

METAL ROOF SYSTEM SUMMARY

This is a generic summary of IPC's more detailed **METAL ROOF SYSTEM SPECIFICATION**. For warranty purposes, Approved Applicators are responsible to study, understand, and follow the specification.

I. Surface Preparation—Cleaning

1. Remove loose rust and scale with a wire brush.
2. If present, remove as much aluminized asphalt or asphaltic mastic as possible.
3. Passivate rust areas with **ISOPHOS™** phosphating solution or equal, and rinse with water.
4. Pressure wash roof deck with TSP or other suitable cleaner and rinse with water.

II. Surface Preparation—Priming

1. Tighten all loose fasteners.
2. Sink extra fasteners as necessary to tighten up loose seams or laps.
3. Complete any required or necessary structural repairs.
4. Prime all galvanized or non-painted metal with **ISOPRIME™** and allow to dry. When estimating materials, assume an application rate of 0.4 gallons per square (250 square feet per gallon).

III. Surface Preparation—Detailing

1. Seal all vertical seams with a one inch wide line of **ACRYCAULK™**, forcing some sealant into the gap.
2. Seal all horizontal and ridge cap seams with the following method:
 - a. Brush a coat of **ACRYCAULK™** along either side of seam.
 - b. Embed 4-inch wide strip of non-woven polyester fabric in **ACRYCAULK™**.
 - c. Brush heavy coat of **ACRYCAULK™** over polyester, ensuring no wrinkles or fishmouths.
 - d. Allow to cure overnight. Inspect and repair as necessary.
 - e. This procedure requires approximately 1 gallon of **ACRYCAULK™** per 25 linear feet (approximately 6 inches wide).
 - f. Use this method to bridge any gaps or holes in the roof deck, so as to ensure that the **ACRYLINK G™** membrane will be continuous.
3. Completely encapsulate each fastener head with **ACRYCAULK™**.
4. When estimating materials, assume an application rate of 0.5 gallons of **ACRYCAULK™** per square.

IV. Coating Application

1. The surface to be coated must be clean and dry.
2. Apply **ACRYLINK G™** elastomeric roof coating with an airless sprayer, giving special attention to seams and bridged or repaired areas.
3. Use an appropriate number of coats to achieve the correct millage, however, one must use a minimum of two coats.
 - a. 5-year: 2.3 gallons of **ACRYLINK G™** per square total.
 - b. 10-year: 3.2 gallons of **ACRYLINK G™** per square total.
 - c. 20-year: 5.5 gallons of **ACRYLINK G™** per square total.
4. Allow each coat to dry, inspect and repair as necessary before applying next coat.
5. Apply 0.5 gallons per square (200 square feet per gallon) of **ACRYSHEEN™** surface coating as a top coat, if desired.

V. Limitations

1. This procedure is to be used only in conjunction with commonly accepted roofing and waterproofing standards.
2. **ACRYLINK G™**, **ACRYCAULK™**, **ISOPRIME™**, and **ACRYSHEEN™** shall not be applied during inclement weather, when a precipitation appears imminent, when the temperature is below 45 °F, when the relative humidity exceeds 85%, or within 4 hours of sundown.
3. In order to qualify for a factory warranty, applicator must have Approved Applicator status, the roof must meet the square foot minimum, the **ACRYLINK G™** membrane must be continuous, and the membrane must meet the TDM minimum.
4. In conjunction with the final inspection, remove all debris, material, and equipment from the job site, leaving the area in an undamaged and acceptable condition.

METAL ROOF SYSTEM SPECIFICATION

Section 1.0 Scope

The intention of this specification is to outline procedures for the application of an **ACRYLINK G[™]** elastomeric coating membrane for the purposes of waterproofing, protecting, extending the life, and/or renewing an existing metal roof substrate. This specification describes materials, methods, and conditions necessary for the proper installation of this membrane.

- 1.1 This integrated system complies with all model building codes for roofing. Additionally, it constitutes one of the most cost-effective methods of waterproofing, protecting, extending the life, and/or renewing commercial and industrial roofs.
- 1.2 This system is to be used only in conjunction with commonly accepted roofing and waterproofing standards.
- 1.3 Any substantial deviation from these specifications shall be referred to the authorized representatives of Isothermal Protective Coatings, Inc. (IPC).

