

## TECHNICAL INFORMATION SHEET

### I.S.O. Spray™ R Adhesive

**Item Description**

Part A: 15 gal (57 L) contained in 15 gal (53 L) Drum  
 Part B: 15 gal (57 L) contained in 15 gal (53 L) Drum

Part A: 50 gal (184 L) contained in 55 gal (208 L) Drum  
 Part B: 50 gal (184 L) contained in 55 gal (208 L) Drum

Part A: 5 gal (18.9 L) bag in box  
 Part B: 5 gal (18.9 L) bag in box

**Item Number**

W56RACR15A  
 W56RACR15B

W56RACR55A  
 W56RACR55B

W56RACR05A  
 W56RACR05B



### Product Information

**Description:**

Firestone I.S.O. Spray R Adhesive is a two-component low rise polyurethane adhesive engineered to:

- Anchor acceptable roof insulation to acceptable substrates.
- Adhere multiple layers of insulation.
- Adhere fleece backed UltraPly™ TPO XR membrane to acceptable substrates.

Firestone I.S.O. Spray R Adhesive is mixed and dispensed by high or low pressure pump/proportioning units capable of mix/meter/dispensing two-component polyurethanes in full spray application and/or continuous bead extrusion.

### Product Packaging

Packaging	Contents per Container	Containers per Pallet:
Part A in 15 gal (57 L) Drum	15 gal (56.7 L) 167 lb (76.0 kg) per pail	8 Pails per Pallet
Part B in 15 gal (57 L) Drum	15 gal (56.7 L) 137 lb (62.3 kg) per pail	4 Drums Part A & 4 Drums Part B
Part A: 55 gal (208 L) Drum	50 gal (189.2 L) 553 lb (251.4 kg) per drum	8 Pails per Pallet
Part B: 55 gal (208 L) Drum	50 gal (189.2 L) 453 lb (205.9 kg) per drum	2 Drums Part A & 2 Drums Part B
Part A: 5 gal (18.9 L) Bag-in-box	5 gal (18.9 L) 52 lb (23.6 kg) per box	36 Bag-in-Boxes/Pallet
Part B: 5 gal (18.9 L) Bag-in-box	5 gal (18.9 L) 42 lb (19.1 kg) per box	18 Boxes Part A & 18 Boxes Part B Each Part A & B set contains: 5 Static Mixers

### Method of Application: Mix/Meter/Dispense units necessary for dispensing I.S.O. Spray R

1. Summary of dispensing equipment options

#### High Pressure Dispense Equipment

Name	Dispense Form	Container Applicability	Comment
Graco Predator™ Proportioner*	Spray or Bead	55 Gallon Drum 15 Gallon Pail	<u>Spray dispensing:</u> Spray tips may be necessary- sold separately from equipment manufacturer
Graco E-10 Reactor*			<u>Bead dispensing:</u> Static mixers necessary- sold separately:
AST Adhesive System Technology PCH GMP-075*			<ul style="list-style-type: none"> <li>• Millennium PG-1 Pump Grade Adhesive Mix Tips</li> <li>• Static Mixers by others:</li> </ul>
AST Adhesive System Technology PCH GMP-500*			36 element X ½" I.D. X 16 ½" long

\*Drum heaters & heated hoses available & recommended to maintain ISO Spray R between 60 °F and 80 °F (15.6 °C and 26.7 °C) during dispensing. Store and dispense ISO Spray R between 60 °F and 80 °F (15.6 °C and 26.7 °C).

#### Low Pressure Dispense Equipment

Name	Dispense Form	Container Applicability	Comment
Millennium Cyclone 1 Low Pressure Pump Cart**	Bead	5 Gallon Bag-in-Box	<u>Static Mixers require:</u> <ul style="list-style-type: none"> <li>• 5 Static Mixers included with each 5 gal set of Parts A &amp; B</li> <li>• Purchase Static Mixers (sold separately) for bead dispensing 15 Gallon Pails</li> </ul>
Millennium Cyclone 5/15 Low Pressure Pump Cart**		5 Gallon Bag-in-Box 15 Gallon Pail	

\*\*Drum heaters recommended when dispensing ISO Spray R below 40 °F (4.4 °C). Store and dispense ISO Spray R between 60 °F and 80 °F (15.6 °C and 26.7 °C).

