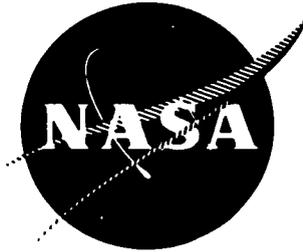


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OR 12,641



**THESAURUS OF TERMS
FOR INFORMATION ON
MECHANICS OF STRUCTURAL FAILURE**

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**CASE FILE
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prepared for

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16. Abstract <p>This Thesaurus is comprised of approximately 700 subject terms used to describe the six problem areas in the mechanics of structural failure. The initial criteria for the selection of terms are their significance and frequency of use in the literature describing the mechanics of structural failure.</p> <p>The purpose of the Thesaurus is to provide the Aerospace Safety Research and Data Institute a list of key words and identifiers that afford effective retrieval of information regarding failure modes and mechanisms for aerospace structures. The Thesaurus includes both a conventional listing of subject terms and a Key Words In Context (KWIC) listing.</p>					
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FOREWORD

This **Thesaurus of Terms** is comprised of the subject terms used to describe six problem areas in the mechanics of structural failure as defined in the Introduction. A modified version of the definitions, conventions, and cross-reference structure that appear in the NASA Thesaurus (NASA SP-7040) is used; however, a significant number of new terms are introduced.

The initial criteria for the selection of terms are their significance and frequency of use in the literature describing the mechanics of structural failure.

The purpose of the thesaurus is to provide the Aerospace Safety Research and Data Institute a list of key words and identifiers that afford effective retrieval of information from the Aerospace Safety Data Bank* regarding failure modes and mechanisms for aerospace structures.

*Located at the NASA Lewis Research Center, Cleveland, Ohio 44135

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INTRODUCTION

This Thesaurus of Terms is an alphabetical listing of subject terms (postable and nonpostable) identified during a literature search of the six problem areas listed below:

- I. **Life prediction of materials at high temperatures and exposed to monotonic and cyclic loading** – Includes information on low cycle and thermal fatigue particularly as it applies to turbine buckets in the gas turbine engine and high cycle fatigue data for materials used in components such as engine bearings.
- II. **Fracture toughness data on various structural materials** – Available data are categorized with respect to test methods, K_{Ic} versus K_{Ic} , and other peculiar parameters considered by the investigators. In particular, data derived from ASTM standard tests are identified.
- III. **Fracture mechanics analyses – capabilities and limitations** – A significant amount of publications deal with linear elastic fracture mechanics which assumes plane strain. Attempts were made to identify any work that was done, taking into account elastic-plastic theories.
- IV. **Hydrogen embrittlement of superalloys** – This subject is of interest regarding turbine buckets, which are exposed to high temperatures. It will be of increasing importance if additional interest develops in using hydrogen as the fuel in gas turbine engines.
- V. **Protective coatings** – Airbreathing engines operating in contaminated environments are in need of protection against attack by the contaminants. Information on the various candidate coatings and the effects of combustion products of contaminants in jet fuels on engine components is of prime interest. For example, the sulfur ordinarily contained in JP fuels reacts with salt present in shipboard and offshore environments and the resulting compounds attack turbine buckets severely.
- VI. **Composite materials data on low cycle and thermal fatigue** – Our aim here is to search for data related to composite structural materials.

The Thesaurus of Terms is divided into two parts. Part I is a conventional listing of terms, using a modified form of the conventions used in the NASA Thesaurus (NASA SP-7040). Part II is a rearrangement of the same terms into a Key Words in Context (KWIC) listing to group all related terms. In both listings, an asterisk (*) has been used to identify words or phrases which are not in the September 1971 edition of the NASA Thesaurus.

DEFINITIONS AND CONVENTIONS

The definitions and conventions employed in the development of the thesaurus follow.

Term Selection. Subject terms have been chosen on the basis of their significance and use in the literature on the mechanics of structural failure and their utility in enabling information retrieval. Particular consideration has been given to the indexing in the NASA Thesaurus (NASA SP-7040), however, new terms have been added when such terms will facilitate retrieval. An asterisk (*) has been used to denote new terms. For example:

*COMPRESSIVE LOADS

Singular vs Plural. The plural form has in general been used for subject terms. The singular form, however, is occasionally used for specific processes, properties, conditions, or hardware.

Grammatical Form. Subject terms are presented in the noun form.

Punctuation. An effort has been made to minimize the use of punctuation within subject terms. When it is used it becomes an integral part of the term.

