDI is sprayed, aerosolized, or heated. In such cases, respiratory protection must be worn. The type of respiratory protection selected must comply with the requirements set forth in OSHA's Respiratory Protection Standard (29 CFR 1910.134). The type of respiratory

	protection available includes (1) an atmosphere-supplying respiratory such as a self-contained breathing apparatus (SCBA) or a supplied air respirator (SAR) in the positive pressure or continuous flow mode, or (2) an air purifying respirator (APR). If an APR is selected then (a) the cartridge must be equipped with an end-of-service life indicator (ESLI) certified by NIOSH, or (b) a change out schedule, based on objective information or data that will ensure that the cartridges are changed out before the end of their service life, must be developed and implemented. The basis for the change out schedule must be described in the written respirator program. Further, if an APR is selected, the airborne diisocyanate concentration must be no greater than 10 times the TLV or PEL. The recommended APR cartridge is an organic vapor/particulate filter combination cartridge (OV/P100).
Skin and body protection:	Wear appropriate chemical resistant clothing. Animal tests and other research indicate that skin contact with TDI can play a role in causing isocyanate sensitization and respiratory reaction. This data reinforces the need to prevent direct skin contact with isocyanates.
Hygiene measures:	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.
Control parameters:	Follow standard monitoring procedures. Local exhaust should be used to maintain levels below the TLV whenever TDI is heated, sprayed, or aerosolized. Standard reference sources regarding industrial ventilation (e.g. ACGIH Industrial Ventilation Manual) should be consulted for guidance about adequate ventilation. To ensure that published exposure limits have not been exceeded, monitoring for airborne diisocyanate should become part of the overall employee exposure characterization program. NIOSH, OSHA, and others have developed sampling and analytical methods. These are available through various suppliers. Gaco Western does not supply these sampling methods directly.
Thermal hazards:	Wear appropriate thermal protective clothing, when necessary.
Environmental exposure controls:	Inform appropriate managerial or supervisory personnel of all environmental releases.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear light amber liquid
Color:	light amber
Form:	Liquid
Odor:	Musty, mild solvent
Odor Threshold:	Not applicable
Physical State:	Liquid
pH (at 20°C):	Not applicable
Melting Point/Freezing Point:	Not applicable
Initial Boiling Point and Boiling Range:	Not applicable
Flash Point:	>200°F/>93°C
Evaporation Rate:	Not applicable
Flammability (solid, gaseous):	Not Flammable
Lower Flammability/Explosive Limit:	Not applicable

Upper Flammability/Explosive Limit:	Not applicable
Evaporation rate:	Not applicable
Vapor Pressure (mm Hg @25°C):	<0.0001
Vapor Density:	Not applicable
Density (lb/gal):	8.66
Relative Density/Specific Gravity:	1.04
Solubility in water/miscibility:	Insoluble - reacts slowly with water to liberate CO_2 gas
Partition coefficient: n-octanol/water:	Not applicable
Auto-ignition Temperature:	Not applicable
Decomposition Temperature:	Not applicable
Viscosity (at 25°C) g/L:	Not applicable
Oxidizing Properties:	Not applicable
Explosive Properties:	Not applicable
VOC %:	<10 g/L (<0.083 lb/gal)
Solvent content - Organic:	Not applicable
Solvent content - Water:	Not applicable
Solvent content - Solids:	100%
Other information:	Not applicable
Incompatibilities:	Copper, copper alloy, galvanized surfaces, water, amines, strong bases, alcohols.

SECTION 10: STABILITY AND REACTIVITY

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

10.2 CHEMICAL STABILITY

Chemical stability: Material is stable under normal conditions.

Materials to avoid: Copper, copper alloy, galvanized surfaces, water, amines, strong bases, alcohols. Moisture sensitive.

10.3 POSSIBILITY OF HAZARDOUS REACTIONS

Hazardous reactions: Moisture sensitive. Contact with moisture, other materials that react with isocyanates, or temperatures above 350°F (177°C), may cause polymerizations.

