# ACRYPLY® ROOFING SYSTEM
## Installation Guide Specification
## 1-Ply All Acrylic System for BUR & Mod Bit Roofs 07500

*Saving Money, Safeguarding the Environment…One Roof at a Time.®*

# I. GENERAL

### 1.01 SUMMARY

A. Provide labor, materials, equipment and supervision necessary to install a 1-ply polyester reinforced spray applied elastomeric acrylic coating system as outlined in this specification to create a seamless, fully-reinforced, fully-adhered waterproof membrane over built-up or modified bitumen roofing.

B. The manufacturer's application instructions for each product used are considered part of these specifications and should be followed at all times.

### 1.02 SUBMITTALS

A. Submit product data sheets and literature verifying fire ratings and other physical and performance properties of materials.

B. Submit material safety data sheets.

### 1.03 QUALITY ASSURANCE

A. Supplier Qualifications: The ACRYPLY® Roofing System for built-up & modified bitumen roofing, as supplied by National Coatings Corporation, is approved for use on the project.

B. Applicator Qualifications: The applicator shall be approved by National Coatings Corporation to apply the system. Manufacturer's written verification of applicator approval is required.

### 1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Containers and Packaging: Deliver materials in original sealed containers, clearly marked with: manufacturer’s logo; full product name; and lot number(s).

B. Storage: Store materials between 40ºF and 100ºF with careful handling to prevent damage to products. If conditions exceed these ranges, special consideration in storage must be taken. Do not store at high temperatures in direct sunlight.

C. Protection: Protect all materials from freezing and other damage during transit, handling, storage, and installation.

### 1.05 PROJECT CONDITIONS

A. These minimum recommendations for material usage are for ideal conditions. The number of gallons per 100 square feet may need to increase due to uneven application, rough surface texture, wind conditions while spraying or other variables.

B. Wet insulation must be thoroughly evaluated and then addressed with removal or other measures. Consult a National Coatings Technical Consultant regarding the need for moisture surveys and other assessments.

C. Structural cracks should be referred to the appropriate National Coatings Technical Consultant.

D. This installation guide specification assumes that the deck, if plywood, has no dry rot, and is in sound condition, or has been repaired.

E. Do not apply materials unless surface to receive acrylic roofing system is clean, dry and prepared as specified.

F. Install all material in strict accordance with all published safety, weather, or applicable regulations of the manufacturer and/or local, state, and/or federal agencies which have jurisdiction.

G. The entire system shall be fully adhered to the surface on which it is applied. Voids left under the system by creating bridges are not acceptable.

H. Do not proceed with application of coating or sealing materials when temperature is less than 50ºF. No coating system shall be applied if weather will not permit it to dry prior to exposure to precipitation or freezing.

I. Heavy puddles of coating on the roof are not acceptable.

J. Instructions for use of all roofing materials and application equipment should be read and followed at all times.

K. As a general principle, to prevent the ponding of water, install additional drains as necessary or install drainage systems with sprayed polyurethane foam (SPF).

### 1.06 DETAIL WORK

A. This specification does not extensively outline procedures for preparation and finishing of drains, vents, ducts, flashings, parapet walls, sheet metal work, etc. This work should be outlined by the contractor before work commences, and shall be performed observing good trade practices.

## II. PRODUCTS

### 2.01 ACRYPLY ROOFING SYSTEM

A. The roofing system is an acrylic, elastomeric, spray-applied ACRYPLY Roofing System manufactured by National Coatings Corporation.

B. The reinforcing fabric shall meet the following physical property requirements:

| Properties | Test Method | Average Value | | |
|---|---|---|---|---|
| | | T272 | T325 | T326 |
| Weight (per sq. yard) | Calculated by formula | 3 ounces | 2.75 ounces | 2.75 ounces |
| Bursting Strength (lbs) | ASTM D3786 | 177 | 127 | 99.6 |
| Tensile Strength (psi) | ASTM D1682 | 57.1 | 41 | 31.6 |
| Tear Strength (lbs) | ASTM D1117 | 16.1 | 14.2 | 13.2 |
| Elongation (%) | ASTM D1682 | 62 | 25.8 | 40.6 |
| Conformability | | Excellent | Good | Excellent |
| Ease of Saturation | | Excellent | Excellent | Excellent |

C. Physical Properties of Cured Roofing System: The testing of the coating shall be done under ASTM-D6083, “Standard Specification for Liquid Applied Acrylic Coating Used in Roofing”, unless otherwise specified. The testing of the composite reinforced membrane system shall also be according to appropriate ASTM methods.

