

**SECTION 07560**  
Fluid Applied Roofing



**Energy Seal Coatings**

**Acu-Shield {acrylic}**

**METAL**  
**Roof Coating System**

**MASTER APPLICATION SPECIFICATION**

*This **MASTER APPLICATION-SPEC** is a brief outline of Advanced Coating Systems, Inc.'s (ACS) Manufacturers Specifications for the above described product and is intended for use as a submittal with any bid package by one of ACS' Certified Applicators. ACS Representative and the Certified Applicator must comply with the "Application" section of all Technical Data Bulletins prior to design or bid. The "Product" and "Safety" sections located on the Technical Data Sheet and MSDS contain information pertaining to the proper usage of products as well as applicable safety precautions. These sections must be thoroughly reviewed prior to the installation of this roofing system.*

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**PART I - GENERAL**

**1.01 SCOPE OF WORK**

- A. Furnish all labor, materials, tools and equipment necessary for the installation of Energy Seal Coatings® including accessory items subject to the general provisions of the contract.

**1.02 RELATED SECTIONS**

- A. See: Warranty Request Form, Warranty Example, Technical Data Sheets, & MSDS

**1.03 DESCRIPTION OF WORK**

- A. Entire roof system to be restored.
- B. Gutters to be rust-proofed and/or waterproofed (optional).
- C. Mechanical equipment, vents and ductwork to be rust-proofed and/or waterproofed (optional).
- D. Skylights may be sealed and/or waterproofed (optional).
- E. Adjoining walls and copings to be waterproofed (optional).

**1.04 QUALITY ASSURANCE**

- A. ACS Ten (10) Year Warranty covering material shall be issued within thirty (30) days of final payment.
- B. This roofing system must be installed by an Authorized Roofing Applicator in compliance with written Application Specifications as approved by ACS Technical Services. There must be no deviations without the PRIOR WRITTEN APPROVAL of ACS Technical Services. Upon completion of the installation, an inspection will be conducted by a ACS Representative to ascertain that the roofing system has been installed according to ACS published Master Application Specifications and details applicable at the time of bid.
- C. Provide written proof of required licenses, insurance and permits prior to job start-up.
- D. Provide copy of Approved ACS Warranty Request Form Application, submitted by the Contractor.

**1.05 SUBMITTALS**

- A. Samples (optional): Provide two (2) 1"x 2" (2.5cm x 5.0cm) samples of the system to be installed.
- B. Installation Procedures: Submit additional and specific procedures unique to the project by addendum.
- C. Product Data: Submit all product data with physical properties, requirements for preparation, limitations and application rates.

**1.06 DELIVERY AND STORAGE**

- A. Deliver coating materials and accessories in manufacturer's original protective containers with labels intact and legible. Comply with manufacturer's published instructions for storage and handling.
- B. Store materials in dry protected areas and on clean raised platforms with securely anchored weather protective covering.
- C. Store flammable products away from spark or open flame.
- D. Store coating materials at a minimum of 50°F (10°C) prior to use or as otherwise recommended by the manufacturer. Protect materials from freezing. Protect

materials from prolonged exposure to temperatures exceeding 105°F (40.6°C).

- E. Contaminated and Damaged Materials: Remove damaged or contaminated materials from site and dispose of in accordance with local, State and Federal regulations.

**1.07 SITE CONDITIONS**

- A. EXAMINATION OF EXISTING CONDITIONS: Contractor shall examine substrate for conditions that might detrimentally affect the application of Energy Seal Coatings® and shall report all unsatisfactory conditions to ACS and will not proceed until these conditions have been corrected.
- B. ALL WARRANTIES REQUIRE AN INFRARED SCAN AND THE REPLACEMENT OF ALL WET ROOFING MATERIALS, PRIOR TO SYSTEM APPLICATION.
- C. Commencing work implies acceptance of existing condition, by contractor, as satisfactory to the outcome of this work.
- D. Air intake vents, blowers, air conditioning units and evaporative coolers shall be disconnected or otherwise modified to prevent fumes from entering into the building or from contaminating the roof surface with condensate water or exhaust gases.