Section 2.0 Materials

All materials shall be manufactured or approved by IPC, and shall meet the following minimum specifications:

- 2.1 **ACRYLINK G[™]** Elastomeric Coating
 - Vehicle Type Crosslinking Acrylic
 - Pigment to Vehicle Ratio 1.5 to 1
 - Solids (Volume) 63%
 - Elongation 360%
 - Tensile Strength 304 psi
 - Permeance @ 45 mils 2.21 perms
 - Reflectivity (White) 79%
- 2.2 **ACRYCAULK[™]** Brush or Trowel Grade Sealant
 - Vehicle Type 100% Acrylic
 - Pigment to Vehicle Ratio 1.97 to 1
 - Solids (Volume) 70%
 - Elongation 325%
- 2.3 **ACRYSHEEN[™]** Surface Coating
 - Vehicle Type 100% Acrylic
 - Pigment to Vehicle Ratio 1.2 to 1
 - Gloss Medium Low
 - Color Bright White (tintable)
 - Reflectivity (untinted) 80%
- 2.4 **ISOPRIME[™]** Corrosion Inhibiting Primer
 - Vehicle Type Phenolic Modified Alkyd
 - Solids (Weight) 57.5%
 - Weight (per gallon) 11.25 lbs.
 - Color White
- 2.5 **ISOPHOS[™]** Phosphating Solution
 - Active Ingredient Phosphoric Acid (H₃PO₄)
- 2.6 Delivery and Storage
 - 2.6.1 Materials shall be delivered in their original, tightly sealed containers or unopened packages, clearly labeled with the manufacturer's name, Underwriter's Laboratories file number, and—where appropriate—product identification and lot numbers.
 - 2.6.2 Materials shall be kept from freezing, and shall be stored out of the weather, in their original tightly sealed containers or unopened packages, as recommended by the manufacturer.

Section 3.0 Contractor

- 3.1 The **ACRYLINK G[™]** elastomeric coating membrane shall be applied by a single, experienced, and competent contractor or applicator, approved by IPC.
- 3.2 Contractor or applicator shall be responsible for selecting and supplying all labor and supervision, and shall be responsible for furnishing all materials required to complete the job satisfactorily, in accordance with manufacturer's specifications.
- 3.3 Contractor or applicator shall be responsible for assessing and determining the integrity of the existing substrate. All structural repairs (including, but not limited to, the installation or repair of insulation, crickets, scuppers, roof drains, one-way vents, and the like) as well as the elimination of areas of gross ponding water, shall be the exclusive responsibility of the contractor or applicator.
 - 3.3.1 All installations or repairs shall be completed before application of the **ACRYLINK G[™]** elastomeric coating membrane commences.
 - 3.3.2 The industry standard definition of gross ponding water is ½ inch or more of water, standing on a 100 square foot or more area, 24 hours or more after a precipitation. Contractor shall be responsible to address and eliminate all such areas before coating application commences.
 - 3.3.3 All installations or repairs shall be performed in accordance with commonly accepted roofing and waterproofing standards and practices.
 - 3.3.4 An authorized representative of IPC may be consulted for technical assistance in such matters.

Section 4.0 Surface Preparation—Cleaning

Preparations shall include all requirements specified by IPC to ensure adequate adhesion of the **ACRYLINK G[™]** elastomeric coating membrane to the substrate surface.

Preparation shall include, but shall not be limited to, the following:

- 4.1 All unnecessary and non-functional equipment, conduit, and debris shall be removed from the roof.
- 4.2 All structural repairs or installations shall be completed before coating application commences.
 - 4.2.1 Crickets, roof drains, insulation, one-way vents, scuppers, roof deck, and the like, shall all be installed or repaired before coating application commences.
 - 4.2.2 Areas of gross ponding water shall have been addressed and eliminated before coating application commences. Consult section 3.3.2 of this specification for further details.
- 4.3 The fasteners on all the panels shall be inspected. Loose fasteners shall be tightened and missing fasteners shall be replaced. IPC recommends that extra fasteners be installed wherever there is significant or undesirable movement between two panels.
- 4.4 PLEASE NOTE: During coating application procedures, **ACRYLINK G[™]** elastomeric coating shall be applied a minimum of three (3) inches above the termination of all flashings, repairs, and bridges. That is, coating shall be applied to sections of parapet walls, the bases of air handling equipment, penetrations, and the like. Section 7.0 of this specification should be consulted for details. These surfaces must be adequately prepared in order to ensure adhesion of the **ACRYLINK G[™]** membrane.
 - 4.4.1 All masonry surfaces to be coated shall be wire-brushed before pressure washing in order to remove all dust.

