LEGACY REPORT

ER-5007

Reissued March 1, 2004

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www.icc-es.org

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Legacy report on the 1997 *Uniform Building Code*™

DIVISION: 07—THERMAL AND MOISTURE PROTECTION
Section: 07560—Fluid Applied Roofing

ACRYSHIELD ROOF COATING SYSTEMS

NATIONAL COATINGS CORPORATION
1201 CALLE SUERTE
CAMARILLO, CALIFORNIA 93012

1.0 SUBJECT

AcryShield Roof Coating Systems.

2.0 DESCRIPTION

2.1 General:

AcryShield roof coating systems are elastomeric coatings that are used as roof coverings, and are for application directly on noncombustible cementitious decks, on spray-applied polyurethane foam, and on existing code-complying built-up roof coverings attached to combustible decks. When installed as set forth in this report, the systems have roof covering classifications in accordance with Section 2.8 and Tables 1 and 2. Wind resistance is described in Section 2.7.

2.2 Materials:

2.2.1 AcryShield Coating: AcryShield is an acrylic elastomeric coating used as the first and second coats of the AcryShield roofing systems specified in Table 1, and as the top coat of the AcryShield/Liquiseal systems specified in Table 2. The coating materials are available in 5- and 55-gallon (18.9 and 208.2 L) containers, and have a shelf life of one year when stored in unopened containers at temperatures between 50˚F and 80˚F (10˚C and 26.7˚C). The AcryShield II coating is similar to the AcryShield coating, except there is less fire-retardant chemical in the formulation.

2.2.2 Liquiseal Coating: Liquiseal is a nonfibered, asphaltic, bentonite water-based material used as the base coat for roof covering systems described in Table 2. The coating materials are available in 5- and 55-gallon (18.9 and 208.2 L) containers, and have a shelf life of one year when stored in unopened containers at temperatures between 50˚F and 80˚F (10˚C and 26.7˚C).

2.2.3 Reinforcement: As referenced in Tables 1 and 2 of this report, the fabric reinforcement is 3-ounce-per-square-yard (101.7 g/m^2) stitchbonded polyester.

2.2.4 Foam Plastic Insulation: Polyurethane foam plastic insulation is as specified in Tables 1 and 2. The foam plastic has a flame-spread rating of 75 or less when tested in accordance with UBC Standard 8-1, and must comply with ASTM C 1029.

2.3 Preparation of Substrates:

2.3.1 General: The substrates to be covered must be free of all grease, oil, loose particles, moisture, and other foreign materials. All parapet surfaces, valleys, etc., must be flashed and counterflashed as required by the code. Areas not receiving a polyurethane foam plastic insulation application must be masked off or otherwise protected from overspray.

2.3.2 Wood Substrates: Wood substrates must be Exposure 1 plywood complying with UBC Standard 23-2, must be at least $^{15}/_{32}$ inch (11.9 mm) thick and bonded with exterior glue, and must be adequate for the required roof loading. All plywood edges must be supported by blocking or tongue-and-groove joints, as required in Section 2602.5.3 of the UBC. The plywood surface must be primed with a primer/sealer material that does not have a waxy or oily character.

2.3.3 Noncombustible Substrates: Noncombustible cementitious decks must be thoroughly cured and must have a surface pH level not higher than 11 prior to application of coating. Allowable types and required design loading of the substrates must comply with the code. See Table 1 for additional information.

2.3.4 Existing Built-up Roof Coverings: The AcryShield and AcryShield/Liquiseal roof coating systems may be applied over existing built-up roof coverings, as described in Tables 1 and 2, subject to inspection of the existing roof covering, and written approval, in accordance with Section 1515.1 of Appendix Chapter 15 of the *Uniform Building Code*™ (UBC). The existing roofing must be securely attached to the deck. Prior to application of the spray-applied polyurethane foam, the existing surface must be prepared in accordance with Section 1516.2 of Appendix Chapter 15 of the UBC.

2.4 Foam Plastic Application:

The polyurethane foam plastic insulation described in Table 1 is applied to substrates that are prepared in accordance with Section 2.2, using foam-spraying equipment approved by the foam plastic manufacturer. Application of the foam plastic is prohibited if substrate temperature is less than 50˚F (10˚C), if ambient temperature is less than 50˚F (10˚C), or if wind velocity is above 15 miles per hour (24 km/h). Application is also prohibited if precipitation is expected prior to the achievement of a fully cured full-thickness application.