**1.08 ENVIRONMENTAL REQUIREMENTS**

- A. Proceed with coating work only when weather conditions comply with ACS recommendations and other current published data and MSDS information. Do not exceed temperature limitations recommended by ACS.
- B. Owner may occupy the premises during the entire period of the roof retrofit. Cooperate with Owner's Representative during application operations to minimize conflict, and to facilitate continued use of the facility.
- C. Coordinate scheduling with the Owner in order to relocate or protect vehicles, building occupants and building contents from damage during application operations.

**PART 2 - PRODUCTS**

**2.01 COATING SYSTEM COMPONENTS**

- A. Approved Manufacturer
  - 1. Energy Seal Coatings® by ACS
  - 2. Approved Equal
  - 3. See Product Data Sheet for specific details.
- B. Acrylic: (Acu-Shield™)
  - 1. Acu-Shield™ is a single component, water-based, 100% acrylic elastomeric coating.

PHYSICAL PROPERTY	TYPICAL VALUE
Tensile Strength	254 psi min.
Elongation	465 %
Viscosity	115- 120 KU
Solar Reflectance	0.89
Thermal Emittance	0.89
SRI (solar reflective index)	113

- C. Recommended coating for tropical environments such as Florida, Hawaii and the Caribbean: Acu-Shield:T™
  - 1. **Acu-Shield:T™** is a single component, water-based, 100% acrylic elastomeric coating.

PHYSICAL PROPERTY	TYPICAL VALUE
Tensile Strength	254 psi min.
Elongation	465 %
Viscosity	115- 120 KU
Percent Solids, weight	65%
Percent Solids, volume	51%
Fungi Resistance	Zero Growth

**2.02 ACCESSORY MATERIALS AVAILABLE**

- A. **Acu-Wash™**:  
A pre-treatment water-soluble detergent surfactant recommended for cleaning surfaces which are to be coated with Energy Seal Coatings® products.
- B. **Acu-Metal Prime™**:  
A water-based, self cross-linking durable acrylic primer for metal surfaces.
- C. **Acu-Caulk:BG™**:  
A 100% acrylic elastomeric brush grade caulk used as a patching material for filling and patching cracks, joints and seams.
- D. **Acu-Fabric™**:  
A stitch-bonded polyester fabric that comes in varying widths used in conjunction with Acu-Tac™ and/or Acu-Caulk:BG™ to create a fully adhered fabric reinforced waterproof system for flat and pitched roofs.
- E. **Acu-Caulk:FG™**:  
A fiber reinforced, acrylic elastomeric, flashing grade caulk. It is formulated to seal cracks and gaps ranging from 1/32 - 1/4" (.8mm - 6.3mm) with limited or no shrinkage.
- F. **Acu-Tape™**.  
A pressure sensitive, roof repair and seam sealing tape for all types of surfaces.

**PART 3 - EXECUTION**

**3.01 PREPARATION FOR COATING**

- A. Adhesion test:
  - 1. **Prior to commencing this specification, an ADHESION TEST PATCH must be applied and evaluated after the roof has been properly cleaned.**
- B. Metal Panels:
  - 1. Replace deteriorated or structurally unsound metal roof panels.
  - 2. **Excessive amounts of cold applied materials shall be removed.**
- C. Cleaning:
  - 1. Apply Acu-Wash™ using a hand-pump, compression type sprayer, or pressure washing equipment at the rate of 500 sq.ft. (46m<sup>2</sup>) per gallon (3.7 liter).
  - 2. When using a hand-pump sprayer, adjust nozzle to achieve a uniform spray pattern with a 3 to 4 foot (91cm – 122 cm) arc.

- 3. When using pressure washing equipment, use injector hose with a 40° fan angle tip. Care should be taken to prevent the Cap Sheet from being damaged during cleaning.
- 4. Use concentrated chlorine solution to treat areas of mildew, fungus or algae.
- 5. After procedures "1 through 4" above, care should be taken to thoroughly rinse the area with clean water and to flush all residue from the roof surface. Allow the roof to dry completely before proceeding with priming or coating.
- 6. Loose coating, paint, rust and scale shall be removed using: wire brush and scraper, or water blasting. Remove loose rust by: water blasting at min 2,400 psi; wire brushing; power or hand sanding.
- 7. New galvanized panels weathered less than six (6) months shall be cleaned with a 50/50 vinegar and water solution to remove machining oils.
- 8. After procedures above, care should be taken to rinse thoroughly with clean water and flush all residues from roof surface. Allow roof to dry completely before proceeding with priming or coating.

