

General information

The use of product specifications does not always give a true comparison of the products that are used in today's market place. As an example, one manufacturer may use a different reinforcement in a product which is not included in the product specification. The reinforcement although superior in design and function may be deemed unacceptable using a product specification.

Established and recognized industry performance tests provide the truest method of comparing products. Performance test results give an accurate evaluation of the products being compared.

Manufacturers do not write performance tests. Industry associations, testing laboratories and standard associations write them. Included are:

- Underwriters Laboratories Inc (UL)
- Intertek Testing Services / Warnock Hersery (ITS/WHI)
- National Fire Protection Association (NFPA)
- American Society for Testing and Materials (ASTM)
- Steel Door Institute (SDI)
- Door and Hardware Institute (DHI)

In most cases after the performance test is written many people, groups and associations review the resulting performance specification before it becomes a recognized standard. As a result, the performance specification is accepted as the true measuring tool for products.

Performance tests

The pages included in this section describe the tests that have been conducted on the various Steelcraft products. Copies of the test report are available upon request through Steelcraft distributors.

Errors and omissions

Every effort has been made to insure the accuracy and completeness of the Steelcraft Spec Manual. This manual is for use by qualified persons only. The information herein is subject to some interpretation, and from time to time the Spec sheets will be updated whenever it is deemed necessary as new tests are conducted, new products are introduced and as specifications are revised. For these reasons and because of the nature and scope of the subject, the Steelcraft Manufacturing Company and its employees can assume no responsibility or liability for the absolute accuracy of the material contained herein or its use. The information in this Spec Manual is subject to change without notice and does not represent a commitment on the part of Steelcraft.

Please contact the Steelcraft Technical Service Department if you identify an error or an omission.

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Physical endurance

Cycle tests

Door strength and durability is determined by either ANSI A250.4 or SDI 131-10 Accelerated Physical Test Procedure for Steel Doors, Frames and Anchors (formerly ANSI A250.5 Accelerated Physical Endurance Test Procedure for Steel Doors, Frames and Frame Anchors). These performance standards include both cycle and twist test requirements. In both tests the door is subjected to stresses that exceed those found in typical applications. During and at the end of the test, the technician is looking for metal fatigue, weld breakage, panel separation, delaminating, reinforcement failure and any other failures that occur.

ANSI/SDI A250.8-20 14 "Recommended Specifications for Standard Steel Doors and Frames" specifies the minimum number of cycles for doors:

Door Gauge	Cycles Tested
20 gauge door	250,000 (Level C)
18 gauge door	500,000 (Level B)
16 and 14 gauge door	1,000,000 (Level A)

ANSI A250.4

The door is mounted in a frame and is pushed to an open position of 60 degrees. The door is then closed using a conventional door closer.

Cycle Test: The cycle is repeated approximately 15 times per minute. The forces placed on the door in this test are determined by adjusting the closer speed.

Twist Test: At intervals prescribed by the test procedure, three corners of the door are clamped in place and a prescribed load applied to the fourth corner.

Steelcraft doors tested in accordance with ANSI A250.4 for extended life cycle.

Door Series	Cycles Tested	Frame Series
L18	5 million	MU16
L16	5 million	MU16
L14	3 million	F16
B18	3 million	F16
B16	3 million	F16
CE18	2 million	DW16

This test simulates a door in actual operation. Steelcraft's L Series door construction was successfully tested in accordance With ANSI/SDI A250.4 for 5,000,000 cycles and 103 twist tests conducted at specified intervals throughout the cycle test.

All tests are UL certified.

Performance and finishes - Physical endurance

SDI 131-10 (Previously ANSI A250.5)

The door is mounted in a test fixture and is rapidly cycled (opened and closed) by an air cylinder, or by an arm connected to an electric motor through a cam mechanism.

Cycle Test: The cycle is repeated a minimum of 60 cycles per minute. The closing forces applied to the door.

Twist Test: At test intervals prescribed by the test procedure, three corners of the door are clamped in place and the fourth corner is twist tested.

Steelcraft doors tested in accordance with SDI 131-10 for extended life cycle.

Door Series	Cycles Tested
L18	10 million
T18	250,000

This test simulates an actual door in operation. Steelcraft's L18 honeycomb core door was successfully tested in accordance with SDI 131-10 for 10,000,000 cycles and 21 twist tests conducted at different intervals throughout the cycle test.

Products tested: Door Model: L-18 3070

Test Results: After 10,000,000 cycles and 21 twist tests, the L-18 door demonstrated the following:

Cycle Test:

1. Edge Condition: no visible signs of metal fatigue, cracking, or deformation along edges or channels
2. Hardware Preparations: no visible issues
3. Core condition: no notable issues
4. Panel condition: no de-lamination or weld damage

Twist Test:

- Initial deflection at 300 lbs = .132"
- Initial residual deflection (0 lbs) = .002"
- After 10 million cycles max. deflection at 300 lbs = .528"
- After 10 million cycles residual deflection (0 lbs) = .0045"

ANSI A 250.4



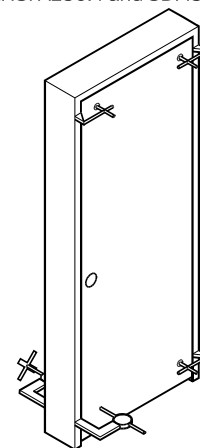
Twist tests

The twist test evaluates the door structure and clearly establishes the strength of the bonding or welding of the core material to the panels and the connection of the panels. The twist test is a required part of both ANSI 250.4 and SDI 131-10.

The door is placed into a structural steel opening and clamped into place at three corners. The unclamped corner is subjected to a force applied in 30 pound increments until a total of 300 pounds of force is applied. The force is removed in the same 30 pound increments until all of the force is off the door.

Measurements are taken at each 30 pound increment and at the 300 pound force. Additional measurements are taken at every 30 pound increment as the force is being removed. Five minutes after the force has been removed, a final reading is taken. This is the residual deflection the door has taken.

ANSI A250.4 and SDI 131-10



Twist test fixture

ANSI 250.4					
Door opening	Cycles tested	Test standard	Average Deflection in test 300 lbs load, 1.25" max. See note #2	Residual Deflection at Completion of test (load removed), 0.125" max. See note #2	Total Number of twist tests conducted
L18	10 million	SDI 131-10	.033"	0.01"	.21
L16	5 million	ANSI 250.4	0.76"	0.05"	103
L14	5 million	ANSI 250.4	0.62"	0.03"	103
B18	3 million	ANSI 250.4	0.45"	0.01"	63
B16	3 million	ANSI 250.4	0.75"	0.06"	63
CE18	2 million	ANSI 250.4	1.02"	0.125"	43

Notes:

1. All tests are UL certified
2. Maximum deflection shown is the pass/fail criteria in accordance with ANSI A250.4 and SDI 131-10.