

**Standard Practice
for
Determining the
Steady-State Thermal
Transmittance
of
Steel Door
and Frame Assemblies**



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Standard Practice for Determining the Steady-State Thermal Transmittance of Steel Door and Frame Assemblies

1 Purpose

- 1.1** The purpose of this practice is to establish a standard test specimen size, test conditions and a rating system for determining the thermal transmittance of operable steel door and frame assemblies.
- 1.2** This practice refers to the standardized thermal transmittance; U_{st} of an operable steel door and frame assembly installed vertically in the absence of solar and air leakage effects.
- 1.3** This practice employs the use of ASTM C1363-05, *Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus*, ASTM C1199-09e1, *Standard Test Method for Measuring the Steady-State Thermal Transmittance of Fenestration Systems Using Hot Box Methods* and ASTM E1423-06 *Practice for Determining Steady State Thermal Transmittance of Fenestration Systems*.

2 Test Specimen

- 2.1** Single doors and pairs of doors shall be tested as nominal 3'0" (914mm) wide x 7'0" (2134mm) high and 6'0" (1828mm) wide x 7'0" (2134mm) high openings, respectively.
- 2.2** The test specimens shall consist of door, frame, weather-stripping system, glazing (if included) and hardware and be fully operable prior to the sealing of the assembly.

Note: ASTM E1423 requires sealing of the test specimen to prevent air leakage.

3 Experimental Procedure

- 3.1** The specimen shall be tested in accordance with ASTM C1199, C1363 and E1423.

4 Calculation

- 4.1** The standardized Thermal Transmittance (U_{st}) shall be calculated per the CTS method described in ASTM C1199.

5 Performance Ratings

Table 1

U-Value	< ½ Light	> ½ Light	Rating
> 0.46	>0.52	> 0.57	0
≤ 0.45	≤ 0.51	≤ 0.56	1
≤ 0.43	≤ 0.49	≤ 0.54	2
≤ 0.41	≤ 0.47	≤ 0.52	3
≤ 0.39	≤ 0.45	≤ 0.50	4
≤ 0.37	≤ 0.43	≤ 0.48	5
≤ 0.35	≤ 0.41	≤ 0.46	6
≤ 0.33	≤ 0.39	≤ 0.44	7
≤ 0.31	≤ 0.37	≤ 0.42	8
≤ 0.29	≤ 0.35	≤ 0.40	9
≤ 0.27	≤ 0.33	≤ 0.38	10

6 Report

- 6.1** The report shall contain the following information:
- 6.2** A detailed description of the test specimen components, i.e. Door, frame, hardware, glazing and weather-strip that includes model or series numbers.
- 6.3** If the test specimen is of a size other than that specified in Section 2.1, the reason for the deviation should be noted.
- 6.4** All of the information specified in Section 9 of test method ASTM C1199.
- 6.5** A statement affirming that the test was conducted in accordance with this standardized procedure.
- 6.6** A rating as defined in Table 1.

AVAILABLE PUBLICATIONS

Specifications

- ANSI/SDI A250.6** Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames
- ANSI/SDI A250.8** Specifications for Standard Steel Doors and Frames (SDI-100)
- SDI-108** Recommended Selection & Usage Guide for Standard Steel Doors
- SDI-118** Basic Fire Door, Fire Door Frame, Transom/Sidelight Frame, and Window Frame Requirements
- SDI-128** Guidelines for Acoustical Performance of Standard Steel Doors and Frames
- SDI-129** Hinge and Strike Spacing
- SDI-133** Guideline for Specifying Steel Doors & Frames for Blast Resistance
- SDI-136** Guideline for Specifying Windstorm Products

Test Procedures

- ANSI/SDI A250.3** Test Procedure & Acceptance Criteria for Factory Applied Finish Coatings for Steel Doors and Frames
- ANSI/SDI A250.4** Test Procedure & Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors
- ANSI/SDI A250.10** Test Procedure & Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames
- ANSI/SDI A250.13** Testing and Rating of Severe Windstorm Resistant Components for Swinging Door Assemblies for Protection of Building Envelopes (Not applicable for FEMA 320/361 or ICC-500 Shelters)
- SDI-113** Standard Practice for Determining the Steady-State Thermal Transmittance of Steel Door and Frame Assemblies
- SDI-131** Accelerated Physical Endurance Test Procedure for Steel Doors

Construction Details

- ANSI/SDI A250.11** Recommended Erection Instructions for Steel Frames
- SDI-110** Standard Steel Doors & Frames for Modular Masonry Construction
- SDI-111** Recommended Details for Standard Steel Doors, Frames, Accessories and Related Components
- SDI-122** Installation Troubleshooting Guide for Standard Steel Doors & Frames

Miscellaneous Documents

- SDI-112** Zinc-Coated (Galvanized/Galvannealed) Standard Steel Doors and Frames
- SDI-117** Manufacturing Tolerances for Standard Steel Doors and Frames
- SDI-124** Maintenance of Standard Steel Doors & Frames
- SDI-127** Industry Alert Series (A-L)
- SDI-130** Electronic Hinge Preparations
- SDI-134** Glossary of Terms for Hollow Metal Doors and Frames
- SDI-135** Guidelines to Measure for Replacement Doors in Existing Frame Openings

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