

## **Industry Benchmark for Critically Evaluated Materials Properties Data**

# Now available on-line—CINDAS Aerospace Structural Metals Database (ASMD)

The ASMD web-based database allows the user to instantly see the properties and relationships for 280 metal alloys with over 96,100 data curves. This user-friendly interface enables ASMD subscribers to quickly select and compare the attributes of the alloys for which they are looking.

The ASMD provides numeric and graphic information as part of the database, including a comprehensive PDF consisting of additional information for each alloy.

#### ASMD Users

Universities Course Material Aid

Technical Schools Project Reference & Guide

Government Agencies New Material Research

Aerospace Industry Turbine Design

Automotive Industry Developing Engines & Frame

Industrial Suppliers Manufacturing, Machinery

Research Corporations Research and Development

And many others...

#### **About the Data**

The ASMD was fully developed by CINDAS LLC from the widely used and highly respected Aerospace Structural Metals Handbook (ASMH).

CINDAS LLC completed and released the database under a Cooperative Research and Development Agreement (CRADA) with the United States Air Force Materials Directorate at Wright Patterson Air Force Base.

# Search and Browse the Aerospace Structural Metals Database by

Material Group

(Aluminum, Titanium, Nickel Alloys, Stainless Steels, etc.)

Material Name

(Al6061, Ti-6Al-4V, AZ63A, etc.)

**Property Group** 

(Mechanical, Thermophysical, etc.)

Property Name

(Yield Strength, Elongation, Fracture Toughness, etc.)

## **Property Groups**

The ASMD contains 700 different properties. These properties are separated into 20 easy-to-navigate property groups. Alternatively, you can search the property names by using keywords which would bring you directly to the property you're interested in.

Thermophysical

Thermoradiative

Electrical and Nuclear

Mechanical Properties

Strength, Stress, Hardness, Fatigue & Crack Growth, Impact Energy, Strain, Area Reduction, Deformation and others

Temperature

Time, Life to Failure

Corrosion, Oxidation, and Weight Change

Length, Thickness, Diameter, Size, and Grain Size

Content of Component, Phase

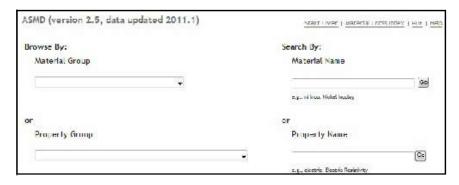
Plus others...

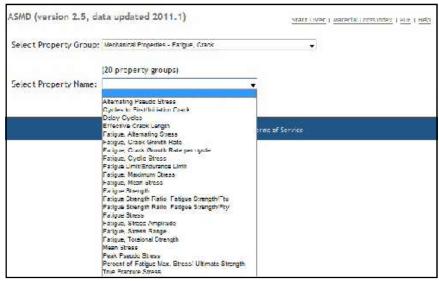
# Searching and Browsing: Aerospace Structural Metals Database (ASMD) Finding Information

Search: Enter the full or partial name of the property or material.

Browse: Use the drop-down menu to find the property or material.

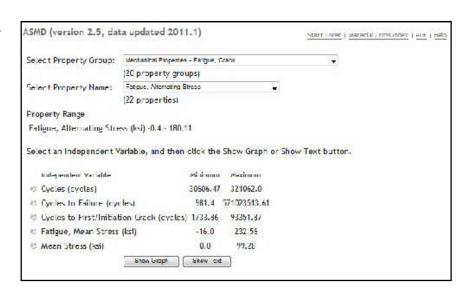
The Aerospace Structural Metals Database contains 280 metal alloys in 20 metal groups and 700 properties in 20 property groups.





## **Customizing Information**

Select: The independent variable.



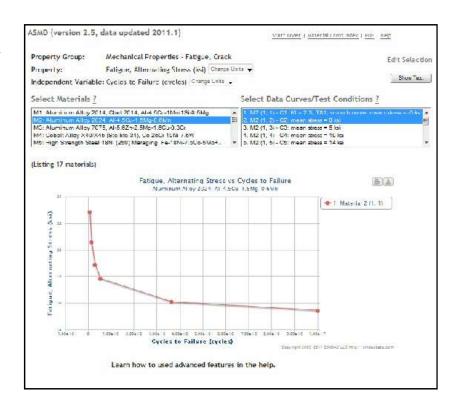
## **Viewing Information**

The ASMD allows the user to view a property of multiple materials on one graph.

Step 1: Select Materials.

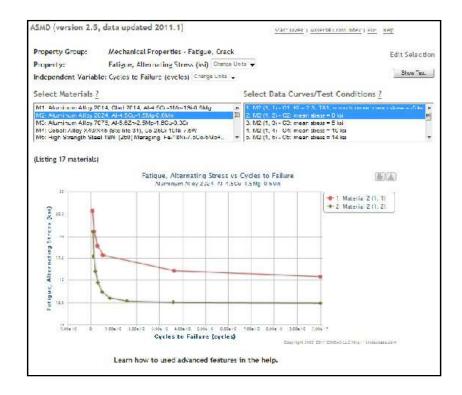
Step 2: Select Data Curves or Test Conditions.

Note: At any time, the user can click on the "Show Text" button to see the values of the data points, text description, references, etc.