Term Length. No more than 42 characters, including spaces and punctuation, are used for any subject term.

Term Ambiguity. When subject terms can have more than one meaning in aerospace usage, clarification is provided by the addition of a parenthetical qualifying expression which becomes part of the subject term. For example:

FAILURES (MATERIALS)
FATIGUE (MATERIALS)

Direct Entry. Subject terms that consist of more than one word are listed for direct entry, i.e., in their natural word order rather than in their inverted form. For example:

AERODYNAMIC HEATING, not HEATING, AERODYNAMIC

Abbreviations and Acronyms. Abbreviations and acronyms that are in common use in the aerospace community are employed in this listing. In most cases USE cross-references are made from the unabbreviated forms. For example:

NONDESTRUCTIVE TESTING
USE NDT

Synonyms. When candidate subject terms are true synonyms, one is chosen to be the valid or postable term and the other is provided with a USE cross-reference. For example:

FRACTURE TOUGHNESS
USE FRACTURE STRENGTH

Array Terms. Subject terms with ambiguous meanings or that are too broad for effective indexing or retrieval of information have been designated array terms and carry the following scope note. (USE A MORE SPECIFIC TERM -- CONSULT THE TERMS LISTED BELOW). Relationships with other postable terms are shown by denoting USE preferences.

Identifiers. Identifiers, i.e., subject terms that include a numerical or alphabetical designation or both are treated as regular subject terms. Identifiers are terms assigned to projects, programs, hardware, nicknames, trade names, etc. For example:

NASA IIB7
RENE 41
UDIMET 700

CROSS-REFERENCE STRUCTURE

Three cross-reference structures are used in this Thesaurus of Terms. In Part I, use (USE) and used for (UF) references are shown for all true synonyms and, also, an array structure is used to minimize ambiguity for broad terms. In Part II, the Key Words in Context (KWIC) listing collects related noun forms making no distinction between singular or plural, gerund, gerundive, etc. These cross-references have the following specific applications.

Use (USE). This indicates that the term is not "postable," i.e., not a valid term and the following term or terms should be used instead. For example:

FRACTURE TOUGHNESS
USE FRACTURE STRENGTH

Used for (UF). This is a reciprocal of the USE cross-reference and identifies valid, or "postable," terms. For example:

FRACTURE STRENGTH
UF FRACTURE TOUGHNESS

Array Terms. This cross-reference structure is used to identify "postable" subject terms that represent more specific concepts than the term used. To this extent, while they are not true synonyms, they are the reciprocal of the broader term. For example:

MECHANICAL PROPERTIES
(USE A MORE SPECIFIC TERM -- CONSULT THE TERMS LISTED BELOW)
USE ABRASION RESISTANCE
BRITTLENESS
CREEP STRENGTH
DUCTILITY
YIELD POINT

Key Words in Context (KWIC). The KWIC cross-reference structure collects all related noun forms included in the thesaurus, including both postable and nonpostable terms. For example:

TESTS
CREEP TESTS
NOTCH TESTS
TEST RESULTS
TESTING METHODS
WIND TUNNEL TESTS

Single terms, i.e., those that do not appear elsewhere in the thesaurus in another noun form, are not included in the KWIC listing. For example:

ADSORPTION

Identifiers that include a numerical or alphabetical designation, or both, are not included in the KWIC listing. For example:

B 1900
PRD 49
RENE 41

ALPHABETIZATION

A modified computer sorting has been used in the alphabetization of subject terms in this Thesaurus of Terms. The resulting arrangement closely resembles the word-by-word arrangement while simultaneously providing a standard numerical sequence for the numbered terms.

PART I
ALPHABETICAL LISTINGS
OF SUBJECT TERMS
(A - Z)

