

CINDAS网络版

宇航结构金属数据库 (Aerospace Structural Metals Database, ASMD)

这个基于网络的ASMD数据库提供96, 100万多条数据曲线, 能让用户即时了解280种金属合金的性能和相互的关系。友好的检索界面能帮助用户快速地选择和比较特定金属合金的属性。ASMD数据库不仅提供数字和图表信息, 还提供包括各种金属合金的附加信息的PDF综合文档。

ASMD用户

大学	课程辅导教材
技术类院校	项目参考&指南
政府机构	新材料研究
航天工业	汽轮机设计
汽车工业	开发发动机和车架
工业供应商	制造, 机械
研究类公司	研究和开发
还有很多。。。	

关于ASMD数据库

ASMD数据库由CINDAS LLC完全开发, 是被广泛使用并广受赞誉的宇航结构金属手册 (ASMH) 的网络版。CINDAS LLC与美国空军材料部 (位于怀特-帕特森空军基地) 签署了研发合作协议 (Cooperative Research and Development Agreement, CRADA), 共同完成和发布ASMD数据库。网络版ASMD除了保持原有的各种材料的PDF文档外, 还增加了互动界面, 便于用户检索、浏览和比较各种材料的性能。

通过以下方式检索浏览ASMD数据库

材料组别

(如铝, 钛, 镍合金, 不锈钢等)

材料名称

(如Al-6061, Ti-6Al-4V, AZ63A等)

性能组别

(如机械, 热物理等)

性能名称

(如屈服强度, 伸长率, 断裂韧性等)

性能组别

ASMD数据库包含700多种不同的性能，这些属性被分类于20个易查找的性能组别中。用户可以通过浏览方式查找所需的性能。或者，通过输入全名或部分名称（关键字）检索到所需的性能。

热物理

热辐射

电与核子

机械性能

强度，应力，硬度，疲劳裂纹扩展，冲击力、应变、收缩率、变形及其他

其他性能

温度

时间，寿命

腐蚀、氧化和重量变化

长度、厚度、直径、尺寸和晶粒大小

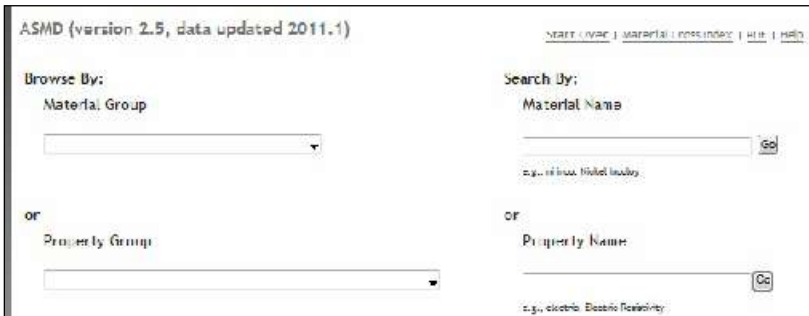
成分，相位

...

检索和浏览ASMD数据库示范

A. 查找信息

检索：输入性能或者材料的全名或者部分名称



ASMD (version 2.5, data updated 2011.1)

Search By: Material Group

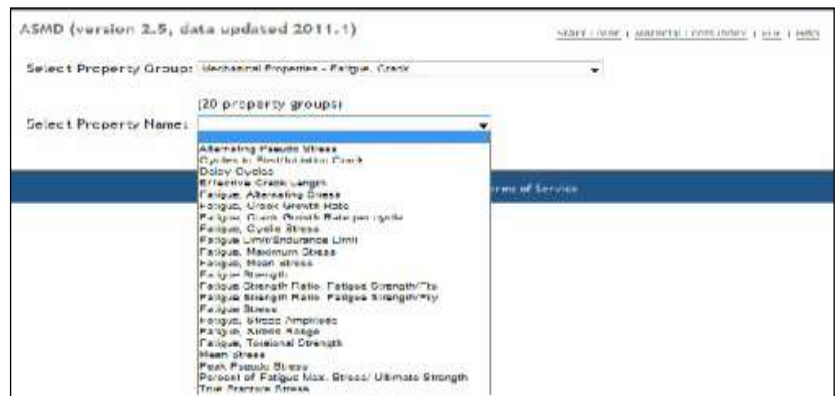
Search By: Material Name

or

Property Group

or

Property Name



ASMD (version 2.5, data updated 2011.1)

