Federal Aviation Administration, DOT

§ 29.613 Material strength properties and design values.

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

(b) Design values must be chosen to minimize the probability of structural failure due to material variability. Except as provided in paragraphs (d) and (e) of this section, compliance with this paragraph must be shown by selecting design values that 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; and

(2) For redundant structures, those 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 strength, detail design, and fabrication of the structure must minimize the probability of disastrous fatigue failure, particularly at points of stress concentration.

(d) Design values may be those contained in the following publications (available from the Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120) or other values approved by the Administrator:

(1) MIL-HDBK-5, “Metallic Materials and Elements for Flight Vehicle Structure”.

(4) Reduce to an acceptable level the effects of lightning and static electricity on the functioning of essential electrical and electronic equipment.

[Amdt. 29–24, 49 FR 44437, Nov. 6, 1984; Amdt. 29–40, 61 FR 21907, May 10, 1996; 61 FR 33963, July 1, 1996]