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## I.S.O. Spray™ R Adhesive

### Continue:

### Method of Application: Mix/Meter/Dispense units necessary for dispensing I.S.O. Spray R

2. Static mixers for bead application

#### Static Mixers for Bead Application

##### Millennium PG-1 Pump Grade Adhesive Mix Tips

Other static mixers for two component adhesives can work:  
½" inside diameter X 16 ½" long with 36 static mixing elements

3. High Pressure mix/meter/dispense units shall include heated hoses, and the capabilities to dispense mixed I.S.O. Spray R adhesive in spray and/or bead application.
4. Dispense Firestone I.S.O. Spray R Adhesive with pre-heater and hose temperature set between 90 °F and 120 °F (32 °C – 49 °C).
5. Pump pressure for spray application should be approximately 80 PSI, adjusted as required to maintain full mixing and uniform spray fan.
6. Pump pressure for bead extrusion should be 50 – 60 PSI, adjusted as required to maintain full mixing and uniform continuous bead extrusion.

### Method of Application for Insulation Attachment using I.S.O. Spray R Adhesive

1. Install only as much roof insulation as can be covered and made watertight during the workday.
2. Ambient and substrate temperature to receive I.S.O. Spray R Adhesive shall exceed 40 °F (4.4 °C); and clean, smooth, dry, free of sharp edges, loose and foreign materials, oil, grease, and other contaminates.
3. When dispensing ISO Spray R from:
  - a. High pressure equipment with heated hoses and drum heaters, the ambient and substrate temperatures to receive I.S.O. Spray R adhesive shall exceed 25 °F (-4 °C); and clean, smooth, dry, free of sharp edges, loose and foreign materials, oil, grease, and other contaminates
  - b. Low pressure equipment, the ambient and substrate temperature to receive I.S.O. Spray R Adhesive shall exceed 25 °F (-4 °C); and clean, smooth, dry, free of sharp edges, loose and foreign materials, oil, grease, and other contaminates. When dispensing below 40 °F (4.4 °C), drum heaters are recommended to keep ISO Spray R between 60 °F and 80 °F (15.6 °C and 26.7 °C).
4. Allow I.S.O. Spray R Adhesive to rise (within 1–2 minutes) before setting the insulation boards (max. size: 4' x 4' [1.2 m x 1.2 m]) after dispensing the I.S.O. Spray R Adhesive.
5. If I.S.O. Spray R Adhesive does not rise after dispensing- **STOP**. Troubleshooting is required to determine why the mixed adhesive is not rising. Conduct mix ratio test to ensure ISO Spray R is dispensed at 1:1 ratio of Part A: Part B.
6. Immediately after setting the insulation board, weight each board, using full pails of Bonding Adhesive or other available source of weight that will not damage the roof insulation. This ensures full contact and adhesion during set-up time. Set-up time will vary depending on ambient conditions.
7. Performance of I.S.O. Spray R Adhesive should be periodically monitored during the workday to verify that sufficient rise, adhesion, and full bonding is occurring.
8. Portable wind screens may be used to contain and limit airborne I.S.O. Spray R Adhesive overspray.
9. Do not attempt to apply I.S.O. Spray R Adhesive during unfavorable conditions.