A

ABRASION
 ABRASION RESISTANCE
 ACCEPTABILITY
 UF ACCEPTANCE
 ACCEPTANCE
 USE ACCEPTABILITY
 *ACCIDENT ANALYSES
 ACCIDENT INVESTIGATION
 ACCIDENT PREVENTION
 UF PRECAUTIONS
 *ACCIDENT PREVENTION MANUALS
 *ACCIDENT REPORTS
 ACCIDENTS
 ACOUSTIC FATIGUE
 UF SONIC FATIGUE
 *ACOUSTICAL CRACKS
 ADSORPTION
 AERODYNAMIC HEATING
 AERODYNAMIC LOADS
 AERODYNAMICS
 AEROELASTICITY
 AEROTHERMOELASTICITY
 UF THERMOAEROELASTICITY
 AEROSPACE VEHICLES
 *AF2-IDA
 AIRCRAFT
 AIRCRAFT DESIGN
 AIRCRAFT STABILITY
 AIRCRAFT STRUCTURES
 ALARMS
 USE WARNING SYSTEMS
 *ALLOWABLE STRESSES
 ALLOYS
 UF METAL ALLOYS
 (USE A MORE SPECIFIC TERM--
 CONSULT THE TERMS LISTED BELOW)
 USE ALUMINUM ALLOYS
 BEARING ALLOYS
 *BE-CU ALLOY 25
 BERYLLIUM ALLOYS
 BETA II TITANIUM
 BINARY ALLOYS
 CHROMIUM ALLOYS
 COBALT ALLOYS
 HAFNIUM ALLOYS
 *HASTELLOYS
 HEAT RESISTANT ALLOYS
 HIGH STRENGTH ALLOYS
 *INCOLOY 800
 *INCONEL ALLOYS
 *INCONEL 617
 *INCONEL 625

*INCONEL 700
 *INCONEL 706
 *INCONEL 713
 *INCONEL 718
 *INCONEL 722
 *INCONEL X
 *INCONEL X-750
 *M 252
 MAGNESIUM ALLOYS
 *MAR M200
 MARAGING STEEL
 *MILD STEELS
 MOLYBENUM ALLOYS
 *MP 35M
 *MW 171G
 *NASA IIB
 *NASA IIB-7
 *NASA IIB-11
 *NICHROME 5
 NICKEL ALLOYS
 NIMONIC ALLOYS
 NIOBIUM ALLOYS
 REFRACTORY METAL ALLOYS
 RENE 41
 RENE 63
 RENE 77
 *RENE 95
 *RENE 120
 RHENIUM ALLOYS
 *SAP ALLOYS
 STAINLESS STEELS
 STEELS
 STELLITES
 TANTALUM ALLOYS
 TERNARY ALLOYS
 TITANIUM ALLOYS
 TUNGSTEN ALLOYS
 UDIMET ALLOYS
 *UDIMET 500
 *UDIMET 630
 *UDIMET 700
 WASPALLOY

 ALUMINUM
 ALUMINUM ALLOYS
 ALUMINUM OXIDES
 *ANALYSIS METHODS
 *ANALYSIS TOOLS
 ANISOTROPY
 ANODIC COATINGS
 *ANTI-PLANE SHEAR
 USE SHEAR
 APPLICATION
 USE UTILIZATION

ASSEMBLY
*ASSEMBLY PROCEDURES
*ASSEMBLY SPECIFICATIONS
ATMOSPHERES
ATMOSPHERIC ENTRY
AXIAL COMPRESSION LOADS
AXIAL LOADS
AXIAL STRAIN
UF UNIAXIAL STRAIN
AXIAL STRESS
UF UNIAXIAL STRESS

B

*B 1900
BALL BEARINGS
BAUSCHINGER EFFECT
BEARING ALLOYS
*BEARING LIFE
*BEARING LOADS
BEARINGS
*BE-CU ALLOY 25
*BEND TESTS
BENDING
BENDING FATIGUE
*BENDING LOADS
BENDING MOMENTS
*BENDING VIBRATION
BERYLLIUM
BERYLLIUM ALLOYS
BETA II TITANIUM
*BIAXIAL PROPERTIES
*BIAXIAL STRESS
BIBLIOGRAPHIES
BINARY ALLOYS
*BLAST RESISTANCE
*BLAST RESISTANCE CRITERIA
BOLTS
*BORIDE COMPOSITES
*BORIDE Z
BORON
*BRITTLE FRACTURE
BRITTLENESS
BUCKLING
UF COMPRESSIVE BUCKLING

C

*CALIBRATION STANDARDS
CARBON
CARBON FIBERS
CASTINGS
*CATASTROPHES
*CATHODIC PROTECTION

*CERAMAL PROTECTIVE COATINGS
USE PROTECTIVE COATINGS
CERAMALS
USE CERMETS
CERAMIC COATINGS
CERAMICS
CERMETS
UF CERAMALS
*CHARPY IMPACT TESTS
*CHECK LISTS
CHEMICAL COMPOSITION
*CHEMICAL DETECTION
*CHEMICAL HAZARDS
CHEMICAL MACHINING
UF CHEMICAL MILLING
CHEMICAL MILLING
USE CHEMICAL MACHINING
CHEMICAL REACTIONS
CHROMIUM
CHROMIUM ALLOYS
CLADDING
*CLEANING PROCEDURES
CLEAVAGE
COATINGS
UF INORGANIC COATINGS
(USE A MORE SPECIFIC TERM--
CONSULT THE TERMS LISTED BELOW)
USE ANODIC COATINGS
CERAMIC COATINGS
*DIFFUSION COATINGS
OXIDATION RESISTANT COATINGS
OXIDE COATINGS
PHOTOELASTIC COATINGS
PLASTIC COATING
PROTECTIVE COATINGS
*SILICIDE COATINGS