## **Results: Graphic and Numeric**

- Over 96,100 data curves
- Color-coded data curves
- Multiple curves of different materials per graph
- Hovering cursor to show X and Y values of each data point
- Unit conversion package
  - Contains both English and SI units
  - Shows all typically used units for the variables
  - Allows both X-axis and Y-axis selection



## **Materials Cross Index**

The materials cross index contains the commercial and alternative designations for all the metal alloys in the database. This feature can be used to find the correct metal alloy when only the trade name or commercial designation is available.

MCode and MName	Commercial and Alternate Designations		
1218, High Strength Steel H-11 Mod	H-11 Mod, AISI Type H-11, SAE Type H-11, JNS T20811, AI Tech Potomac A	Carpenter No. 882, Chromo-V, Gotrel H-11, Hot Form No. 2	
1220, High Strength Steel 18NI (250) Managing	18Ni 250 Grade Maraging Steat, UNS K92890, K92940, Almar 18 250; Marvac 250	Nimark 250, Udimer 5-250, Vascomax 250	
1221, High Strength Steel 9Ni-4Co	9Ni-4Co;   P-9-4-20;   P-9-4-30; UNS K91283		
1223, High Strength Steel 18Ni (200) Maraging	18 NI Maraging Steel; 18NI-00-Mo; 18NI (200) Maraging; 18-8- 3; Vascomex 200 CVM	KSM 200; Almar 18	
1224, High Strength Steel AF1410	Unimach 1/10; AF 1/10		
1225, High Strength Steel 18Ni (300) Managing	18Ni Maraging Steel; 18Ni-Co-Mo; 18-9-5; Vascomax 300 CVM; RSM 300; Almar 18	Marciac 300; 18N (300) Maraging Sheet; 300 Grade Maraging Steet	
1270, High Strength Steel SNi Steel	9 Bil Steel		
1227, Lligh Strength Steel MSQ/MSQNil Sheels	M50. AISI M50, Carpenter VIM-VAR M-50 Bearing Steel, Latrobe I M Stilligh Spord Stoel; Introbe Lescalloy MSD VIM-VAR Bearing Steel, Vasco M-50 High Speed Tool Steel, UNS T11850 IK88155;	WHINE Tatrone CSS SUNIT VIM VAR Carburizing Rearing and Gear Steel	
1228, High Strength Steel Managing T-250	Managing T-250, Managing MS 250, Managing Free-Co		
1229, High Strength Steel AcrMet 100	AcriMct 100; UNS K92580		
	H-13, H13, AISI H-13, Premium AISI H-13, ASTM H-13, SAE H-15,	Nu-Die V, Nu-Die XL, Nu-Die ESR (Cruciale), Orvar Superior,	

#### **On-line Handbook**

The Aerospace Structural Metals Database includes an interactive on-line version of the printed handbook. The on-line PDF handbook supplements the ASMD by providing additional information about the metal alloys.

- General Overview
- Commercial Designations
- Alternative Designations
- Metal Specifications
- Composition
- Heat Treatment
- Forms & Conditions
- Melting & Casting
- Fabrication
- Metal Treatments

And many others...

22	Aerospace Structur	al Metals	s Handbook Non-Ferrous	s Alloys • 🗚
Autho	or K. Brown			747
1	GENERAL	1.04	Composition	
	Aluminum alloy 7475 is primarily an aerospace alloy	1.04	[Table] Aluminum Association composition limits.	5.6
	used in a heat-treated condition. It is usually available as bare or clad sheet or as plate, but on	1.05	Heat Treatment	SEE 11 SEE 11 SEE 12 SEE
	occasions, extrusion and forgings have been made for special applications in place of its sister alloys, 7075 and 7175.  Alloy 7475 is basically a high purity version of 7075, i.e., it contains lower iron and silicon, and has marginally lower upper limits on copper and magnesium. Special proprietary processing may sometimes be given to 7475. The limits on chemical		Details of the heat treatments should be obtained, when required, from the specific supplier of the material due to possible differences in fabrication history, and consequent differences in response to heat treatments.	
				1.5
				0.21
				Low
	composition reduce the amounts of second phase constituents, which result in higher fracture	1.06	Hardness	
	toughness at the same level of strength and corrosion resistance. In over-aged tempers, for example, T7x, 7475 is resistant to exfoliation and	1.061	T61 sheet: R <sub>B</sub> 89; T761 sheet: R <sub>B</sub> 85; T7351 plate: R <sub>B</sub> 76 to 85.	
	stress corrosion. Most aerospace applications are for component requiring high strength and toughness at temperatures up to 300 F.	1.07	Forms and Conditions Available	
1.01	Commercial Designations		Alloy 7475 is available as sheet (up thick) in both bare and clad forms	
	7475 aluminum alloy		T761 tempers. It is also available in T7351, T7651, T76351 and T651 plate up to approximately 4-incl	
1.02	Alternate Designations		in thickness, and in extruded rods for the manufacture of cartridge cases. Producers ar	for the
	UNS A97475		aerospace companies have also in	vestigated the
1.03	Specifications 7475-T7351 plate: AMS 4202 (33)		availability of 7475 structural forgings and extrusions; however, the data are not found in the	
	7475-17351 plate: AMS 4202 (33) 7475-T651 plate: AMS 4090 (34)		open literature.	

## We Are Confident in Our Products

The ASMD is quick, efficient, and frequently updated, and is currently used by a growing list of universities, corporations and research facilities. Please visit www.cindasdata.com for a demo.