- 4.4.2 All oxidized metallic surfaces to be coated shall be wire-brushed or otherwise abraded before phosphating and pressure washing in order to remove as much rust and scale as possible.
- 4.5 All oxidized areas shall be pre-treated with ISOPHOS™ phosphating solution, or equal, according to the following procedure:
- 4.5.1 ISOPHOS™ may be applied by brush, mop, low-pressure hand pump sprayer, or other suitable instrument.
- 4.5.2 ISOPHOS™ shall be applied to all oxidized areas and these surfaces shall be kept wet with ISOPHOS™ until the reddish color of the rust turns grayish in color. The amount of time required to complete this procedure will vary as the amount and degree of oxidation varies.
- 4.5.3 After the reaction has been completed, the areas treated with ISOPHOS™ shall be rinsed clean with water.
- 4.5.4 Phosphated surfaces shall be allowed adequate time to dry before primer application commences.
- 4.5.5 IPC recommends that ISOPHOS™ be applied to all non-painted metallic surfaces for approximately 30 seconds and then rinsed off. Oxidization occurs on all metallic surfaces, of any age. Passivating these surfaces helps extend the life of the metal substrate.
- 4.6 The entire surface to be coated—including, but not limited to, sections of parapet walls, penetrations, air handling equipment, and the like—shall be pressure washed in order to remove all dust, dirt, debris, chalk, oil, tar, and the like from the substrate surface. A suitable cleaner, such as TSP, and a broom shall be used as necessary. If a cleaner is required, the surface shall be rinsed with water to remove residue.
- 4.7 Special care shall be taken with surfaces coated with aluminized asphalt. All poorly adhered leafed aluminum shall be removed by vigorous brushing in addition to pressure washing.

Section 5.0 Surface Preparation—Priming

Preparations shall include all requirements specified by IPC to ensure adequate adhesion of the ACRYLINK G™ elastomeric coating membrane to the substrate surface. Preparations shall include, but shall not be limited to, the following:

- 5.1 As much loose rust and scale as possible shall already have been removed by abrasion (wire brush or other suitable instrument) from oxidized areas.
- 5.2 Primer application shall not commence during inclement weather, when a precipitation appears imminent, when the temperature is below 45 °F, or when the relative humidity exceeds 85%. To provide adequate curing time, primer application shall terminate a minimum of two (2) hours before sundown.
- 5.3 Entire surface to be primed with ISOPRIME™ corrosion inhibiting primer shall be free of dust, dirt, tar, oil, moisture, frost, or any other material that would impair the adhesion of the primer to the substrate surface.
- 5.4 Using conventional airless spray equipment or a brush, all galvanized, phosphated, and non-painted metallic surfaces that are to be coated—metal flashings, expansion joints, air handling equipment, penetrations, and the like—shall be primed with ISOPRIME™ corrosion inhibiting primer, or equal, at a rate of 250 to 400 square feet per gallon.
- 5.5 At contractor's option, ISOPRIME™ may be applied to the seams first, leaving the panels unprimed until after the procedures outlined in section 6.0 are completed. If this option is chosen, the unprimed panels shall be primed, at the required application rate, and allowed adequate curing time, before coating application commences.
- 5.6 Primer shall be allowed to cure for approximately two (2) hours, depending upon temperature and relative humidity, after which an inspection shall be performed. Additional ISOPRIME™ shall be applied to any areas where there are voids in the primer coat, in order to make the coat continuous.

Section 6.0 Surface Preparation—Detailing

Preparations shall include all requirements specified by IPC to ensure adequate adhesion of the ACRYLINK G™ elastomeric coating membrane to the substrate surface. Preparation shall include, but shall not be limited to, the following:

- 6.1 Detail work shall not commence during inclement weather, when a precipitation appears imminent, when the temperature is below 45 °F, or when relative humidity exceeds 85%. To provide adequate curing time, detail work shall terminate a minimum of four (4) hours before sundown.
- 6.2 All galvanized, phosphated, and non-painted metallic surfaces to be coated—including, but not limited to, metal flashings, expansion joints, air handling equipment, penetrations, and the like—shall have already been primed with ISOPRIME™ corrosion inhibiting primer, or equal, and allowed adequate curing time, before detail work commences.
- 6.3 The entire surface to be coated shall be free of dust, dirt, tar, oils, moisture, frost, or any other material that would impair the adhesion of ACRYLINK G™ elastomeric coating to the substrate surface.
- 6.4 All vertical seams shall be sealed with ACRYCAULK™ brush or trowel grade sealant. An approximate one (1) inch wide line of ACRYCAULK™ shall be applied to every vertical seam, in such a way so as to force a small amount of the caulk up and into the narrow gap along the vertical seam and so that the gap along the edge of the vertical seam is completely bridged. The application rate for this procedure is approximately 1/3 gallon per 100 lineal feet. When estimating materials needed, plan on using at least 1/10 gallon of ACRYCAULK™ per 100 square feet for this procedure.
- 6.5 All horizontal and ridge cap seams shall be sealed with non-woven or spun polyester roofing cloth embedded between two coats of ACRYCAULK™ sealant. An authorized representative of IPC shall be consulted for approval of specific types of non-woven polyester. Horizontal and ridge cap seams shall be sealed according to the following procedure:
- 6.5.1 Using a brush or other suitable instrument, a six (6) inch wide coat of ACRYCAULK™ brush-grade sealant shall be applied over both sides of the horizontal or ridge cap seam to be sealed.
- 6.5.2 A four (4) inch strip of non-woven or spun polyester roofing fabric shall be pressed down into the caulk, thus bridging the horizontal or ridge seam.
- 6.5.2.1 It is important to ensure that there are no wrinkles or fishmouths in the polyester, especially along the uppermost edge.
- 6.5.2.2 IPC recommends cutting out a section of the polyester fabric so that the polyester does not cover fastener heads. If this is done, these fastener heads shall be coated with a thick coat of ACRYCAULK™ while the polyester is being applied.