Foam plastic is applied in minimum $^1/_2$-inch-thick (12.7 mm) passes, to reach the desired thickness as noted in Table 1.

The total finished thickness must be achieved within the same day. Flash passes of less than $^1/_4$ inch (6.4 mm) thickness are not acceptable in the top layer. The finished surface of the foam must be smooth and free of voids, pinholes and crevices, with a maximum allowable roughness defined as coarse orange peel.

2.5 Application of AcryShield Systems:

AcryShield coatings described in Table 1 are normally applied using spray equipment designed for use with high-viscosity coatings. When the coatings are applied over existing built-up roofs, application by roller is acceptable; the coatings must be spray-applied over foam plastic. The coating must be applied at the rate specified in Table 1. Application of AcryShield coatings is prohibited if either, or both, of the following conditions exist:

1. Substrate surface temperature is less than 50˚F (10˚C).
2. Surface is subject to precipitation or freezing.

Approximately 4 to 24 hours must be allowed, depending on weather conditions, prior to application of top coats. Foam plastic insulation must be coated within 48 hours of application, to avoid the possibility of oxidation. One cause of oxidation is prolonged exposure to ultraviolet light prior to coating. If the foam plastic is oxidized, the oxidized surface must be broomed and primed prior to application of AcryShield. See Figure 1 for typical details.

When the coating is applied over foam plastic, an optional surfacing consisting of No. 6 crushed limestone may be used, applied at a rate of 64 pounds per 100 square feet (3.1 kg/m^2), embedded into the top coating and covered with Roof Guard or Arctic Cap roof mix applied at a rate of one batch per 100 square feet (9.29 m^2). One batch consists of 40 pounds (18.1 kg) of dry mix, $4^1/_2$ gallons (17.0 L) of water, $^1/_2$ gallon (1.9 L) of Roof Guard acrylic resin and $^3/_4$ ounce (21.3 g) of Colloid 60.

As an option for Item 21 of Table 1, the polyester fabric reinforcement described in Section 2.2.3 may be embedded in the first coat.

2.6 Application of AcryShield/Liquiseal Systems:

Liquiseal base coat is normally applied by spray equipment designed for spraying high-viscosity coatings, and may need mixing with a power mixer prior to use. Application by roller or roofing broom is acceptable if the material is applied evenly. Temperature and weather limitations are the same as those for the AcryShield coating. The base coat is applied to the thickness specified in Table 2. The Liquiseal coating must be allowed to cure a minimum of 24 hours before application of the AcryShield top coat.

Before applying the AcryShield coating over a Liquiseal base coat, the surface must be washed to remove any deleterious substances. The AcryShield coating is applied as described in Section 2.5, over the Liquiseal base coat, to the thickness specified in Table 2.

2.7 Wind Resistance:

Assemblies described in Tables 1 and 2 are limited to installation in areas having a maximum basic wind speed of 80 miles per hour (129 km/h), on structures a maximum of 40 feet (12 192 mm) in height, in Exposure B areas.

Attachment of perimeter flashing shall, to the satisfaction of the building official, provide a minimum 75-pound-per-lineal-foot (1094.5 N/m) design tensile capacity.

2.8 Fire Classification:

The assemblies described in Tables 1 and 2 have the roof classifications noted in the tables.

2.9 Identification:

Containers of Liquiseal and AcryShield coatings have labels bearing the National Coatings Corporation name and address, the product designation, the date of manufacture and the shelf life; the name of the inspection agency (Underwriters Laboratories Inc.); and the evaluation report number (ER-5007). The polyester fabric reinforcement is identified as T272, T325 or T326. Containers of foam plastic insulation must be identified in accordance with Section 2602.3 of the UBC.

3.0 EVIDENCE SUBMITTED

Descriptive literature; installation instructions; data in accordance with the ICC-ES Interim Criteria for Membrane Roof-covering Systems (AC75), dated June 2003, and with the ICC-ES Interim Criteria for Foam Plastic Insulation (AC12), dated July 2002; reports of tests in accordance with FM 4470 and UL 1256 (use on steel decks); and a quality control manual.