COBALT
COBALT ALLOYS
CODES
COFFIN COEFFICIENT
COFFIN-MANSON LAW
*COLUMBIUM ALLOYS
USE NIOBIUM ALLOYS
*COMBINED LOADS
COMBINED STRESS
*COMBUSTIBLE MATERIALS
COMBUSTION INSTABILITY
USE COMBUSTION STABILITY
COMBUSTION STABILITY
UF COMBUSTION INSTABILITY

COMPATIBILITY
 *COMPATIBLE MATERIALS
 *COMPLEX SHAPES
 *COMPONENT FAILURES
 COMPOSITE MATERIALS
 UF COMPOSITES
 COMPOSITE STRUCTURES
 COMPOSITES
 USE COMPOSITE MATERIALS
 COMPRESSIVE BUCKLING
 USE BUCKLING
 *COMPRESSIVE LOADS
 COMPRESSIVE STRENGTH
 COMPUTER PROGRAMS
 CONFIDENCE LIMITS
 *CONFIGURATION TESTS
 CONNECTIONS
 USE JOINTS (JUNCTIONS)
 *CONSTANT LOADS
 *CONSTRUCTION SPECIFICATIONS
 CONTAMINANTS
 CONTAMINATED ENVIRONMENTS
 CONTAMINATION
 *CORRECTIVE ACTION
 CORROSION
 *CORROSION INHIBITORS
 CORROSION PREVENTION
 CORROSION RESISTANCE
 *CRACK ANALYSIS
 *CRACK DETECTION
 CRACK FORMATION
 USE CRACK INITIATION
 CRACK INITIATION
 UF CRACK FORMATION
 CRACK PROPAGATION
 *CRACK TIP PLASTIC ZONE
 CRACKS
 *CREEP
 CREEP ANALYSIS
 CREEP PROPERTIES
 (USE A MORE SPECIFIC TERM--
 CONSULT THE TERMS LISTED BELOW)
 USE SHEAR CREEP
 TENSILE CREEP
 CREEP RESISTANCE
 USE CREEP STRENGTH
 *CREEP RUPTURE
 CREEP RUPTURE STRENGTH
 UF STRESS RUPTURE STRENGTH
 CREEP STRENGTH
 UF CREEP RESISTANCE
 *CREEP STRENGTH DIAGRAMS

CREEP TESTS
 CRITERIA
 *CRITICAL FLAW SIZE
 CRYOGENICS
 CUMULATIVE DAMAGE
 *CUMULATIVE EFFECTS
 CYCLE LOADS
 USE CYCLIC LOADS
 *CYCLIC CREEP
 CYCLIC LOADS
 UF CYCLE LOADS
 *CYCLIC TEMPERATURES
 USE THERMAL CYCLES
 *CYCLIC TESTING
 CYCLIC TORSION
 CYLINDRICAL SHELLS

D

DAMAGE
 *DAMAGED STRUCTURE LIFE
 DANGER
 USE HAZARDS
 DEFECTS
 USE MATERIAL DEFECTS
 DEFLECTION
 DEFORMATION
 *DENSITY (PROPERTIES)
 DESIGN
 *DESIGN CODES
 *DESIGN CRITERIA
 *DESIGN GUIDES
 *DESIGN PROCEDURES
 *DESIGN STANDARDS
 *DETECTION SYSTEMS
 *DIBORIDES
 DIFFUSION
 *DIFFUSION COATINGS
 DIRECTORIES
 DISASTERS
 *DISCONTINUITIES
 USE MATERIAL DEFECTS
 *DISPERSION STRENGTHENED MATERIALS
 *DISSIMILAR MATERIALS BONDING
 *DISTORTION
 *DUCTILE-BRITTLE TRANSITION
 *DUCTILE FRACTURE
 DUCTILITY
 DYNAMIC LOADS
 *DYNAMIC STRESSES
 DYNAMIC TESTS

E

EDDY CURRENTS
EFFECTS

(USE A MORE SPECIFIC TERM--
CONSULT THE TERMS LISTED BELOW)