10.4 CONDITIONS TO AVOID Contact with incompatible materials. Temperatures above 350°F (177°C).

10.5 INCOMPATIBLE MATERIALS Copper, copper alloy, galvanized surfaces, water, amines, strong bases, alcohols.

10.6 HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous decomposition products: By fire and high heat: Carbon dioxide (CO2), Carbon monoxide (CO), oxides of nitrogen (NOx), dense black smoke, isocyanate, isocyanic acid, other undetermined compounds.

Hazardous polymerization: Moisture sensitive. Contact with moisture, other materials that react with isocyanates, or temperatures above 350°F (177°C), may cause polymerizations.

Other information: Not available.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 INFORMATION ON TOXICOLOGICAL EFFECTS

Acute toxicity: Harmful if inhaled. May cause respiratory irritation. Difficulty breathing. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction. Dermatitis. Rash. Causes skin irritation. May cause redness and pain. Causes serious eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Likely routes of exposure: Skin contact. Eye contact. Inhalation.

Eye: Causes serious eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Skin: Causes skin irritation. May cause redness and pain. May cause an allergic skin reaction. Dermatitis. Rash.

Contact with TDI can cause discoloration. Animal tests and other research indicate that skin contact with TDI can play a role in causing isocyanate sensitization and respiratory reaction. This data reinforces the need to prevent direct skin contact with isocyanates.

Ingestion: Not an expected route of exposure. Expected to be a low ingestion hazard.

Inhalation: Harmful if inhaled. May cause respiratory irritation. Difficulty breathing. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Diisocyanate vapors or mist at concentrations above the TLV or PEL can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) causing runny nose, sore throat, coughing, chest discomfort, shortness of breath, and reduced lung function (breathing obstruction). Persons with a preexisting, nonspecific bronchial hyperreactivity can respond to concentrations below the TLV or PEL with similar symptoms as well as asthma attack or asthma-like symptoms. Exposure well above the TLV or PEL may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). Chemical or hypersensitivity pneumonitis, with flu-like symptoms (e.g. fever, chills), has also been reported. These symptoms can be delayed up to several hours after exposure. These effects are usually reversible.

LD50/LC50 values relevant to this classification:

Toluene-diisocyanate, mixture of toluene-2,4-di-isocyanate and toluene-2,6-di-isocyanate

Oral mouse LD50 >2,000 mg/kg bw
Oral rat LD50 >2,000 mg/kg bw
Oral rat LD50 5840 mg/kg bw
Inhal rat LC50 66 ppm (95 % CL: 31 -141 ppm)
Inhal rat LC50 350-360 mg/m3 air 4hr
Inhal rat LC50 14.1-19 ppm air 6hr
Derm rabbit LD50 > 9400 mg/kg bw no deaths

Calculated overall chemical acute toxicity values for this formulation:

Calculated overall Chemical Acute Toxicity Values		
LC50 (inhalation)	**LD50 (oral)**	**LD50 (dermal)**
1.0 ≤ 5.0 mg/L (dust and mist)	>2000 mg/kg	>2000 mg/kg

11.2 DELAYED, IMMEDIATE, AND CHRONIC EFFECTS OF SHORT- AND LONG-TERM EXPOSURE

Skin corrosion/irritation: Causes skin irritation. May cause redness and pain. May cause an allergic skin reaction.

Serious eye damage/irritation: Causes serious eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

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

Skin sensitization: May cause an allergic skin reaction.

Symptoms and target organs: Prolonged exposure may cause chronic effects. Suspected of causing cancer. May cause damage to organs (lungs) through prolonged or repeated (inhalation) exposure. May cause respiratory irritation. Difficulty breathing. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Skin irritation. May cause redness and pain. May cause allergic skin reaction. Dermatitis. Rash. Causes serious eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Chronic health effects: Suspected of causing cancer. May cause damage to organs (lungs) through prolonged or repeated (inhalation) exposure.