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## I.S.O. Spray™ R Adhesive

### Method of Application for UltraPly TPO XR Membrane Attachment using I.S.O. Spray R Adhesive

1. Install only as much UltraPly TPO XR Membrane as can be completed and made watertight during the workday.
2. When dispensing ISO Spray R from:
  - a. High pressure equipment with heated hoses and drum heaters, the ambient and substrate temperatures to receive I.S.O. Spray R adhesive shall exceed 25 °F (-4 °C); and clean, smooth, dry, free of sharp edges, loose and foreign materials, oil, grease, and other contaminants
  - b. Low pressure equipment, the ambient and substrate temperature to receive I.S.O. Spray R Adhesive shall exceed 25 °F (-4 °C); and clean, smooth, dry, free of sharp edges, loose and foreign materials, oil, grease, and other contaminants. When dispensing below 40 °F (4.4 °C), drum heaters are recommended to keep ISO Spray R between 60 °F and 80 °F (15.6 °C and 26.7 °C).
3. Starting at the highest roof elevation, unroll and position UltraPly TPO XR Membrane. Position membrane panels so the laps will be fabricated in “shingle fashion”, and not “buck” water.
4. Allow UltraPly TPO XR Membrane to relax in its final intended position for 30 minutes (minimum).
5. Fold the properly positioned membrane panels back to expose the substrate to receive I.S.O. Spray R Adhesive. Take care not to move, or otherwise disturb, UltraPly TPO XR Membrane from its final intended position during folding.
6. Dispense I.S.O. Spray R Adhesive on the substrate as follows:
  - a. Spray Application: Full spray coverage 1/8" to 1/4" thick (3.2 to 6.4 mm).
  - b. Bead Application: 1/2" to 3/4" wide continuous beads 6" or 12" on center (12.5 to 19.0 mm wide; 152.4 or 304.8 mm on center continuous beads).

**NOTE:** Bead spacing will be modified (requiring closer bead spacing) at building corners and perimeter, depending on wind zone.

  - c. **Do not apply I.S.O. Spray R Adhesive to UltraPly TPO XR Membrane.** Keep lap areas of UltraPly TPO XR Membrane clean and free of I.S.O. Spray R Adhesive. Remove any I.S.O. Spray R Adhesive from lap areas.
7. Allow I.S.O. Spray R Adhesive to rise (within 1 to 2 minutes) before mating UltraPly TPO XR Membrane. Mate the UltraPly TPO XR Membrane into the freshly applied adhesive.
8. If I.S.O. Spray R Adhesive does not rise after dispensing- **STOP**. Troubleshooting is required to determine why the mixed adhesive is not rising. Conduct mix ratio test to ensure ISO Spray R is dispensed at 1:1 ratio of Part A: Part B.
9. Using a weighted roller (such as linoleum roller) roll the freshly mated UltraPly TPO XR Membrane to ensure proper adhesion.
10. Performance of I.S.O. Spray R Adhesive should be periodically monitored during the workday to verify that sufficient rise, adhesion, and full bonding is occurring.
11. Portable wind screens may be used to contain and limit airborne I.S.O. Spray R Adhesive overspray.
12. Do not attempt to apply I.S.O. Spray R Adhesive during unfavorable conditions.

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## I.S.O. Spray™ R Adhesive

### Acceptable Substrates

Substrate	Insulation Attachment	TPO XR Attachment	NOTE
Structural Concrete (New)	Yes	No	Newly poured decks must be sufficiently cured to allow adhesion to the substrate surface. Cure times vary. A roof consultant, structural engineer, or concrete industry professional may be contacted to perform moisture tests if readiness of concrete is in question.
Structural Concrete (Existing)	Yes	Yes	Positive adhesion test required.
Steel	Yes	No	New steel decks may require cleaning to remove processing oils.
Gypsum Decks	Yes	Yes	Poured in place gypsum; not gypsum panels
Cementitious Woodfiber	Yes	Yes	
Smooth or Granule Surfaced Modified Bitumen Roofs	Yes	Yes	
Plywood and OSB	Yes	Yes	
SBS Base Sheets	Yes	Yes	
Lightweight Concrete* <i>*Lightweight concrete substrates with aggregate (such as perlite or vermiculite) are not acceptable substrates.</i>	Yes	Yes	Acceptable lightweight concrete substrates include cellular or air-entrained concrete. <i>*Lightweight concrete substrates with aggregate (such as perlite or vermiculite) are not acceptable substrates.</i>
Existing Asphalt Smooth Surface Built up Roofing	Yes	Yes	Existing substrates containing residual asphalt must be cleaned and scraped as smooth as possible.
ISO 95+™ GL Insulation, ISOGARD™ HD Cover Board, RESISTA™ Insulation, FiberTop™ Insulation, DensDeck® and DensDeck Prime, Expanded Polystyrene (EPS), Extruded Polystyrene (XPS), Polyiso Insulation, Woodfiber	Yes	Yes EPS & XPS: NO	Extruded Polystyrene (XPS) and Expanded Polystyrene (EPS) are not acceptable immediate substrates to receive adhered TPO XR membrane.
Existing Single-Ply Roofs, Coal Tar Pitch, Fiberglass Insulation, Perlite Insulation	No	No	These substrates are not acceptable as an immediate substrate for this product.