USE BAUSCHINGER EFFECT
*CUMULATIVE EFFECTS
ENVIRONMENTAL EFFECTS
*FREQUENCY EFFECTS
*JET ENGINE FUEL EFFECTS
*NOTCH EFFECTS
TEMPERATURE EFFECTS

ELASTIC MODULUS

USE MODULUS OF ELASTICITY

ELASTICITY

USE ELASTIC PROPERTIES

*ELASTIC-PLASTIC ANALYSIS

*ELASTIC-PLASTIC MODULUS

USE MODULUS OF ELASTICITY

ELASTIC PROPERTIES

UF ELASTICITY
INELASTICITY

(USE A MORE SPECIFIC TERM--
CONSULT THE TERMS LISTED BELOW)

USE AEROELASTICITY
AEROTHERMOELASTICITY
MODULUS OF ELASTICITY
PHOTOELASTICITY
THERMOELASTICITY

ELASTIC STABILITY

ELECTRON MICROSCOPY

ELECTROPLATING

ELONGATION

UF TENSILE ELONGATION

EMBRITTLMENT

*ENGINEERING STANDARDS

*ENVIRONMENTAL CAPABILITY

ENVIRONMENTAL EFFECTS

ENVIRONMENTAL ENGINEERING

ENVIRONMENTAL TESTS

ENVIRONMENTS

EPOXY COMPOUNDS

EPOXY RESINS

*EROSION RESISTANCE

*EXCESSIVE PRESSURES

*EXCESSIVE VIBRATIONS

*EXPECTED LIFE

*EXPERIMENTAL DATA

EXTRUSION METHODS

*EXTRUSIONS

F

FABRICATION

*FABRICATION METHODS

*FABRICATION STANDARDS

*FACTOR OF SAFETY

*FAIL-SAFE DESIGN

FAILURE

FAILURE ANALYSES

*FAILURE INVESTIGATIONS

*FAILURE MECHANISM

*FAILURE MODE

*FAILURE PREVENTION

*FAILURE REPORTS

*FAILURES (MATERIALS)

FASTENERS

FATIGUE (MATERIALS)

UF STRUCTURAL FATIGUE

FATIGUE DIAGRAMS

USE S-N DIAGRAMS

STRESS-STRAIN DIAGRAMS

FATIGUE LIFE

FATIGUE PROPERTIES

FATIGUE STRENGTH

*FATIGUE TESTING MACHINES

FATIGUE TESTS

FAULT MECHANICS

USE FRACTURE MECHANICS

*FEDERAL REGULATIONS

*FIBER-REINFORCED COMPOSITES

FIBER STRENGTH

FIBERS

UF GLASS FIBERS

*FIELD INSPECTION TECHNIQUES

FINITE ELEMENT ANALYSIS

*FLAT PANELS

FLAT PLATES

FLAWS

USE MATERIAL DEFECTS

FLIGHT TESTS

FLUTTER

FOREIGN BODIES

FORGINGS

*FRACTURE ANALYSIS

FRACTURE MECHANICS

UF FAULT MECHANICS

MOHR CIRCLES

*FRACTURE PROPERTIES

USE MECHANICAL PROPERTIES

FRACTURE RESISTANCE

USE FRACTURE STRENGTH

FRACTURE STRENGTH
UF FRACTURE RESISTANCE
FRACTURE TOUGHNESS
*FRACTURE TESTS
FRACTURE TOUGHNESS
USE FRACTURE STRENGTH
FRACTURES (MATERIALS)
FRAGMENTATION
*FRAGMENTATION DISPERSALS
*FREQUENCY EFFECTS
FUEL CORROSION
*FUSED SILICA
FUSELAGES

G

GAS TURBINE ENGINES
GLASS FIBERS
USE FIBERS
*GRAPHITE-EPOXY SYSTEMS
GRIFFITH CRACK
*GROUND-TO-AIR CYCLES
*GUIDES
(USE A MORE SPECIFIC TERM--
CONSULT THE TERMS LISTED BELOW)
USE *DESIGN GUIDES
*INSPECTION GUIDES
*SAFETY GUIDES
GUST LOADS

H

HAFNIUM
HAFNIUM ALLOYS
HANDBOOKS
HARDNESS
*HASTELLOYS
HAZARDS
UF DANGER
SAFETY HAZARDS
HEAT
HEAT CONDUCTION
HEAT EFFECTS
USE TEMPERATURE EFFECTS
*HEAT OF DEGRADATION
HEAT RESISTANT ALLOYS
UF HIGH TEMPERATURE ALLOYS
SUPERALLOYS
HEAT SHIELDING
HEAT TREATMENT

