Designation: C 945 – 81 (Reapproved 2000)

Standard Practice for Design Considerations and Spray Application of a Rigid Cellular Polyurethane Insulation System on Outdoor Service Vessels[1]

This standard is issued under the fixed designation C 945; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice concerns itself with the substrate preparation and priming, the selection of the rigid cellular polyurethane system, and the protective insulation coatings for outdoor service equipment.

NOTE 1—For the purpose of this practice, polyurethane is defined to mean either polyurethane or polyisocyanurate and is hereafter referred to as "PUR/PIR."

1.2 The values given in inch-pound are to be regarded as the standard. The values given in parentheses are for information only.

1.3 *This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*

C 168 Terminology Relating to Thermal Insulating Materials[2]

D 883 Terminology Relating to Plastics[3]

D 1600 Terminology for Abbreviated Terms Relating to Plastics[3]

D 2200 Pictorial Surface Preparation Standards for Painting Steel Surfaces[4]

2.2 *American National Standards:*

Z87.1 Practice for Occupational and Educational Eye and Face Protection[5]

2.3 *Clemtex Limited Standard:*

"Anchor Pattern Standard"[6]

2.4 *National Association of Corrosion Engineers Standard:*

TM-01-70 Visual Surface Preparation Panels[7]

3. Terminology

3.1 *Definitions*—Definitions included in Terminology C 168, Definitions D 883, and Abbreviations D 1600 apply to the terms used in this standard.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *blasting*—the process of cleaning surfaces by use of abrasive particles propelled at high velocity upon the surface to be cleaned.

3.2.2 *coatings/coverings*—ultraviolet ray-absorbing and water-shedding protective materials applied over the urethane foam.

3.2.3 *density:*

3.2.3.1 *in-place density*— the weight per unit volume of the cross section of foam from substrate to exposed surface, including all skins (or surfaces).

3.2.3.2 *core density*— the weight per unit volume of a single layer of foam excluding top and bottom skins or (if present) interlayer skins.

3.2.4 *foam system*—appropriate formulations of two liquid components, polyisocyanate, or A side, and polyol, or B side, for intended applications.

3.2.5 *ignition barrier*—cement plaster or equivalent coating/covering providing a resistance to ignition of the foam insulation acceptable to the concerned building or fire department(s), or both. (Designated UL test is optional.)

4. Significance and Use

4.1 This practice facilitates the selection and application of an insulation system for use at service temperatures between − 30 and + 107°C (−22 and + 225°F). Although the successful installation of spray-applied PUR/PIR is influenced by many factors, this practice treats those four areas found to be of major importance:

(1) Substrate preparation,

[1] This practice is under the jurisdiction of ASTM Committee C16 on Thermal Insulation and is the direct responsibility of Subcommittee C16.40 on Insulation Systems.

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[2] *Annual Book of ASTM Standards,* Vol 04.06.

[3] *Annual Book of ASTM Standards,* Vol 08.01.

[4] *Annual Book of ASTM Standards,* Vol 06.02.

[5] Available from American National Standards Institute, 11 West 42nd Street, 13th Floor, New York, NY 10036.

[6] Available from Clemtex Ltd., P.O. Box 15214, Houston, TX 77020.

[7] Available from the National Association of Corrosion Engineers, 1440 S. Creek Dr., Houston, TX 77084.

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