

## § 160.017-15

(4) Each spacer ear made of sheet metal must have features such as formed ribs, rolled flange edges, and stress relief holes at the ends of cuts, to prevent the ear from bending or tearing.

(h) *Fasteners.* Each fastening device must have a means to prevent the device from loosening.

(i) *Workmanship.* A ladder must not have splinters, burrs, sharp edges, corners, projections, or other defects that could injure a person using the ladder.

### § 160.017-15 Performance.

(a) Each chain ladder must be capable of being rolled up for storage.

(b) Each ladder when rolled up must be able to unroll freely and hang vertically.

### § 160.017-17 Strength.

(a) Each chain ladder must be designed to pass the approval tests in § 160.17-21.

(b) [Reserved]

### § 160.017-21 Approval tests.

(a) *General.* Each approval test must be conducted on a ladder of the longest length for which approval has been requested. If a ladder fails one of the tests in this section, the cause of the failure must be identified and any needed changes made. After a test failure and any design change, the failed test, and any other previously completed tests affected by the design change, must be rerun.

(b) *Visual examination.* Before starting the tests described in this section, an assembled chain ladder is examined for evidence of noncompliance with the requirements in §§ 160.017.11, 160.017-13, and 160.017-15.

(c) The following approval tests must be conducted:

(1) *Strength test #1.* An assembled ladder is supported so that a static load, if placed on any of its steps, would exert a force both on the step and each suspension member. A static load of 315 kg (700 lb.) is then placed on one step for at least one minute. The load must be uniformly distributed over a contact surface that is approximately 100 mm (4 in.) wide. The center of the contact surface must be at the center of the step. This test is performed on six dif-

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ferent steps. No step may break, crack, or incur any deformation that remains after the static load is removed. No attachment between any step and a suspension member may loosen or break during this test.

(2) *Strength test #2.* A ladder is suspended vertically to its full length from its top lashing rings. A static load of 900 kg (2000 lbs.) is then applied to the bottom lashing rings so that it is distributed equally between the suspension members. The suspension members, lashing rings, and spacer ears must not break, incur any elongation or deformation that remains after the test load is removed, or be damaged in any other way during this test.

(3) *Strength test #3.* A rolled-up ladder is attached by its top lashing rings to anchoring fixtures in a location away from any wall or structure that would prevent it from falling freely, and where it can hang to its full length vertically. The ladder when dropped must unroll freely. When unrolling the ladder, its steps and attachments must not become cracked, broken, or loosened. Other similar damage making the ladder unsafe to use must likewise not occur.

### § 160.017-25 Marking.

(a) Each chain ladder step manufactured under Coast Guard approval must be branded or otherwise permanently and legibly marked on the bottom with—

(1) The name of the manufacturer;

(2) The manufacturer's brand or model designation;

(3) The lot number and date of manufacture; and

(4) The Coast Guard approval number.

(b) [Reserved]

### § 160.017-27 Production tests and examination.

(a) *General.* Each ladder manufactured under Coast Guard approval must be tested in accordance with this section and subpart 159.007 of this chapter. Steps that fail testing may not be marked with the Coast Guard approval number and each assembled ladder that fails testing may not be sold as Coast Guard approved.