- 6.5.3 The polyester cloth shall then be completely covered with a second coat of **ACRYCAULK[™]**. This second coat shall completely cover the polyester and shall be applied within the same working day as the application of the polyester.
- 6.5.4 The application rate for this procedure is approximately 4 gallons of **ACRYCAULK[™]** per 100 lineal feet. When estimating materials needed, plan on using approximately ¼ gallon per 100 square feet.
- 6.5.5 All holes or gaps on or adjacent to the roof deck should be repaired or bridged according to this method as well. Small holes or gaps may be bridged with **ACRYCAULK[™]** alone, without the use of polyester cloth.
- 6.6 Using a soft, round brush, or other suitable instrument, each fastener head shall be individually encapsulated with **ACRYCAULK[™]**. The application rate for this procedure is approximately 1/8 gallon per 100 square feet.
- 6.7 After completing these procedures, the sealed seams and encapsulated fasteners shall be allowed to cure overnight. Before coating application commences, all seams shall be inspected and repaired, as necessary, with **ACRYCAULK[™]** or an approved building sealant.
- 6.8 **ACRYLINK G[™]** coating shall be applied over the sealed seams during normal coating application procedures.

Section 7.0 Coating Application

- 7.1 Coating application shall not commence during inclement weather, when a precipitation appears imminent, when temperature is below 45 °F, or when relative humidity exceeds 85%. To provide adequate curing time, coating application shall terminate at least four (4) hours before sundown.
- 7.2 Entire surface to be coated shall be free of dust, dirt, tar, oil, moisture, frost or any other material that would impair the adhesion of **ACRYLINK G[™]** elastomeric coating to the substrate surface.
- 7.3 All metallic, asphaltic, or aluminized surfaces to be coated shall have been prepared in accordance with the procedures specified in sections 4-6.
- 7.4 **ACRYLINK G[™]** elastomeric coating: Base Coat
 - 7.4.1 The base coat of **ACRYLINK G[™]** elastomeric coating shall be applied at 1½ gallons per 100 square feet using conventional airless spray equipment.
 - 7.4.2 Coating shall be applied so as to cover the substrate uniformly. All flashed, bridged or repaired areas (as described in section 6) shall be coated again at this time, and during each subsequent coat.
 - 7.4.3 Wherever possible, coating shall be applied at least three (3) inches beyond the termination of polyester flashings or bridges, especially along parapet walls, penetrations, air handling equipment, and the like.
 - 7.4.4 The base coat may be applied in more than one pass, if desired, to accelerate curing, provided adequate curing time has been allowed between passes to prevent damage from being done to the membrane when it is walked upon.
 - 7.4.5 IPC recommends the use of a darker color, like gray, for the base coat, as it cures much faster than a lighter color, such as white.
 - 7.4.6 The base coat shall be allowed to cure for at least two (2) hours, depending on temperature and humidity conditions, after which an inspection shall be performed. Any defects in the coating membrane shall be repaired with **ACRYLINK G[™]** or an approved building sealant.
- 7.5 **ACRYLINK G[™]** elastomeric coating: Subsequent Coats
 - 7.5.1 IPC recommends that **ACRYLINK G[™]** elastomeric coating be applied in contrasting color coats to improve coverage and spray pattern. Order of application shall be as contractor specifies.
 - 7.5.2 The surface of the **ACRYLINK G[™]** base coat, and all subsequent coats, shall be free of all moisture, dirt, and debris before a subsequent coat is applied.
 - 7.5.3 The second coat of **ACRYLINK G[™]** elastomeric coating shall be applied as soon as practical, within 24-72 hours of the application of the base coat.
 - 7.5.4 The second coat, and all subsequent coats, shall be applied at a right angle to the direction in which the previous coat was applied. For example, if the previous coat was applied with a north-south motion, the subsequent coat shall be applied with an east-west motion.
 - 7.5.5 The second coat, and all subsequent coats, shall be applied by conventional airless spray at the rate specified to achieve the TDM minimum in a reasonable number of coats. Each coat shall completely mask the color of the previous coat.