1. The roofing system shall have good resistance to ponding water.

2. The roofing system shall contain no plasticizers.

3. The roofing system shall contain no migrating fire retardants.

4. The roofing system shall have a Class A fire rating on a noncombustible deck when tested according to the procedures outlined in ASTM E-108.

5. The base coating shall be ACRYSHIELD® A503 or an equivalent, and the top coating shall be ACRYSHIELD A400 or an equivalent. Both shall meet the following physical property requirements:

| Property | ASTM Method | Results |
|---|---|---|
| Tensile Strength, psi (Max @ 73ºF) | D6083 | Minimum 250 |
| % Elongation @ Break (73ºF) | D6083 | Minimum 250 |
| Wet adhesion to Specified Substrate | D6083 | Minimum 1.5 pli |
| Permeance, perms | D6083 | Maximum 15 |
| Volume Solids %<br>Weight Solids % | D6083 | > 50<br>> 65 |

6. The reinforced membrane system shall also meet the following physical property requirements:

| Property | ASTM Method | Results |
|---|---|---|
| Initial Tensile Strength, psi | D6083 | Minimum 1000 |
| Break Strength, lbf | D751 | Minimum 50 Transverse<br>Minimum 100 Longitudinal |
| Shore A Hardness | D2240 | Minimum 50 |
| Water Swelling, 7 days, % | D471 | Maximum 30 |
| Permeance, perms | D6083 | Maximum 10 |
| Dimensional Stability, % | D1204 | Maximum 1% Each Direction |
| 1000-hr Accelerated Weathering | D6083 | No Cracking or Checking |

## 2.02 RELATED MATERIALS

A. Flashing, adhesives, thinners, elastomeric caulking compounds, primers, and similar materials shall be approved by the manufacturer of the coatings. All materials used shall be applied in accordance with its manufacturer's recommendations.

## 2.03 EQUIPMENT

A. For recommended spray equipment guidelines, please refer to National Coatings Technical Paper "TP-102 Guide for Selecting Coating Spray Equipment", or consult the spray equipment manufacturer directly.

# III. EXECUTION

## 3.01 MANUFACTURER'S INSTRUCTIONS

A. Compliance: Comply with manufacturer's product data, including product technical bulletins and product guide specification instructions.

## 3.02 EXAMINATION

A. Inspect surfaces which will receive the ACRYPLY Roofing System to make sure they are clean, smooth, sound, properly prepared, and free of moisture, dirt, debris, or other contamination.

B. Verify that all roof penetrations, mechanical equipment, cants, edge metal, and other on-roof items are in place and secure.

C. Verify that all critical areas around the immediate vicinity of the spray area are suitably protected.

D. Verify all roof drains are clean and in working order.

E. Verify that all air conditioning and air intake vents are suitably protected or closed.

## 3.03 PREPARATION

A. The surface must be clean, sound, dry and free of any materials that would inhibit proper adhesion of the coating or sealant. Achievement of this condition may require the use of INDUSTRIAL CLEANER, scraping, power brooming, vacuuming or other means, and shall always be performed observing responsible trade practices. In any case, any existence of talc or other separator agents on the built-up or bitumen roofing is not acceptable.

B. NOTE: National Coatings recommends using the procedure outlined in our Technical Bulletin "TB-106 Basic Adhesion Test for AcryShield Applications" in order to ensure proper adhesion of the coating over the existing substrate.

C. On built-up roofs with mineral cap sheet, apply CLEARSEAL A101 surface sealer to the entire roof surface at the rate of at least ½ gallon per 100 square feet.

D. Repair all cracks, voids, holes or other surface imperfections in the roof field or flashing areas with ACRYFLEX® or ACRYSHIELD A503 as appropriate. After allowing the sealant or coating to dry (normally at least 24 hours), these areas shall be coated with ACRYSHIELD A503 applied at the rate of at least 2 gallons per 100 square feet. Polyester reinforcing fabric shall then be embedded in the wet coat of ACRYSHIELD A503 , with a second coat of ACRYSHIELD A503 being immediately applied on top of the fabric, at the rate of at least 1 gallon per 100 square feet. The polyester fabric shall extend 4-6 inches beyond the area in need of repair. Both the first and second coats of ACRYSHIELD A503 shall extend 2 inches beyond the edges of the polyester reinforcing fabric.