**NOTE:** Building Codes may not allow specific applications listed above. Confirm that proposed application and assemblies comply with the applicable Building Code requirements before proceeding.

### Storage

- Do not allow I.S.O. Spray R Adhesive to freeze.
- Store in original, unopened containers between 60 °F and 80 °F (15.6 °C and 26.7 °C).
- Keep bungs on drums tightly closed during storage.
- Do not store in direct sunlight.
- Do not expose to moisture.
- For optimum results, rotate stock to ensure stored material will not exceed the shelf life.

### Shelf Life

- Shelf life of eighteen (18) months can be expected when stored in original, unopened containers at temperatures between 60 °F and 80 °F (15.6 °C and 26.7 °C) and kept out of sunlight, and protected from rain and moisture.
- All containers indicate the date of manufacture.

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## I.S.O. Spray™ R Adhesive

### Coverage Rates:

#### Spray application:

- Full spray coverage to 1/8" to 1/4" thick (3.2 to 6.4 mm) on granule or smooth substrates: 90 to 100 ft<sup>2</sup>/gallon\* (2.21 m<sup>2</sup>/L to 2.45 m<sup>2</sup>/L)\*\*
- Full spray coverage to 1/8" to 1/4" thick (3.2 to 6.4 mm) over gravel surface BUR: 50 ft<sup>2</sup>/gallon\* (1.23 m<sup>2</sup>/L)\*\*

#### Bead Application:

I.S.O. Spray R Bead Spacing in Continuous beads 1/2" - 3/4" (12.5 mm – 19.0 mm) wide	Coverage (English units)	Coverage (metric units)
12" (0.305 m) on center	200 to 250 feet <sup>2</sup> /Gallon*	4.909 to 6.136 meter <sup>2</sup> /Liter**
9" (0.229 m) on center	150 to 187 feet <sup>2</sup> /Gallon*	3.682 to 4.590 meter <sup>2</sup> /Liter**
6" (0.152 m) on center	100 to 125 feet <sup>2</sup> /Gallon*	2.454 to 3.068 meter <sup>2</sup> /Liter**
4" (0.102 m) on center	66 to 83 feet <sup>2</sup> /Gallon*	1.620 to 2.037 meter <sup>2</sup> /Liter**
3" (0.076 m) on center	50 to 62 feet <sup>2</sup> /Gallon*	1.227 to 1.522 meter <sup>2</sup> /Liter**

\*1 Gallon mixed I.S.O. Spray R = 1/2 gallon Part A I.S.O. Spray R + 1/2 gallon Part B I.S.O. Spray R

\*\*1 Liter mixed I.S.O. Spray R = 1/2 Liter Part A I.S.O. Spray R + 1/2 Liter Part B I.S.O. Spray R