4.0 FINDINGS

That the AcryShield roof coating systems described in this report comply with the 1997 *Uniform Building Code*™, subject to the following conditions:

4.1 All system components are installed in accordance with this report and the manufacturer's instructions, by applicators approved by National Coatings Corporation.

4.2 Where moderate or heavy foot traffic occurs, such as for maintenance of equipment, the roof coating system must be adequately protected, to prevent rupture or wearing of the surface.

4.3 Installation is limited to areas noted in Section 2.7 of this report.

4.4 AcryShield is manufactured at the National Coatings Corporation facility in Camarillo, California, under a quality control program with inspections by Underwriters Laboratories Inc. (AA-668). Liquiseal is manufactured for National Coatings under a quality control program with inspections by Underwriters Laboratories Inc. (AA-668).

This report is subject to re-examination in two years.

TABLE 1—ACRYSHIELD SYSTEMS

SYSTEM NUMBER AND ROOFING CLASSIFICATION	POLYURETHANE INSULATION				ACRYSHIELD COATING			MAXIMUM ROOF SLOPE	SUBSTRATE
	Foam Plastic Manufacturer	Product	Nominal Density (pcf)	Nominal Thickness (inches)	Application Rate (gal. per 00 sq. ft.[1])		Total Dry-film Thickness (mils)		
					Base	Top			
1. Class A	Polythane Systems, Inc.	SH200	2.5 to 3.0	1 to 2	1 1/2	1 1/2	18 to 25	1:12	Nomcombustible[6]
2. Class B[1]	Polythane Systems, Inc.	SH200	2.5 to 3.0	1 to 2	1 1/2	1 1/2	18 to 25	1/2:12	Minimum 1/2-inch-thick plywood[2]
3. Class B	Polythane Systems, Inc.	SH200	2.5 to 3.0	1 1/2, min.	1 1/2	1 1/2	18 to 25	1:12	Minimum 1/2-inch-thick plywood[2]
4. Class A	Polythane Systems, Inc.	SH200	2.5 to 3.0	Any	1 1/2 to 2 1/2	1 1/2 to 2 1/2	18 to 40	4 1/2:12	Noncombustible[6]
5. Same as existing roof covering	Polythane Systems, Inc.	SH200	2.5 to 3.0	1 1/2, min.	1 to 2	1 to 2	18 to 25	3:12	Class A, B or C BUR over 1/2-inch-thick plywood[2]
6. Class A	BASF	Elastospray BUC124	2.5 to 3.0	1/2 to 3	1 to 2	1 to 2	18 to 30	1:12	Noncombustible
7. Class B[4]	BASF	Elastospray HPS 5100	2.5 to 3.0	1 1/2	1 1/2	1 1/2	18 to 25	2:12	Minimum 1/2-inch-thick plywood[2]
8. Class A	BASF	Elastospray HPS 5100	2.5	Any	1 1/2	1 1/2	18 to 25	3:12	Noncombustible[7]
9. Same as existing roof covering[4]	BASF	Elastospray HPS 5100	2.5	1, min.	1 1/2 to 3	1 1/2 to 3	18 to 45	2:12	Class A, B or C BUR over 1/2-inch-thick plywood[2]
10. Class A	Foam Enterprises, Inc.	Premium 241	2.5 to 3.0	2	1 1/2	1 1/2	18 to 25	3:12	Noncombustible
11. Class A[3]	Foam Enterprises, Inc.	Premium 241B	2.5 to 3.0	4, max.	1 1/2	1 1/2[4]	18 to 25	Unlimited	Noncombustible
12. Class B[3]	Foam Enterprises, Inc.	Premium 241B	2.5 to 3.0	1 1/2 to 4	1 1/2	1 1/2[5]	18 to 25	1/2:12	Minimum 1/2-inch-thick plywood[2]
13. Same as existing roof covering	Foam Enterprises, Inc.	Premium 241	2.5 to 3.0	Any	1 to 2	1 to 2	18 to 32	3:12	Class A, B or C BUR over 1/2-inch-thick plywood[2]
14. Class A	Foam Enterprises, Inc.	FE 303-2.7	3.0 2.7	2	1 to 2	1 to 2	18 to 30	1:12	Noncombustible
15. Class A	BASF	Elastospray SS-1270II or S-1570	2.5 to 3.0	2	1 1/2	1 1/2	18 to 25	1:12	Noncombustible
16. Class A	BASF	Elastospray S-1270, S-1409, S-1451 or S-1570	2.5 to 3.0	2	1 1/2	1 1/2	18 to 25	1 1/2:12	Noncombustible
17. Same as existing roof covering	BASF	Elastospray S-1570	2.5	2, max.	1 to 2	1 to 2	18 to 32	1 1/2	Class A, B or C BUR over 1/2-inch-thick plywood[2]
18. Same as existing roof covering	BASF	Elastospray S-1409	2.5	2, max	1 to 2	1 to 2	18 to 32	1 1/2	Class A, B or C BUR over 1/2-inch-thick plywood
19. Class A[5]	None	—	—	—	1 to 2	1 to 2	15 to 30	1:12	Noncombustible
20. Same as existing roof covering[5]	None	—	—	—	1 to 2 1/2	1 to 2 1/2	15 to 40	1:12	Class A, B or C BUR over 15/32-inch-thick plywood
21. Same as existing roof covering[5]	None	—	—	—	3	3	48	1/2:12	Class A, B or C BUR over 15/32-inch-thick plywood
22. Class A	Resin Technology	RT2031	2.5 to 3.0	1, min.	1 1/2 to 2 1/2	1 1/2 to 2 1/2[8]	18 to 40	1/4:12	Minimum 1/2-inch-thick plywood[2]
23. Class A	Stepan Company	9700 Series	2.5 to 3.0	1, min.	2 to 4	Not required	25 to 50	1 1/4:12	Noncombustible cementitious only