HIGH-CYCLE FATIGUE
HIGH PRESSURE
HIGH SPEED
HIGH STRENGTH
HIGH STRENGTH ALLOYS
HIGH TEMPERATURE
HIGH TEMPERATURE ALLOYS
USE HEAT RESISTANT ALLOYS
HIGH TEMPERATURE ENVIRONMENTS
HIGH TEMPERATURE MATERIALS
USE REFRACTORY MATERIALS
HIGH TEMPERATURE TESTS
*HONEYCOMB SANDWICH PANELS
*HOT CORROSION
UF SULFIDATION
HUMIDITY
HYDROGEN
*HYDROGEN EMBRITTLEMENT
*HYDROGEN ENVIRONMENT EMBRITTLEMENT
*HYDROGEN REACTION EMBRITTLEMENT
HYPERVELOCITY IMPACT

I

IMPACT
IMPACT STRENGTH
IMPERFECTIONS
USE MATERIAL DEFECTS
IMPLOSIONS
IMPURITIES
*INCOLOY 800
*INCONEL ALLOYS
*INCONEL X
*INCONEL X750
*INCONEL 617
*INCONEL 625
*INCONEL 700
*INCONEL 706
*INCONEL 713
*INCONEL 718
*INCONEL 722
INDEXES
(USE A MORE SPECIFIC TERM--
CONSULT THE TERMS LISTED BELOW)
USE BIBLIOGRAPHIES
DIRECTORIES
INDEXES (DOCUMENTATION)
KWIC INDEXES
INDEXES (DOCUMENTATION)
INELASTICITY
USE ELASTIC PROPERTIES
INFLUENCE COEFFICIENTS
INORGANIC COATINGS
USE COATINGS

*INORGANIC BONDED COMPOSITES
INSPECTION
*INSPECTION GUIDES
*INSPECTION STANDARDS
INSTALLATION MANUALS
*INSTALLATION PROCEDURES
*INSTRUCTION MANUALS

J

*JET ENGINE FUEL EFFECTS
UF *JET FUEL EFFECTS
*JET FUEL EFFECTS
USE *JET ENGINE FUEL EFFECTS
JOINTS (JUNCTIONS)
UF CONNECTIONS

K

KWIC INDEXES

L

LABORATORY
*LABORATORY SIMULATIONS
*LABORATORY TESTS
LAMINATED MATERIALS
USE LAMINATES
LAMINATES
UF LAMINATED MATERIALS
LANDINGS
*LATTICE DIFFUSION
LAUNCHINGS
*LEAK DETECTION
*LEAK TESTING
LEAKAGE
LIFE (DURABILITY)
*LIFE EXPECTANCY
*LIFE PREDICTION
*LINEAR DAMAGE RULE
*LOAD CYCLES
LOAD DISTRIBUTION (FORCES)
LOADS (FORCES)
(USE A MORE SPECIFIC TERM--
CONSULT THE TERMS LISTED BELOW)
USE AERODYNAMIC LOADS
AXIAL COMPRESSION LOADS
AXIAL LOADS
*BEARING LOADS
*BENDING LOADS
*COMPRESSIVE LOADS
CYCLIC LOADS

DYNAMIC LOADS
RANDOM LOADS
*SHEAR LOADS
STATIC LOADS
*TORSIONAL LOADS

*LOW-CYCLE FATIGUE
*LOW DENSITY MATERIALS
*LOW STRENGTH STEELS
LOW TEMPERATURE
LOW TEMPERATURE TESTS
LUBRICANTS

M

*M 252
MACHINING
MAGNESIUM
MAGNESIUM ALLOYS
MAINTENANCE
*MAINTENANCE METHODS
*MAINTENANCE STANDARDS
MANGANESE
MANGANESE ALLOYS
MANUALS
(USE A MORE SPECIFIC TERM--
CONSULT THE TERMS LISTED BELOW)
USE *ACCIDENT PREVENTION MANUALS
*INSTALLATION MANUALS
*SAFETY MANUALS
*TECHNICAL MANUALS
*MAR M200
MARAGING STEEL
*MARGIN OF SAFETY
MARS ATMOSPHERE
*MATERIAL DEFECTS
UF DEFECTS
DISCONTINUITIES
FLAWS
IMPERFECTIONS
*MATERIAL DEGRADATION
*MATERIAL FRACTURES
*MATERIAL PROCESSING
MATERIALS
*MATERIALS COMPATIBILITY
*MEAN STRESS
MECHANICAL PROPERTIES
UF FRACTURE PROPERTIES
(USE A MORE SPECIFIC TERM--
CONSULT THE TERMS LISTED BELOW)
USE ABRASION RESISTANCE
AEROELASTICITY
AERTHERMOELASTICITY