 - 7.5.6 The second coat, and all subsequent coats, may be applied in more than one pass, if desired, to accelerate curing, provided adequate curing time has been allowed between passes to prevent damage from being done to the membrane when it is walked upon.
 - 7.5.7 Subsequent coats shall be applied by conventional airless spray at the rate required to achieve the TDM minimum. It is essential to realize that the true surface area may be greater than the apparent surface area because of surface texture or profile. In order to achieve the TDM minimum on such a surface, the application rate must be increased appropriately.
 - 7.5.8 Each coat shall be allowed to cure for at least two (2) hours, depending upon temperature and humidity conditions, and inspected and repaired as necessary, before a subsequent coat is applied.
- 7.6 **ACRYSHREEN[™]** surface coating: Optional Coat
 - 7.6.1 At the contractor's option, a top coat of **ACRYSHREEN[™]** surface coating may be applied by conventional airless spray at a minimum rate of ½ gallon per 100 square feet. ½ gallon per 100 square feet of **ACRYSHREEN[™]** surface coating may be substituted for ¼ gallon per 100 square feet of **ACRYLINK G[™]** elastomeric coating.
 - 7.6.2 Surface coat may be applied in more than one pass, if desired, to accelerate curing. Adequate curing time shall be allowed between passes.
 - 7.6.3 Surface coat shall be applied at a right angle to the direction in which the previous coat was applied. Surface coat shall completely mask the color of the previous coat.
 - 7.6.4 Surface coat shall be allowed to cure for at least four (4) hours, and inspected and repaired as necessary, before a subsequent coat is applied.
- 7.7 The cured **ACRYLINK G[™]** elastomeric coating system membrane shall be TDM minimum in all areas and shall be free of all pinholes and defects.
- 7.8 Required spread rates for the **ACRYLINK G[™]** elastomeric coating membrane are as follows:
 - 7.8.1 5-year application: 2.3 gallons per 100 square feet of **ACRYLINK G[™]** total (21 dry mil average, 18 dry mil minimum).

- 7.8.2 10-year application: 3.2 gallons per 100 square feet of ACRYLINK G[™] total (29.5 dry mil average, 25.5 dry mil minimum).
- 7.8.3 20-year application: 5.5 gallons per 100 square feet of ACRYLINK G[™] total (50.5 Dry mil average, 43.5 dry mil minimum).
- 7.9 Having completed the procedures specified above, and having achieved the TDM minimum in all areas, the ACRYLINK G[™] elastomeric coating membrane shall be given adequate time to cure.
- 7.10 For a minimum of thirty (30) days after the membrane has been applied, contractor shall be responsible to inspect the membrane after every precipitation.
 - 7.10.1 Contractor shall carefully remove water from small ponding areas ("birdbaths") with an air blower, without damaging the ACRYLINK G[™] membrane.
 - 7.10.2 Areas of gross ponding water shall have been addressed and eliminated prior to coating application, in accordance with commonly accepted waterproofing and roofing practices.

Section 8.0 Clean-Up

Upon completion of all work covered in this specification, and before the job is inspected, the contractor shall remove all equipment, material, and debris, leaving the area in an undamaged and acceptable condition. In no case shall the job be considered complete before the jobsite has been properly cleaned.

Section 9.0 Limitations

This system is to be used only in conjunction with commonly accepted waterproofing and roofing standards including but not limited to the following:

- 9.1 In order to qualify for a factory warranty, applicator must have Approved Applicator status, the roof must meet the square foot minimum, the ACRYLINK G[™] membrane must be continuous, and the membrane must meet the TDM minimum.
- 9.2 No application of component materials shall commence during inclement weather, when a precipitation appears imminent, when temperature is below 45 °F, or when relative humidity exceeds 85%.
- 9.3 No material shall be applied to wet, dirty, or frozen surfaces.
- 9.4 Coating application shall not commence until all other trades are off of the roof.
- 9.5 Coating shall not be applied to areas of gross ponding water. Contractor shall address and eliminate areas of gross ponding water prior to coating application.
- 9.6 In conjunction with the final inspection, all debris, material, and equipment are to be removed, leaving the area in an undamaged and acceptable condition.