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NASA TECH BRIEF



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Manual of Typical Low Temperature Mechanical Properties of Several Materials

A series of tests have been conducted to supplement available knowledge regarding low temperature properties of a number of materials commonly used in aerospace. Information resulting from these tests and information from a variety of other sources in literature have been compiled in a conveniently usable manual.

Use of materials at low temperatures depends on the strength of the material and its ability to resist brittle failure caused by stress concentrations, multi-axial stresses, and impact loading. The ability of the material to resist brittle failure can be estimated from the percent elongation, notch tensile strength ratio, and charpy V-notch impact strength. The mechanical properties data from which these values can be obtained are presented on graphs for 54 commonly used materials. The data, however, are taken from many sources and have been averaged and adjusted to represent the properties of typical material. These data,

therefore, are suitable for general comparison only, and should not be used for design purposes.

Note:

Documentation is available from:

Clearinghouse for Federal Scientific and
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No patent action is contemplated by NASA.

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