### Precautions:

- Review applicable Safety Data Sheets (SDS) before handling or use.
- Personnel sensitive or allergic to isocyanate or polyurethane should not work with, or handle, I.S.O. Spray R Adhesive.
- Review method of application with dispensing equipment supplier before use.
- Review dispensing equipment prior to use. Ensure that all equipment is in good working order: generator, air compressor, mix/meter/dispense proportioning unit, transfer pumps, drum heaters, heated hoses, spray gun, bead extruder & static mixers.
- Inspect all Personal Protection Equipment (respirator & cartridges, gloves, safety glasses, protective suits), and insure all are in good working order before handling and dispensing I.S.O. Spray R.
- Ensure dispensing unit is grounded per equipment manufacturer's requirements to prevent static electricity build up and discharge.
- Avoid contact with eyes and skin. Use gloves and safety glasses with side shields when handling or dispensing I.S.O. Spray R Adhesive. Wash all exposed areas thoroughly after handling.
- Avoid breathing vapors. Wear respirators, long sleeved shirts and long pants when handling and dispensing I.S.O. Spray R Adhesive. Protective suits are recommended.
- Agitate Firestone I.S.O. Spray R Adhesive Part A and Part B on drum roller before use (recommended).
- Protect all areas vulnerable to overspray of the I.S.O. Spray R Adhesive. This includes, but is not limited to: vehicles parked adjacent to the building receiving the I.S.O. Spray R Adhesive, air intakes/exhausts on the building, roof-mounted HVAC units, roof drains, access hatches and windows/skylights accessible to the roof, and any other item or personnel which may be downwind from spraying the I.S.O. Spray R Adhesive. *There will be days that the wind conditions, as well as temperature conditions, prevent the use of I.S.O. Spray R Adhesive.* Do not attempt to spray I.S.O. Spray R Adhesive when the wind speed exceeds 15 mph (24 km/h). This can be estimated by observing a flag. When a flag is windblown to the extent that it flies approximately "straight out", the wind is too extreme to use I.S.O. Spray R Adhesive on that particular work day. Portable wind screens may be used to contain and limit airborne I.S.O. Spray R Adhesive overspray.
- When used for insulation attachment, it is imperative that freshly installed insulation is continuously weighted until such time as the I.S.O. Spray R Adhesive sets up and the board is held securely in place by the adhesive.
- Freshly installed UltraPly TPO XR Membrane shall be rolled immediately after mating to ensure proper adhesion.
- Use caution when removing drum bungs as contents may develop pressure during storage. Loosen bungs 3/4" (19.1 mm), and allow gas to escape before completely removing bungs.

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### I.S.O. Spray™ R Adhesive

#### Precautions Continued:

- Do not burn or torch-cut empty drums. Empty Part B component drums can be reconditioned at drum re-conditioners. Empty Part A (or B) component drums should be disposed of in accordance with local, state, and federal regulations.
- Do not expose empty Part A component drums to moisture, or attempt to clean/flush drums with water.
- If the I.S.O. Spray R Adhesive does not rise after dispensing- **STOP**. Troubleshooting is required to determine why the mixed adhesive is not rising. Conduct mix ratio test to ensure ISO Spray R is dispensed at 1:1 ratio of Part A: Part B.
- Replace static mixers when pauses in bead dispensing exceed 1 minute. Extended pauses in bead dispensing allow ISO Spray R to cure within the static mixer, jeopardizing the proper mix ratio of 1:1 Part A: Part B.

#### LEED® Information:

Post-Consumer Recycled Content: 0%  
 Post Industrial Recycled Content: 0%  
 Manufacturing Location: Chagrin Falls, OH  
 \*NOTE: LEED® is a registered trademark of the U.S. Green Building Council.



#### Typical Properties

Property	Typical Performance
Component Composition	Part A: Isocyanate Part B: Polyol
Color	Part A: Light Brown Part B: Colorless with slight haze After Part A & Part B mixed: Off-White
Mix Ratio of Part A: Part B	1:1 by Volume
Viscosity at 77 °F (25 °C)	Part A: 100 to 400 cps using RVT #2 spindle at 20 RPM Part B: 250 to 550 cps using RVT #2 spindle at 20 RPM
V.O.C. Content	When Part A and Part B mixed: 32 grams/Liter
Weight per Gallon	Part A: 10.18 lb/gallon Part B: 8.17 lb/gallon

**NOTE:** DensDeck® is a registered trademark of Georgia Pacific.

**NOTE:** Predator™ is a registered trademark of Graco Inc.

Please contact Technical Services Department at 1-800-428-4511 for further information.

*This sheet is meant to highlight Firestone products and specifications and is subject to change without notice. Firestone takes responsibility for furnishing quality materials which meet published Firestone product specifications or other technical documents, subject to normal roof manufacturing tolerances. Neither Firestone nor its representatives practice architecture. Firestone offers no opinion on and expressly disclaims any responsibility for the soundness of any structure. Firestone accepts no liability for structural failure or resultant damages. Consult a competent structural engineer prior to installation if the structural soundness or structural ability to properly support a planned installation is in question. No Firestone representative is authorized to vary this disclaimer.*