

SECTION 10405

THERMOPLASTIC SHEET MATERIALS FOR SIGNAGE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Thermoplastic Sheet Materials for Signage.

1.2 RELATED SECTIONS

- A. Section 10441 - Plastic Signs.

1.3 REFERENCES

- A. ANSI Z26.1 - Safety Code for Glazing Motor Vehicles Operating on Land Highways.
- B. ANSI Z97.1 - American National Standard for Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test.
- C. ASHRAE - Cooling and Heating Load Calculation Manual, Second Edition.
- D. ASTM C 177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.
- E. ASTM D 256 - Standard Test Method for Determining the Pendulum Impact Resistance of Notched Specimens of Plastics.
- F. ASTM D 570 - Standard Test Method for Water Absorption of Plastics.
- G. ASTM D 635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position.
- H. ASTM D 638 - Standard Test Method for Tensile Properties of Plastics.
- I. ASTM D 648 - Standard Test Method for Deflection Temperature of Plastics Under Flexural Load.

- J. ASTM D 695 - Standard Test Method for Compressive Properties of Rigid Plastics.
- K. ASTM D 696 - Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between -30 degrees C and 30 degrees C.
- L. ASTM D 790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
- M. ASTM D 792 - Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
- N. ASTM D 1929 - Standard Test Method for Ignition Properties of Plastics.
- O. ASTM D 2843 - Standard Test Method for the Density of Smoke from the Burning or Decomposition of Plastics.
- P. ASTM D 3029 - Standard Test Method for the Impact Resistance of Flat Rigid Plastic Specimens by Means of a Tup (Falling Weight).
- Q. CPSC 16CFR 1201 - Safety Standard for Architectural Glazing Materials; Consumer Products Safety Commission.
- R. UL 48 - Electric Signs.
- S. UL 972 - Standard for Burglary Resisting Glazing Material.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's descriptive literature for specified thermoplastic sheet materials; include documentation of conformance to specified requirements.
- C. Closeout Submittals: Warranty documents specified in WARRANTY Article of PART 1 of this section.

1.5 QUALITY ASSURANCE

- A. Regulatory Requirements: Thermoplastic sheet materials to meet requirements for CC-1 rating under the following building codes:
 - 1. BOCA.
 - 2. ICBO.
 - 3. SBCCI.

1.6 SCHEDULING

- A. Ensure that fabricators of affected sections have products of this section available in time for fabrication of products in accordance with construction progress schedule.

1.7 WARRANTY

- A. Manufacturer's Warranty: Manufacturer's 5-year warranty against breakage.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: DSM Engineering Plastic Products, Inc., Sheffield Plastics, 119 Salisbury Road, Sheffield MA 01257; ASD. Tel. (800) 628-5084.
- B. Requests for substitution will be considered in accordance with provisions of Section 01600.
- C. Substitutions: Not permitted.

2.2 MATERIALS

- A. Thermoplastic Sheet Materials:
 - 1. Acceptable product: HYZOD(R) SN5190 polycarbonate sheet, meeting requirements of ANSI Z97.1, CPSC 16CFR 1201 - Categories I and II, UL 972, and UL 48, and having the following characteristics:
 - 2. Acceptable product: HYZOD(R) SN polycarbonate sheet, meeting requirements of ANSI Z97.1, CPSC 16CFR 1201 - Categories I and II, UL 972, and UL 48, and having the following characteristics:
 - a. Specific gravity, when tested in accordance with ASTM D 792: 1.2.
 - b. Chemical resistance, when tested in accordance with ANSI Z26.1: Pass.

- c. Water absorption after 24 hours, when tested in accordance with ASTM D 570: 0.15 percent.
- d. Tensile strength, yield, 1/8 inch (3 mm) thick material, when tested in accordance with ASTM D 638: 9,000 pounds per square inch (62.04 Mpa).
- e. Tensile strength, ultimate, when tested in accordance with ASTM D 638: 9,500 pounds per square inch (65.49 Mpa).
- f. Tensile modulus, when tested in accordance with ASTM D 638: 340,000 pounds per square inch (2343.96 Mpa).
- g. Compressive strength, when tested in accordance with ASTM D 695: 10,400 pounds per square inch (71.69 Mpa).
- h. Flexural strength at 5% strain, when tested in accordance with ASTM D 790: 13,500 pounds per square inch (93.06 Mpa).
- i. Flexural modulus, 1/8 inch (3 mm) thick material, when tested in accordance with ASTM D 790: 345,000 pounds per square inch (2378.43 Mpa).
- j. Izod impact, notched, 1/8 inch (3 mm) thick material, when tested in accordance with ASTM D 256: 12-16 foot-pounds per inch of notch (0.64-0.85 N m per mm of notch).
- k. Rockwell hardness, when tested in accordance with ASTM D 785: 118R Scale.
- l. Drop ball impact, 1/8 inch (3 mm) thick material, when tested in accordance with S.P. Test: Minimum 200 foot-pounds (271.16 N m).
- m. Gardner impact, 1/2 inch (13 mm) diameter dart, 1/8 inch (3 mm) thick material, when tested in accordance with ASTM D 3029: Minimum 320 inch-pounds (36.15 N m).
- n. Heat deflection temperature, 264 pounds per square inch (1.82 Mpa), when tested in accordance with ASTM D 648: 270 degrees F (132.2 degrees C).
- o. Heat deflection temperature, 66 pounds per square inch (0.45 Mpa), when tested in accordance with ASTM D 648: 280 degrees F (137.7 degrees C).
- p. Coefficient of thermal expansion, when tested in accordance with ASTM D 696: 0.0000375 inch per inch per degree F (0.0000675 ratio/degree C).
- q. Coefficient of thermal conductivity, when tested in accordance with ASTM C 177: 1.35 BTU's per hour per square foot per degree F. (7.66 W/sq m/degree K).

- r. Smoke developed, 1/8 inch (3 mm) thick material, when tested in accordance with ASTM D 2843: 68.
 - s. Shading coefficient, clear color, when tested in accordance with ASHRAE: 1.02.
 - t. Shading coefficient, gray/bronze colors, when tested in accordance with ASHRAE: 0.79.
 - u. Horizontal burn, AEB, when tested in accordance with ASTM D 635: Maximum 1 inch (25.4 mm)
 - v. Horizontal burn, ATB, when tested in accordance with ASTM D 635: Maximum 1 minute.
 - w. Self-ignition temperature , when tested in accordance with ASTM D 1929: 1077 degrees F (580.5 degrees C).
 - x. Flash-ignition temperature , when tested in accordance with ASTM D 1929: 872 degrees F (466.6 degrees C).
- 3. Thickness: 1/8 inch (3 mm) nominal.
 - 4. Color: White.
 - 5. Color: Clear.
 - 6. Color: Bronze.
 - 7. Color: Gray.
 - 8. Finish: Matte one side, polished one side.

2.3 FABRICATION

- A. Fabrication of signage items is specified in Section 10441.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Installation of signage items is specified in Section 10441.

END OF SECTION