Select Property Group: Mechanical Properties - Fatigue, Crack

Select Property Name: [20 property groups]

- Alternating Plastic Stress
- Cyclic Plastic Strain Ratio
- Crack Growth
- Effective Crack Length
- Fatigue Alternating Stress
- Fatigue Crack Growth Rate
- Fatigue Crack Growth Rate per cycle
- Fatigue Cycle Stress
- Fatigue Life Endurance Limit
- Fatigue Medium Stress
- Fatigue Mean Stress
- Fatigue Strength
- Fatigue Strength Ratio
- Fatigue Strength To
- Fatigue Strength Ratio
- Fatigue Strength
- Fatigue Stress Amplitude
- Fatigue Stress Range
- Fatigue Torsional Strain
- Mean Stress
- Peak Plastic Stress
- Percent of Fatigue Max. Stress/Ultimate Strength
- True Plastic Stress

浏览：使用下拉菜单浏览性能和材料。

该数据库包含20个材料组别，280种金属材料，和20个性能组别、700个性能

B. 取定信息

选择：自变量

ASMD (version 2.5, data updated 2011.1) [Home](#) | [View](#) | [Material](#) | [Index](#) | [Help](#) | [FAQ](#)

Select Property Group: **Mechanical Properties - Fatigue, Crack**
(20 property groups)

Select Property Name: **Fatigue, Alternating Stress**
(22 properties)

Property Range
Fatigue, Alternating Stress (ksi) -0.4 - 180.11

Select an Independent Variable, and then click the Show Graph or Show Text button.

Independent Variable	Minimum	Maximum
<input type="radio"/> Cycles (cycles)	30506.17	321062.0
<input type="radio"/> Cycles to Failure (cycles)	981.4	571023513.61
<input type="radio"/> Cycles to First/Initiation Crack (cycles)	1733.36	93261.37
<input type="radio"/> Fatigue, Mean Stress (ksi)	-16.0	232.55
<input type="radio"/> Mean Stress (ksi)	0.0	79.26