E. All blisters shall be cut, dried out, re-adhered and sealed with roofing mastic. After allowing sealant to dry, apply the ACRYSHIELD A503 and polyester reinforcing fabric as described in section 3.03.B of this installation guide specification.

F. Seal all HVAC duct work joints as needed with ACRYFLEX and reinforcing polyester fabric, or BUTYL SEAM TAPE. Coat entire duct assembly with two 1½ gallon coats of ACRYSHIELD A400.

G. Reseal around all mechanical equipment and roof penetrations with ACRYFLEX.

H. All loose seams of existing roof system shall be fastened down and sealed with roofing mastic. Sealant must seal fasteners as well. After allowing sealant to dry (normally at least 24 hours), apply ACRYSHIELD A503 and polyester reinforcing fabric as described in section 3.03.B of this installation guide specification.

I. In all valley areas, waterways, drain areas or other areas where potential water accumulation is a concern, apply ACRYSHIELD A503 at the rate of 2 gallons per 100 square feet, approximately 46 inches wide. Immediately embed 40 inch wide T272, T325 or T326 polyester reinforcing fabric into the wet coating, with a second coat of ACRYSHIELD A503 being immediately applied on top of the fabric at the rate of 1 gallon per 100 square feet. Both the first and second coats shall extend a minimum of 2 inches beyond the edges of the polyester reinforcing fabric. In any large valley area multiple widths of fabric should be used, overlapping them a minimum of 3 inches so that the coating and fabric extend at least six inches up above the potential waterline.

J. Allow coating to dry thoroughly (normally 6 to 24 hours), before proceeding to application of the remainder of the roofing system as described in section 3.04 of this installation guide specification.

## 3.04 APPLICATION

A. The entire roof shall receive the ACRYPLY Roofing System consisting of 1 ply of T272, T325 or T326 polyester reinforcing fabric and a minimum 6 gallons per 100 square feet of ACRYSHIELD coating, applied evenly in four separate coats, as described below. Total minimum system thickness of 70 mils including polyester fabric.

B. ACRYSHIELD A503 & Polyester Reinforcing Fabric:

1. NOTE: Often a roll of polyester reinforcing fabric has 1 edge that is thicker than the other. When overlapping fabric, always make sure the thicker edge ends up underneath the fabric overlapping it. Do not overlap with the thicker edge on top of another fabric layer.

2. Apply ACRYSHIELD A503 approximately 46 inches wide at the rate of at least 2 gallons per 100 square feet. Immediately embed 40 inch wide T272, T325 or T326 polyester reinforcing fabric into the wet coating. Using a roller, apply pressure to the surface of the fabric to ensure good saturation of the fabric by the coating, working out any wrinkles at the same time. Immediately apply a second coat of ACRYSHIELD A503 over the polyester reinforcing fabric at the rate of at least 1 gallon per 100 square feet.

3. Continue application, overlapping each 40 inch strip by 3 inches each time until the entire roof surface is covered. When overlapping fabric, always add sufficient extra coating between the layers to assure good saturation and adhesion of the layer on top. The edges of the overlapping fabric should be completely embedded in coating. This ACRYPLY Roofing System shall extend up any parapet walls high enough so that the edges can be overlapped by a metal cap flashing. Where there is no parapet wall, the system shall be brought to the edges, where it will be overlapped by metal edge flashing. Allow coating to dry (normally 6 to 24 hours), before proceeding.

4. Note: For roof system terminations not covered in this installation guide specification or detailed drawings, consult your National Coatings Technical Consultant.

5. At roof edges where there is no parapet wall, refer to a National Coatings Technical Consultant for edge termination details.

6. Extend the system to where it would be overlapped by flashing at HVAC units and other detail work. System edges that are not overlapped by flashing shall be sealed with AcryFlex and ACRYSHIELD six inches above the potential waterline.

C. ACRYSHIELD A400 Top Coat:

1. After allowing sealant to dry, apply two separate coats of ACRYSHIELD A400, using a cross hatch technique, over the entire system at the rate of 1½ gallons per 100 square feet, per coat. Cut in the coating evenly at all edges, and apply these top coats over all HVAC duct work and over the top of any parapet walls. Note: Backroll the first coat into all masonry, stucco and concrete walls.

