

**§ 25.609 Protection of structure.**

Each part of the structure must—

(a) Be suitably protected against deterioration or loss of strength in service due to any cause, including—

- (1) Weathering;
- (2) Corrosion; and
- (3) Abrasion; and

(b) Have provisions for ventilation and drainage where necessary for protection.

**§ 25.611 Accessibility provisions.**

(a) Means must be provided to allow inspection (including inspection of principal structural elements and control systems), replacement of parts normally requiring replacement, adjustment, and lubrication as necessary for continued airworthiness. The inspection means for each item must be practicable for the inspection interval for the item. Nondestructive inspection aids may be used to inspect structural elements where it is impracticable to provide means for direct visual inspection if it is shown that the inspection is effective and the inspection procedures are specified in the maintenance manual required by § 25.1529.

(b) EWIS must meet the accessibility requirements of § 25.1719.

[Amdt. 25–23, 35 FR 5674, Apr. 8, 1970, as amended by Amdt. 25–123, 72 FR 63404, Nov. 8, 2007]

**§ 25.613 Material strength properties and material design values.**

(a) Material strength properties must be based on enough tests of material meeting approved specifications to establish design values on a statistical basis.

(b) Material design values must be chosen to minimize the probability of structural failures due to material variability. Except as provided in paragraphs (e) and (f) of this section, compliance must be shown by selecting material design values which assure material strength with the following probability:

(1) Where applied loads are eventually distributed through a single member within an assembly, the failure of which would result in loss of structural integrity of the component, 99 percent probability with 95 percent confidence.

(2) For redundant structure, in which the failure of individual elements would result in applied loads being safely distributed to other load carrying members, 90 percent probability with 95 percent confidence.

(c) The effects of environmental conditions, such as temperature and moisture, on material design values used in an essential component or structure must be considered where these effects are significant within the airplane operating envelope.

(d) [Reserved]

(e) Greater material design values may be used if a “premium selection” of the material is made in which a specimen of each individual item is tested before use to determine that the actual strength properties of that particular item will equal or exceed those used in design.

(f) Other material design values may be used if approved by the Administrator.

[Doc. No. 5066, 29 FR 18291, Dec. 24, 1964, as amended by Amdt. 25–46, 43 FR 50595, Oct. 30, 1978; Amdt. 25–72, 55 FR 29776, July 20, 1990; Amdt. 25–112, 68 FR 46431, Aug. 5, 2003]

**§ 25.619 Special factors.**

The factor of safety prescribed in § 25.303 must be multiplied by the highest pertinent special factor of safety prescribed in §§ 25.621 through 25.625 for each part of the structure whose strength is—

(a) Uncertain;

(b) Likely to deteriorate in service before normal replacement; or

(c) Subject to appreciable variability because of uncertainties in manufacturing processes or inspection methods.

[Doc. No. 5066, 29 FR 18291, Dec. 24, 1964, as amended by Amdt. 25–23, 35 FR 5674, Apr. 8, 1970]

**§ 25.621 Casting factors.**

(a) *General.* For castings used in structural applications, the factors, tests, and inspections specified in paragraphs (b) through (d) of this section must be applied in addition to those necessary to establish foundry quality control. The inspections must meet approved specifications. Paragraphs (c) and (d) of this section apply to any structural castings, except castings