For **SI:** 1 mil = 0.0254 mm, 1 pound/100 square feet = 0.0488 kg/m^2, 1 oz./sq. yd. = 33.905 g/m^2, 1 ga./100 feet^2 = 0.41 L/m^2.

(*Continued*)

TABLE 1—ACRYSHIELD SYSTEMS—(Continued)

[1]AcryShield II with 35 pounds per 100 square feet of roofing granules embedded in the top coat may be used in place of AcryShield.
[2]Plywood substrate must comply with Section 2602.5.3 of the UBC.
[3]30 pounds per 100 square feet of roofing granules are required in top coat.
[4]40 pounds per 100 square feet of roofing granules are required in top coat.
[5]Reinforcement with 1 ply of 3 oz./sq. yd. polyester fabric is optional.
[6]Polythane Systems SH200 is limited to a maximum thickness of 2 inches when installed on steel decks.
[7]Use of the system with steel decks is limited to buildings with noncombustible walls.
[8]50 pounds per 100 square feet of roofing granules are required in top coat.
BUR = Existing built-up roof covering.

TABLE 2—ACRYLSHIELD/LIQUISEAL SYSTEM

ITEM NO.	FOAM INSULATION	COATING (gal./100 sq. ft.)		TOTAL DRY THICKNESS (mils)	MAXIMUM ROOF SLOPE	SUBSTRATE	ROOF CLASSIFICATION
		Liquiseal	Acryshield				
1.	None	10 - 20[1]	$1^1/_2$ - 3	85-180	2:12	Noncombustible	A
2.	None	10 - 20[1]	$1^1/_2$ - 3	85-180	$1^1/_2$:12	Minimum $^{15}/_{32}$-inch-thick plywood deck covered with code-complying existing built-up roof covering[2]	Same as the classification for the existing built-up roof covering
3.	None	9[3]	$2^1/_2$	75-85	1:12	Minimum $^{15}/_{32}$-inch-thick plywood deck covered with code-complying existing built-up roof covering[2]	Same as the classification for the existing built-up roof covering

For **SI:** 1 mil = 0.0254 mm, 1 oz./sq. yd. = 33.905 g/m^2, 1 gal./100 feet^2= 0.41 L/m^2.