2. These minimum recommendations for material usage are for ideal conditions. The number of gallons per 100 square feet may need to increase due to uneven application, rough surface texture, wind conditions while spraying, or other variables.

3. No coating shall be applied if weather will not allow it to dry prior to exposure to precipitation, dew, or freezing temperatures.

### 3.05 FIELD QUALITY REQUIREMENTS

A. Manufacturer's Field Services: Inspection by the coating manufacturer's representative shall be made to verify the proper installation of the system. Any areas that do not meet the minimum standards for application as specified herein shall be corrected at the contractor's expense. Manufacturer's inspection or verification shall not constitute acceptance of responsibility for any improper application of material.

### 3.06 CLEANING

A. Surfaces not intended to receive the ACRYPLY Roofing System shall be protected during the application of the system. Should this protection not be effective, or not be provided, the respective surfaces shall be restored to their proper conditions by cleaning, repairing or replacing. All debris from completion of work shall be completely removed from the project site.

## IV. MATERIALS

The following materials listed in these recommendations are available from National Coatings Corporation:

1. ACRYSHIELD® A503, high performance elastomeric roof base coating.
2. ACRYSHIELD® A400 acrylic, high-performance, elastomeric roof coating.
3. ACRYFLEX® acrylic, elastomeric, architectural sealant; available as A150 trowelable grade or A151 brushable grade.
4. CLEARSEAL A101 water-based surface sealer.
5. BUTYL SEAM TAPE, polyester-reinforced waterproofing tape.
6. T272, T325 or T326 polyester reinforcing fabric, 6-inch, 10-inch, 20-inch and 40-inch.
7. INDUSTRIAL CLEANER water-based, biodegradable cleaner.



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TECHNICAL

# ASTM D6083

## STANDARD TEST CONDITIONS FOR LIQUID APPLIED ACRYLIC ROOF COATINGS

Early in 1998, ASTM International published the D6083-97 specification titled "Standard Specification for Liquid Applied Acrylic Coating Used in Roofing." The goal of the ASTM Committee D-08 on Roofing, Waterproofing, and Bituminous Materials, was to establish a *minimum* benchmark standard for 100% acrylic elastomeric latex coatings used in roofing systems. ASTM D6083 addresses two important shortcomings in the industry that greatly impacted how facilities professionals could assess whether a specific acrylic roof coating met minimum property and performance criteria:

- The absence of one unifying set of performance requirements left manufacturers presenting product data that varied in scope and emphasis.
- The frequent reference to specific test protocols that did not fully define testing conditions so that data generated under such protocols could not be directly compared.

Manufacturers routinely list Tensile Strength and Elongation values for their coating products. High performance acrylic coatings have substantial strength and flexibility—or so-called "toughness". Prior to ASTM D6083, manufacturers frequently referenced ASTM D412 "Standard Test Methods for Rubber Properties in Tension," but ASTM D412 unfortunately does not clearly specify key testing and equipment conditions such as the gage length and cross head speed of the Instron machine, or the exact temperature and humidity conditions for the test. Conducting the ASTM D412 tensile strength and elongation tests at different conditions can significantly affect reported results. Because of this, facilities professionals would sometimes end up comparing "apples to oranges" when trying to decide on an acrylic roof coating that best suited their needs.

ASTM D6083 clarifies test conditions, especially regarding tensile strength and elongation that comprise toughness. The sample shape is precisely defined (and different than ASTM D412), temperature and humidity are fixed, and cross head speed and gage length are standardized. This means that all test results from ASTM D6083 are directly comparable, unlike those from ASTM D412, and facilities professionals now have a means to compare "apples to apples."

One needs to appreciate that as manufacturers convert their data sheets to ASTM D6083, the values reported for the same product will differ from previous ASTM D412 results. This is perfectly understandable given that different test conditions are employed. Most important is to understand that different products from the same manufacturer or different products from different manufacturers can now be directly compared, provided ASTM D6083 results are used.

The informed facilities professional can also appreciate that ASTM D6083 sets a minimum standard for certain physical and performance properties. In specific applications, performance beyond these minimums is required and specific ASTM D6083 test results become an important indicator of this additional performance requirement.

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