BRITTLENESS
 COMPRESSIVE STRENGTH
 CREEP PROPERTIES
 CREEP RUPTURE STRENGTH
 CREEP STRENGTH
 DUCTILITY
 ELASTIC PROPERTIES
 FATIGUE LIFE
 FIBER STRENGTH
 FRACTURE STRENGTH
 HARDNESS
 HIGH STRENGTH
 IMPACT STRENGTH
 MODULUS OF ELASTICITY
 NOTCH SENSITIVITY
 NOTCH STRENGTH
 PHOTOELASTICITY
 PLASTIC PROPERTIES
 POISSON RATIO
 *RESIDUAL STRENGTH
 RESILIANCE
 SHEAR CREEP
 SHEAR PROPERTIES
 SHEAR STRENGTH
 STIFFNESS
 STRENGTH
 *STRENGTH RETENTION
 STRESS RATIO
 STRESS RELAXATION
 STRUCTURAL STABILITY
 TENSILE CREEP
 TENSILE PROPERTIES
 TENSILE STRENGTH
 THERMAL RESISTANCE
 TOUGHNESS
 WELD STRENGTH
 YIELD POINT
 YIELD STRENGTH

METAL ALLOYS

USE ALLOYS

METAL FOILS

METAL MATRIX COMPOSITES

*METALLIC MATERIALS

METALLOGRAPHY

METALS

(USE A MORE SPECIFIC TERM--
 CONSULT THE TERMS LISTED BELOW)

USE ALUMINUM
 BERYLLIUM
 CHROMIUM
 COBALT
 HAFNIUM

MAGNESIUM
 MANGANESE
 MOLYBDENUM
 NICKEL
 NIOBIUM
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(USE A MORE SPECIFIC TERM--
 CONSULT THE TERMS LISTED BELOW)

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 *NDE METHODS
 *NDI METHODS
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*MICROSTRUCTURES

*MILD STEELS

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USE PALMGREN-MINER RULE

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 YOUNG MODULUS
 YOUNGS MODULUS

MOHR CIRCLES

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MOLYBDENUM ALLOYS

*MONOTONIC STRESS

*MP 35N

*MW 171G

N

*NASA IIB

*NASA IIB-7

*NASA IIB-11

*NDE

UF NONDESTRUCTIVE EVALUATION

*NDE METHODS

*NDE TECHNIQUES

*NDI

UF NONDESTRUCTIVE INSPECTION

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UF NONDESTRUCTIVE TESTING

- *NDT METHODS
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- NIOBIUM
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- UF COLUMBIUM ALLOYS
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- NOTCH SENSITIVITY
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CONSULT THE TERMS LISTED BELOW)

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- *PLANE STRAIN FRACTURE TOUGHNESS
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- PLASTICITY
- USE PLASTIC PROPERTIES
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- UF POISSONS RATIO
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- POROSITY
- *POSTBUCKLING
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- *PRD 49
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- UF STRAIN AGING
- *PRE-CRACKED SPECIMENS
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CONSULT THE TERMS LISTED BELOW)
- USE *ASSEMBLY PROCEDURES
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CONSULT THE TERMS LISTED BELOW)

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FRACTURE RESISTANCE
HEAT RESISTANT ALLOYS
OXIDATION RESISTANCE
- *OXIDATION RESISTANT COATINGS
RESISTANCE HEATING
THERMAL RESISTANCE

S

SAFETY

- *FACTOR OF SAFETY
- *FAIL-SAFE DESIGN
- *MARGIN OF SAFETY
SAFETY
- *SAFETY CODES
- *SAFETY CRITERIA
SAFETY DEVICES
- *SAFETY DIRECTIVES
SAFETY FACTORS
- *SAFETY GUIDES
SAFETY HAZARDS
SAFETY MANAGEMENT
- *SAFETY MANUALS
- *SAFETY POLICIES
- *SAFETY PRACTICES
- *SAFETY PRINCIPLES
- *SAFETY REGULATIONS
- *SAFETY SPECIFICATIONS
- *SAFETY STANDARDS
- *SAFETY SYSTEMS
- *SAFETY TECHNOLOGY
STRUCTURAL SAFETY
- *SYSTEM SAFETY