Carcinogenicity: Suspected of causing cancer.

Material	OSHA(O)	ACGIH(G)	NTP(N)	IARC(I)
Toluene-diisocyanate, mixture of toluene-2,4-di-isocyanate and toluene-2,6-di-isocyanate	CA	A4	R	2B (as a gas only)

SOURCE AGENCY CARCINOGEN CLASSIFICATIONS:

OSHA (O) =Occupational Safety and Health Administration
Yes = Expected to be carcinogenic
not listed = Not expected to be carcinogenic

ACGIH (G) =American Conference of Governmental Industrial Hygienists
A1 =Confirmed human carcinogen
A2 =Suspected human carcinogen
A3 =Animal carcinogen
A4 =Not classifiable as a human carcinogen
A5 =Not suspected as a human carcinogen
not listed = Not expected to be carcinogenic

NTP (N) =National Toxicology Program
1 =Known to be a carcinogen
2 = Reasonably anticipated to be a carcinogen
not listed = Not expected to be carcinogenic

IARC (I) =International Agency for Research on Cancer
1 =Carcinogenic to humans
2A =Probably carcinogenic to humans
2B =Possibly carcinogenic to humans
3 =Not classifiable as to its carcinogenicity to humans
4 =Probably not carcinogenic to humans
not listed = Not expected to be carcinogenic

Mutagenicity: No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Reproductive Toxicity: This product is not expected to cause reproductive or developmental effects.

Specific Target Organ Toxicity (STOT):

Single Exposure: May cause respiratory irritation.

Repeated Exposure: May cause damage to organs (lungs) through prolonged or repeated (inhalation) exposure.

Aspiration Toxicity: Based on available data, this product is not expected to cause aspiration toxicity.

Other Information: Not available.

SECTION 12: ECOLOGICAL INFORMATION

12.1 ECOTOXICITY

Acute/Chronic toxicity: Harmful to aquatic life with long lasting effects.

Aquatic toxicity: Harmful to aquatic life with long lasting effects.

Environmental effects: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

12.2 PERSISTENCE AND DEGRADABILITY

Persistence/biodegradability: The product contains substances which are not expected to be readily biodegradable.

12.3 BIOACCUMULATIVE POTENTIAL

Bioaccumulation: Does not bioaccumulate

12.4 MOBILITY

Mobility: No data available.
Mobility in soil: No data available.
Mobility in non-soil: No data available.

12.5 OTHER ADVERSE EFFECTS

Ozone layer: No data available.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 WASTE TREATMENT METHODS

Disposal method: This material must be disposed of in accordance with all local, state, provincial, and federal regulations.

Contaminated packaging: Since emptied containers may retain product residue, follow label warnings even after container is emptied. Dispose of contents and container in accordance with all local, regional, national and international regulations.

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

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

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

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

Other disposal recommendations: None

SECTION 14: TRANSPORT INFORMATION

DOT Non-Bulk

Not classified as Dangerous Goods for Transport

DOT Bulk

Not classified as Dangerous Goods for Transport

IMDG

Not classified as Dangerous Goods for Transport

ICAO/IATA

Not classified as Dangerous Goods for Transport

Reportable quantity: Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.

4,4'-Diphenylmethane Diisocyanate (TDI) RQ: 5,040 kg (11,111 lbs)

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material

SECTION 15: REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/ LEGISLATIONS SPECIFIC FOR THE CHEMICAL

US Federal Regulations:

U.S. OSHA (Occupational Safety and Health Administration) Specifically Regulated Substances (29 CFR 1910.1001-1050)

The following components of this product are found at concentrations greater than or equal to 0.1% and are listed as U.S. OSHA Specifically Regulated Substances.

Material	CAS No.	Amount
Toluene-diisocyanate, mixture of toluene-2,4-di-isocyanate and toluene-2,6-di-isocyanate	26471-62-5	30-60%

SARA/CERCLA reporting requirements:

The following components of this product are found at concentrations greater than or equal to 0.1% and are subject to SARA/CERCLA reporting requirements.