- D. Small holes:  
Are to be repaired using Acu-Caulk:BG™ , Acu-Fabric™ and Acu-Caulk:BG™ system OR Acu-Caulk:FG™ OR Acu-Tape™.
- E. Crickets:  
Install new flashing and "crickets" where required. Ponding up slope of penetrations is not acceptable. Use acceptable trade practices to assure flashing and "crickets" do not hold water.
- F. Prime:
  - 1. Prime all metal surfaces to receive the Energy Seal Coating System™ with Acu-Metal Prime™ :

Light rust	200 – 300 sq.ft. per gallon 18.6 – 27.9m <sup>2</sup> per 3.7 liters
Heavy rust	100 – 200 sq.ft. per gallon 9.29 – 18.6m <sup>2</sup> per 3.7 liters

- G. Horizontal Laps:
  - 1. Apply foot pressure to under lapping panel next to joints. If joint opens more than 1/16" (1.5mm), add fasteners to tighten the lap seam.
  - 2. Sealing options: Seal all horizontal laps using Acu-Caulk:BG™ and Acu-Fabric™ system or Acu-Caulk:FG™ or Acu-Tape™ see options below.

**Horizontal Lap Seam Option a):**

- a) Apply Acu-Caulk:BG™ to horizontal lap area, imbed Acu-Fabric™ into wet caulk and apply another coat of Acu-Caulk:BG™ completely covering the fabric and out onto the metal panel.