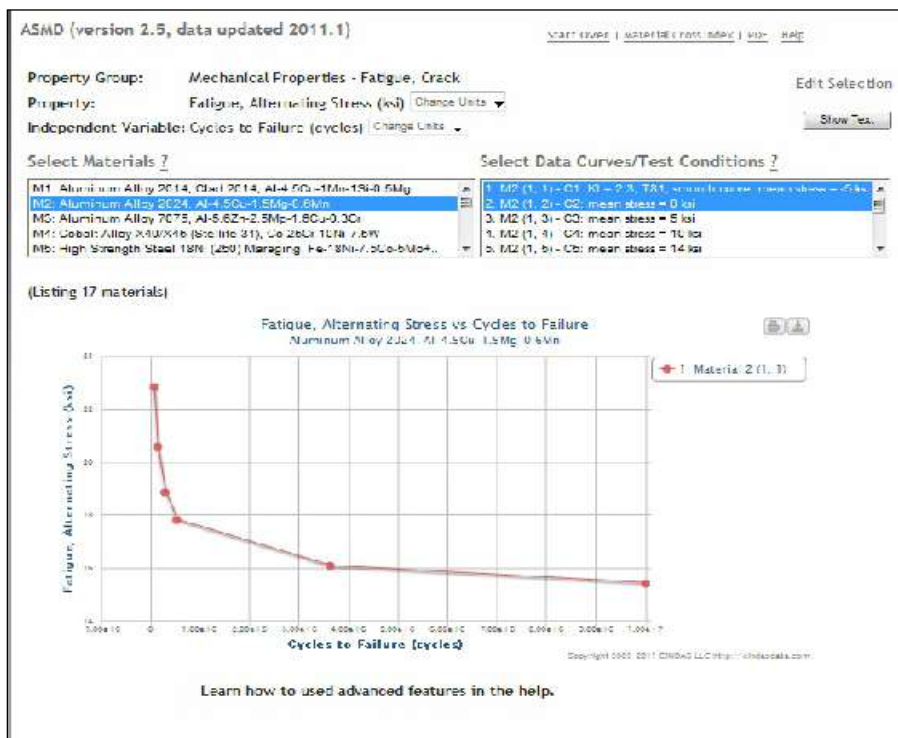
C. 查看信息

用户能够在一张图表上比较多种材料的同一性能。

步骤一：选择材料

步骤二：选择测试条件或者数据曲线

注：用户可以随时点击“Show text”按钮，查看数据点的数值，文本形式的描述和参考信息



D. 定制信息的显示形式：图表和数字

- 96, 100万多条数据曲线
- 彩色编码的数据曲线
- 同一图表上显示不同材料的多条数据曲线
- 将光标悬停在每个数据点上，以显示相应的X和Y数值
- 可以改变X轴和Y轴的属性单位（包括所有常用的英制或国际单位制单位）



材料交叉索引

该数据库的材料交叉索引包含数据库内所有金属合金的商用名和别名，这个功能可以使用户在只知道商标名或商业名的情况下，找到所需的金属合金。

Material Name	Commercial and Alternated Designations
Carbon Steel T-1, Fe-0.15C-0.8Mn-0.85Ni-0.53Cr-0.50Mo+...	T-1, T-1 Type A, T-1 Type B, USS T-1, USS T-1 Type A, USS T-1 Type B
High Strength Steel 4130, Fe-0.30C-0.95Cr-0.20Mo	4130, AISI 4130, SAE 4130, 4130H, UNS G41300, UNS H41300
High Strength Steel 4140, Fe-0.4C-1.0Cr-0.2Mo	4140, AISI 4140, SAE 4140, 4140H, UNS G41400, UNS J14046
High Strength Steel 4330V, Fe-0.3C-1.8Ni-0.8Cr+	4330V, 4330, 4330 Mod, 4330V Mod, 4330V (Mod+Si), UNS J23260, UNS K23
High Strength Steel 4335V Mod, Fe-0.35C-1.8Ni+...	4335 V Modified, 4335 Modified, UNS Number K33517
High Strength Steel 4340 (4337), Fe-0.4C-1.8Ni+...	4340, AISI 4340, SAE 4340, E 4340, 4340 H, UNS G43400
High Strength Steel 52100, Fe-1C-1.45Cr	52100, E 52100, Teflon (Allegheny-Ludlum)
High Strength Steel 8630, Fe-0.3C-0.55Ni-0.5Cr-0.25Mo	8630, AISI 8630, SAE 8630, 8630H, UNS J13042, UNS J13050, UNS G86300
High Strength Steel E9310, Fe-0.1C-3.25Ni-1.2Cr-0.1Mo	E9310, SAE 9310, AISI E 9310 H, AMS 6280 E, UNS G93106
High Strength Steel 17-22A(S), 17-22A(V), Fe-C-1.3Cr+	17-22A(S), 17-22(V), Unilloy 14 MV (Universal Cyclops designation for 17-22A(S))
High Strength Steel D6A, D6AC, Fe-0.46C-1.0Cr-1.0Mo-0.55Ni	D6A (air melt), D6AC, UNS K24728, UNS K24729
High Strength Steel Hy-Tuf, Fe-0.25C-1.8Ni-1.5Si-1.3Mn-0.4Mo	Hy-Tuf, UNS K32550
High Strength Steel Nitralloy 135 Mod, Fe-0.4C-1.6Cr-1.1Al+	Nitralloy 135 modified, Nitralloy Type G modified, AMS 6470 Nitriding Steel, SAE 7140, U
High Strength Steel Hy-130/140, Fe-5Ni-0.55Cr-0.47Mo-0.075V	HY 130, 5 Ni-Cr-Mo-V Steel, UNS K51255
High Strength Steel 300-M, Fe-0.43C-1.8Ni-1.6Si-0.8Cr-0.4Mo+V	300M, Tricent, 4340 M, UNS K44220, UNS K44540
High Strength Steel H-11 Mod, Fe-0.4C-5Cr-1.3Mo-0.5V	H-11 Mod, AISI Type H-11, SAE Type H-11, UNS T20611, AI Tech Potomac A, Carpenter
High Strength Steel 18Ni Maraging (250 G), Fe-18Ni-7.5Co-	