SHEAR

- *ANTI-PLANE SHEAR
- SHEAR
- SHEAR CREEP
- SHEAR LIP
- SHEAR LOADS
- SHEAR PROPERTIES
- SHEAR STRAIN
- SHEAR STRENGTH

SHOCK

- SHOCK
- SHOCK WAVES
- THERMAL SHOCK

STANDARDS

- *CALIBRATION STANDARDS
- *DESIGN STANDARDS
- *ENGINEERING STANDARDS
- *FABRICATION STANDARDS
- *INSPECTION STANDARDS
- *MAINTENANCE STANDARDS
- *OPERATING STANDARDS
- *PERFORMANCE STANDARD
- *SAFETY STANDARDS
- *TESTING STANDARDS

*STRAIN

- AXIAL STRAIN
- *PLANE STRAIN
- *PLANE STRAIN FRACTURE TOUGHNESS
- *PLASTIC STRAIN
- SHEAR STRAIN
- *STRAIN
- STRAIN ACCUMULATION
- STRAIN AGING
- STRAIN DISTRIBUTION
- *STRAIN ENERGY RELEASE
- STRAIN HARDENING
- STRAIN RATE
- STRESS-STRAIN DIAGRAMS
- UNIAXIAL STRAIN

STRENGTH

- COMPRESSIVE STRENGTH
- CREEP RUPTURE STRENGTH
- CREEP STRENGTH
- *DISPERSION STRENGTHENED MATERIALS
- FIBER STRENGTH
- FRACTURE STRENGTH
- HIGH STRENGTH
- HIGH STRENGTH ALLOYS
- IMPACT STRENGTH
- *LOW STRENGTH STEELS
- NOTCH STRENGTH

*RESIDUAL STRENGTH

- SHEAR STRENGTH
- STRENGTH
- *STRENGTH RETENTION
- STRESS RUPTURE STRENGTH
- TENSILE STRENGTH
- *ULTIMATE STRENGTH
- YIELD STRENGTH

STRESS

- *ALLOWABLE STRESSES
- BIAXIAL STRESS
- COMBINED STRESS
- *DYNAMIC STRESSES
- *MEAN STRESS
- *MONOTONIC STRESS
- *OVERSTRESS
- *PLANE STRESS
- *RESIDUAL STRESS
- STRESS
- STRESS ANALYSIS
- STRESS CONCENTRATION
- STRESS CORROSION
- *STRESS CORROSION CRACKING
- STRESS DISTRIBUTION
- STRESS INTENSITY FACTOR
- STRESS MEASUREMENT
- *STRESS RAISERS
- STRESS RATIO
- STRESS RELAXATION
- *STRESS RUPTURE
- STRESS-STRAIN DIAGRAMS
- TENSILE STRESS
- THERMAL STRESSES
- TORSIONAL STRESS
- *UNIAXIAL STRESS
- YIELD STRESS

T

TEMPERATURE

- HIGH TEMPERATURE
- HIGH TEMPERATURE ALLOYS
- HIGH TEMPERATURE ENVIRONMENTS
- HIGH TEMPERATURE MATERIALS
- HIGH TEMPERATURE TESTS
- LOW TEMPERATURE TESTS
- LOW TEMPERATURE
- TEMPERATURE
- TEMPERATURE CYCLES
- TEMPERATURE DISTRIBUTION
- TEMPERATURE EFFECTS
- *TEMPERATURE LIMITATIONS

*TEMPERING TEMPERATURE
*VARIABLE TEMPERATURE
TESTS
*BEND TESTS
*CHARPY IMPACT TESTS
CREEP TESTS
*CYCLIC TESTING
DYNAMIC TESTS
*FATIGUE TESTING MACHINES
FATIGUE TESTS
FLIGHT TESTS
*FRACTURE TESTS
HIGH TEMPERATURE TESTS
*LABORATORY TESTS
*LEAK TESTING
LOW TEMPERATURE TESTS
*NDT
NOTCH TESTS
*PROOF TESTS
STATIC TESTS

*STORAGE TESTS
*TENSION TESTS
*TEST RESULTS
*TESTING METHODS
*TESTING SPECIFICATIONS
*TESTING STANDARDS
TESTS
VIBRATION TESTS
*WIND TUNNEL TESTS
TURBINES
GAS TURBINE ENGINES
TURBINE BLADES
TURBINES.

V

VEHICLES
AEROSPACE VEHICLES
VEHICLES