**Horizontal Lap Seam Option b):**

- b) Apply a generous amount Acu-Caulk:FG™ to horizontal seam area, making sure there are no openings, voids, or other spacing in the lap joint.  
**Horizontal Lap Seam Option c):**
- c) Apply Acu-Tape™ to horizontal seam area, making sure there are no openings, puckers, voids, folds or other spacing in the Acu-Tape™ over the lap joint.
- H. Vertical Seams:
1. If vertical seams are open more than 1/16" (1.5mm), add fasteners to tighten the opening.
  2. Sealing options: Seal all vertical seams using Acu-Caulk:BG™ and Acu-Fabric™ or Acu-Caulk:FG™ or Acu-Tape™.
- Vertical Seam Option a):**
- a) Apply Acu-Caulk:BG™ to vertical seam area, imbed Acu-Fabric™ into wet caulk and apply another coat of Acu-Caulk:BG™ completely covering the fabric and out onto the metal panel.
- Vertical Seam Option b):**
- b) Apply a generous amount Acu-Caulk:FG™ to vertical seam area, making sure there are no openings, voids, or other spacing in the vertical seam.
- Vertical Seam Option c):**
- c) Apply Acu-Tape™ to vertical seam area, making sure there are no openings, puckers, voids, folds or other spacing in the Acu-Tape™ over the vertical seam.
- I. Fasteners:
1. Replace stripped or loose fasteners with oversized fasteners. Add additional fasteners to tighten loose panels or restore original design specifications.
  2. Encapsulate fasteners with Apply Acu-Caulk:BG™ or Acu-Caulk:FG™ and smooth to level on to roof deck.
- J. Gutters:
1. Loose coating, paint, rust and scale shall be removed using: wire brush and scraper, or water blasting. Remove loose rust by: water-blasting at min 2,400 psi; wire brushing; power or hand sanding.
  2. Prime gutter with Acu-Metal Prime™, at a rate of 150 sq.ft. (13.9m<sup>2</sup>) per gallon (3.75liter). Make sure the Acu-Metal Prime™ is completely dry before proceeding to the next step (Optional).
  3. Coat gutter with 1 coat of Acu-Shield™ at a rate of 1½ gallon/ 100 sq.ft. (5.6liter/ 9.29m<sup>2</sup>).
- K. Flashing:
1. Weathered but solid flashings, protrusions, machine legs, sign posts, guide wire straps, inside and outside corners, and all termination points, may be flashed using Acu-Caulk:BG™ and Acu-Fabric™ System or Acu-Caulk:FG™.
1. Do not apply coating when moisture is present on the substrate (or under substrate) or if rain is expected before coating properly cures.
  2. Wind barriers shall be used if wind conditions could affect the quality of the material being applied.
  3. Acu-Shield™ must cover all intended surfaces completely. An extra pass of Acu-Shield™ may be required at all edges, penetrations, and vertical surfaces such as parapet walls.
  4. **Base and finish coats of Acu-Shield™ must be applied perpendicular to each other.**
  5. Basecoat and primer shall be allowed to cure before proceeding with subsequent applications.
  6. All coating and primers shall be coated within recommended time period. If application is delayed beyond that time, consult ACS for primer recommendations.
  7. No traffic shall be permitted on the coated roof surface for a minimum of 3 days. Damage to the surface by other trades shall not be the responsibility of the roofing contractor. The total dry mil thickness shall meet the minimums required by ACS.
- B. Manual Application of Acu-Shield™ as both base & finish coat:
1. Apply base coat, at minimum rate of 1.25 gal/100 sq.ft. (4.7liter/ 9.29m<sup>2</sup>) per coat.
  2. Pour or pump base coat in ribbons one rib at a time from ridge to gutter. Each pass centered in area between ribs.
  3. Brush / back-roll base coat on to rib and across the entire panel. Back-roll the entire panel in one stroke to smooth brush or roller marks.
  4. A visual inspection of the base coat surface should take place before application of the finish coat to confirm an acceptable surface for the finish coat. Any deficiencies must be repaired prior to application of the finish coat.
  5. Apply finish coat at a minimum rate of 1.25 gal/100 sq.ft. (4.7liter/ 9.29m<sup>2</sup>), the same as above, perpendicular to base coat.
  6. **Care should be taken to ensure proper coverage of vertical surfaces of ribs.**
  7. Note: Temperature, humidity, applicator technique, substrate, as well as other factors will affect coating thickness. Applicator must verify proper coating application rates per paragraph 'D' below.
  8. Care should be taken to ensure proper coverage of vertical surfaces of ribs. Application rates of the base coat and the final coat must be checked periodically to assure proper coating thickness. This shall be done using a wet film gauge, checking film thickness every 500 sq.ft. (46m<sup>2</sup>) during application. Wet film thickness should be no less than 20 mil per coat.
- C. Spray Application of Acu-Shield™ as both a base & finish coat:
1. Spray basecoat of Acu-Shield™ at minimum rate of

### 3.02 COATING SYSTEM

#### A. General:

1.25 gal/100 sq.ft. (4.7 liter/ 9.29 m<sup>2</sup>). Each pass shall overlap the previous pass to insure complete coverage. Contractor needs to figure losses due to surface texture, increasing estimated material requirements, if needed.

2. Spray finish coat of Acu-Shield™ **perpendicular to the basecoat** at a minimum rate of 1.25 gal/100 sq.ft. (4.7 liter/ 9.29 m<sup>2</sup>). Each pass shall overlap the previous pass to insure complete coverage.
  3. **Care should be taken to ensure proper coverage of vertical surfaces of ribs.**
  4. Pay special attention to overspray, which can texture or discolor adjoining finished sections. Wind direction should conduct overspray away from finished roofing surfaces.
- D. Care should be taken to ensure proper coverage of vertical surfaces of ribs.

Application rates of the base coat and the final coat must be checked periodically to assure proper coating thickness. This shall be done using a wet film gauge, checking film thickness every 500 sq.ft. (46m<sup>2</sup>) during application. Wet film thickness should be no less than 20 mil per coat.

Contractor should estimate coating requirements based on actual experience and they need to figure losses due to applicator proficiency, surface texture, wind, waste, and other factors. Additional material over and above the original estimate may be required.