PDF在线手册

ASMD数据库是纸本手册的互动网络版，PDF手册版提供各种金属合金的补充信息，丰富了ASMD数据的内容。

PDF在线手册内容：

概况

商业名称

别名

金属规格

成分

热处理

类型&条件

熔化&铸

加工

金属处理

还有很多。。。

Aerospace Structural Metals Handbook		Non-Ferrous Alloys • AIWT										
Author: K. Brown		7475Al										
1 GENERAL	<p>Aluminum alloy 7475 is primarily an aerospace alloy used in a heat-treated condition. It is usually available as bare or clad sheet or as plate, but on occasion, extrusion and forgings have been made for special applications in place of its sister alloys, 7075 and 7175.</p> <p>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 composition reduce the amounts of second phase constituents, which result in higher fracture toughness at the same level of strength and corrosion resistance. In over-aged tempers, for example, T7, 7475 is resistant to exfoliation and stress-corrosion. Most aerospace applications are for component requiring high strength and toughness at temperatures up to 300 F.</p>	1.04 Composition (Table) Aluminum Association composition limits.	<table border="1"><tr><td>Al</td></tr><tr><td>5.6 Zn</td></tr><tr><td>2.2 Mg</td></tr><tr><td>1.5 Cu</td></tr><tr><td>0.21 Cr</td></tr><tr><td>Low Si</td></tr><tr><td>Fe</td></tr><tr><td>Mn</td></tr><tr><td>Ti</td></tr></table>	Al	5.6 Zn	2.2 Mg	1.5 Cu	0.21 Cr	Low Si	Fe	Mn	Ti
Al												
5.6 Zn												
2.2 Mg												
1.5 Cu												
0.21 Cr												
Low Si												
Fe												
Mn												
Ti												
1.01 Commercial Designations 7475 aluminum alloy		1.05 Heat Treatment 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.										
1.02 Alternate Designations UNS A97475		1.06 Hardness 1.061 T61 sheet: $R_{p0.2}$ 89; T61 sheet: $R_{p0.2}$ 85; T7351 plate: $R_{p0.2}$ 76 to 85										
1.03 Specifications 7475-T7351 plate: AMS 4202 [33] 7475-T651 plate: AMS 4990 [34]		1.07 Forms and Conditions Available Alloy 7475 is available as sheet (up to 0.25-inch thick) in both bare and clad forms, in either T61 or T761 tempers. It is also available in T7351, T7651, T76351 and T851 plate up to approximately 4-inches in thickness, and as extruded rods for the manufacture of cartridge cases. Producers and aerospace companies have also investigated the availability of 7475 structural forgings and extrusions; however, the data are not found in the open literature.										

对于 ASMD 数据库, 我们充满信心

ASMD 数据库检索快捷、高效，内容不断更新。越来越多的企业、大学、研究机构正在使用 ASMD 数据库。

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◆ 该数据库在国内由 iGroup 亚太资讯集团公司代理。