Material	SARA 302 (EHSs) TPQ	SARA 304 EHSs RQ	CERCLA RQ	SARA 313 listed	RCRA CODE	CAA 112(r) TQ
Toluene-diisocyanate, mixture of toluene-2,4-di-isocyanate and toluene-2,6-di-isocyanate	Not listed	Not listed	100	X	U223	10,000

State Right-to-Know Regulations

The following components of this product are found at concentrations greater than or equal to 0.1%, subject to state Right-to-Know reporting requirements; or are found at any concentration and are listed under California Proposition 65.

Material	California Proposition 65	Massachusetts Right-to-Know	Minnesota Employee Right-to-Know	New Jersey Community Environmental Hazard Right-to-Know	New Jersey Right-to-Know Substance	Pennsylvania Right-to-Know	Rhode Island Right-to-Know
Toluene-diisocyanate, mixture of toluene-2,4-di-isocyanate and toluene-2,6-di-isocyanate	Cancer	Listed	Not listed	Not listed	Listed	Listed	Listed

Global Inventories:

Notification status:	
US - TSCA	All substances are listed
Canada -DSL	All substances are listed
Canada - NDSL	No substances are listed
EU - EINECS	All substances are listed
EU - ELINCS	No substances are listed
EU - NLP	No substances are listed
Australia – AICS	All substances are listed
China - EICSC	All substances are listed
Japan - ENCS	All substances are listed
Korea - KECI	All substances are listed
Taiwan - NECI	All substances are listed

New Zealand - NZIoC	All substances are listed
Philippine - PICCS	All substances are listed

EU - REACH Status:

A registration number is not available for substances in this mixture as the substances are exempted from registration, the annual tonnage does not require a registration or the registration is envisioned for a later registration deadline.

CANADA – WHMIS (Workplace Hazardous Materials Information System) Classification:

D1A, D2A, D2B

MEXICO:

Hazard Classification: 2-1-1
Carcinogen Status: Carcinogen

SECTION 16: OTHER INFORMATION

HMIS (Hazardous Materials Identification System) rating:

Health:	**2***
Flammability:	**1**
Physical:	**1**

NFPA 704 (National Fire Protection Association) rating:

Health	**2**
Fire	**1**
Reactivity	**1**

Legend:

DOT	US Department of Transportation
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods
ACGIH	American Conference of Governmental Industrial Hygienists
NTP	National Toxicology Program
IARC	International Agency for Research on Cancer
PPE	Personal Protective Equipment
RCRA	Resource Conservation and Recovery Act
CAA	Clean Air Act
SARA	Superfund Amendments and Reauthorization Act
EPCRA	Emergency Planning and Community Right-to-Know Act
WHMIS	Workplace Hazardous Materials Information System
EU	European Union
REACH	Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
TSCA	US Toxic Substances Control Act (TSCA)
DSL	Canada Domestic Substance List (DSL)

NDSL	Canada Non-Domestic Substance List (NDSL)
EINECS	European Inventory of Existing Commercial Chemical Substances (EINECS)
ELINCS	European List of Notified Chemical Substances (ELINCS)
NLP	European list of No-longer Polymers (NLP)
AICS	Australian Inventory of Chemical Substances (AICS)
EICSC	China Existing Chemical Inventory - IECSC
ENCS	Japanese Existing and New Chemical Substances Inventory(ENCS)
KECI	Korea Existing Chemicals Inventory(KECI)
NECI	Taiwan National Existing Chemical Inventory (NECI)
NZIoC	New Zealand Inventory of Chemicals (NZIoC)
PICCS	Philippine Inventory of Chemicals and Chemical Substances (PICCS)
HMIS	Hazardous Materials Identification System
NFPA	National Fire Protection Association (NFPA)

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Prepared by: Gaco Western LLC

End of Safety Data Sheet