**NOTE: The recommended gallons for minimum mil thickness is a guideline and should be verified by the contractor to ensure that the minimum mil thickness is applied to the roof surface.**

### 3.03 PONDING WATER

1. As defined by the National Roofing Contractors Association (NRCA), ponding water is water "that remains on a roof surface longer than 48 hours after the termination of the most recent rain event."
2. Ponding water on a roof could indicate early roof failure. Every effort must be made to eliminate roof ponds through the use of drains, scuppers or some other mechanical means.

### 3.04 INSTALLATION OF WALKWAYS

- A. In high-traffic areas and around mechanical equipment, walkways should be installed to protect the coating system from damage, or apply an additional layer of the Acu-Shield™ at a rate of 1.5 gallons/100 sq.ft. (5.6 liter/ 9.29 m<sup>2</sup>). Broadcast 3M Granules or approved aggregate into the wet coating, to establish a trafficable surface.

### 3.05 FIELD QUALITY CONTROL

- A. Contractor is to maintain Job Progress Report / Daily Log of work completed as required to assure installation is in accordance with manufacturer requirements. Log is to include progress photo's.
- B. Contractor is to provide on-the-job inspections, technical assistance and material application guidance as it may be necessary to complete the Energy Seal

Coatings® System application in accordance with ACS warranty requirements.

### 3.06. JOB COMPLETION

- A. Inspect completed roofing system and correct all defects to meet the specification and/or warranty requirements.
  1. Transparent or Thin Areas: If areas appear to be undercoated, recoating may be needed to ensure final thickness to meet the ACS specifications.
  2. Delamination: Verify that all coated areas appear to be fully adhered to the substrate. A visual inspection looking for typical signs of poor adhesion such as flaking, blistering, peeling, etc. should be made. Re-priming and recoating will be required if such areas are apparent.
  3. Pin Holing: Certain job or site conditions may result in pin holing or out gassing during curing of the coating. Again, a visual inspection looking for typical signs of out gassing such as excessive pockmarks, pinholes, etc. should be done. Recoating will be required if such areas are apparent.
  4. Blisters: Blisters represent a localized loss of adhesion and the lifting of roof coating film from the underlying surface. The most common cause is water or moisture vapor migrating through from below or above the roof surface. Surface blisters in coating can sometimes be caused by the actual moisture in the liquid coating at the time of application. Blisters can form when the coating dries so rapidly some of the water can't evaporate completely before the coating surface cures. Blisters can also form from moisture trapped in the substrate. Blisters must be removed using a shop knife, repaired with Acu-Caulk:BG™ and top coated with Acu-Shield™.
  5. Texture Finish: Heavy patterns, blistering, "skinning", "mud cracking", etc. may appear in the final finish. These may be indicators that too thick a coat or a build-up has occurred or other application problems. Check with ACS for remedial advice.
  6. HVAC Equipment: HVAC equipment must be properly plumbed so as to eliminate condensation runoff onto the roof.
- B. Clean up all debris, excess materials, and equipment and remove from site.
- C. Restrict construction traffic and equipment movement on the completed roofing system to only essential personnel. Provide appropriate protection against traffic and construction activities on completed roofs. Damage to the roof by other trades shall not be the responsibility of the ACS Coating Applicator.

**End of Section  
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CAUTION: Do not apply within two hours of sunset, rain, fog or if surface temperatures are below 50°F or above 140°F (10°C-60°C). Energy Seal Coatings® must be completely dry before exposing to water or foot traffic. Keep Energy Seal Coatings® containers covered when not in use. Dispose of all containers

in accordance with state and local environmental regulations. Keep away from children. If ingested, DO NOT induce vomiting, call Physician immediately, see product MSDS for more information.

Our suggested installation specifications are based on information from laboratory and field testing which we believe to be reliable and correct; however, accuracy and completeness of said tests are not guaranteed and not to be construed as a warranty, either

expressed or implied. Since the use of the material is beyond manufacturer's control, buyer assumes all risk whatsoever as to their use or results obtained. We guarantee our products to conform to Advanced Coating Systems, Inc. quality control. Advanced Coating Systems, Inc. warrants only the standard quality of material. Manufacturer's sole responsibility shall be to replace that portion of the product of this manufacturer which proved to be defective.