[1]Liquiseal emulsion is applied with one to three plies of 3 oz./sq. yd. polyester fabric embedded in Liquiseal.
[2]For gravel roofs, loose gravel is removed and replaced with one layer of Type G2 glass fiber base sheet, mechanically fastened or hot-mopped to the substrate.
[3]One layer of 3 oz/sq. yd. polyester fabric embedded in each of three layers of Liquiseal.

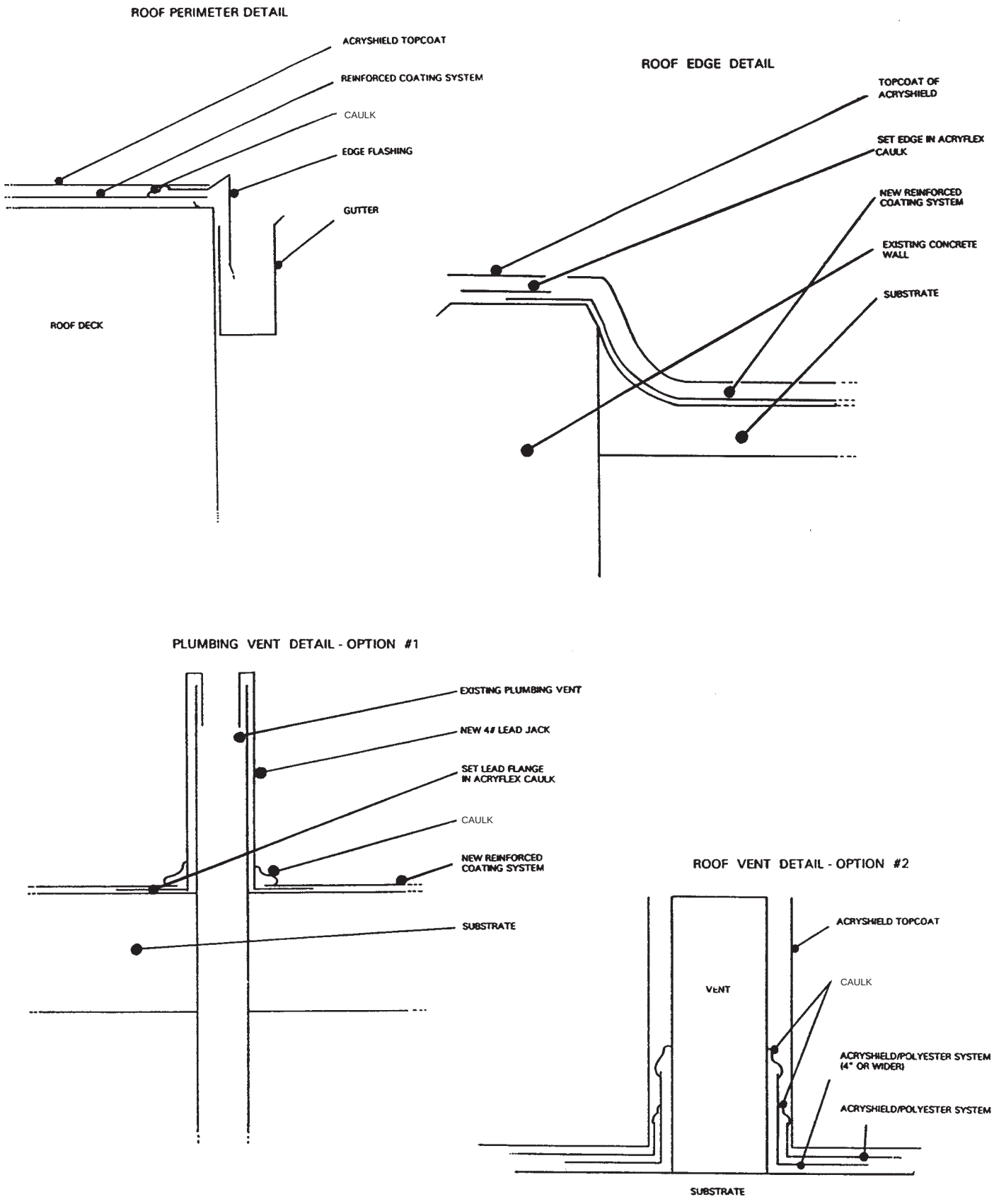

FIGURE 1—TYPICAL INSTALLATION DETAILS