

Industry Benchmark for Critically Evaluated Materials Properties Data

CINDAS線上資料庫

航太及高性能合金資料庫 (Aerospace and High Performance Alloys Database, AHAD)

AHAD是一個線上組合資料庫,涵蓋了CINDAS兩個廣受歡迎的產品:航太結構金屬資料庫(ASMD)和高性能合金資料庫(HPAD)。 AHAD擁有338種合金的詳細資訊: 提供19,300多頁、圖文並存的PDF綜合文獻,引用 11,000多個參考資料,包含29,000多個資料組,以及近102,7000條資料曲線。 AHAD的檢索介面友好易用,能幫助用戶快速地選擇和比較特定金屬合金的屬性。

AHAD用戶和應用領域

大專院校 課程輔助教材

技術類學校專案參考&指南

政府機構新材料研究

航太工業 汽輪機設計

汽車工業 研發發動機&車架

工業供應商 製造/機械

研究類公司 研究&開發

等等

關於AHAD資料庫

AHAD資料庫涵蓋了ASMD和HPAD的所有資料。將兩個廣受歡迎的獨立資料庫合併成一個綜合資料庫,可以極大地提高檢索資料的效率。使用者只需在AHAD的綜合資料庫中進行搜索,就能同時查到ASMD和HPAD兩個獨立資

Purdue Technology Center-Aerospace, 1801 Newman Road, Suite 1150, West Lafayette IN 47906-4524 USA

Phone: 765-807-6052 • 765-807-5400 • Fax: 765-807-5291 • www.cindasdata.com

檢索和流覽AHAD資料庫

材料類別

(鋁,鈦,鎳合金,不銹鋼,等等)

材料名稱

(A1-6061, Ti-6A1-4V, Inconel 706,等等)

屬性類別

(機械,熱物理,等等)

屬性名稱

(降伏強度,伸長率,破壞韌性,腐蝕速率,等等)

AHAD資料庫含有20個屬性類別,760種不同的屬性。使用者可以使用瀏覽的方式,打開屬性類別的下拉式功能表,逐層向下查找所需的屬性。或者,使用者也可以使用檢索的方式,在檢索框中直接輸入屬性名稱的關鍵字,迅速查到所需的屬性。

熱物理

熱輻射

電、磁、核子

機械屬性

強度、應力、硬度、疲勞和裂紋成長、衝擊能、應變、收縮率、變形及其他

其他屬性

溫度

時間,使用壽命

腐蝕、氧化和重量變化

長度、厚度、直徑、尺寸和晶粒尺寸

成分含量,相位

等等

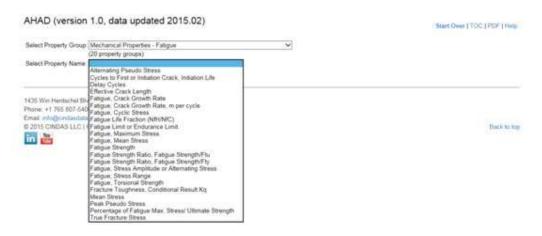
檢索和瀏覽AHAD資料庫示範

A. 查找資訊

檢索:在檢索框中直接輸入需要查找的材料名稱或者屬性名稱(全名或者部分名稱)

rowse By: Material Group	Search By: Material Name
×	Ag. is my Nobel Improy
Property Group.	Property Name Property Name Go a.g. seems Seems Reserving
DS Win Hentschel Blvd. Suite B-110, West Latayette, IN 47506-4162 USA	e.g. events, Dectris Resolving
1.00 km nemaches one. Some 6-1 iv., vest Lazyelee, iv. 47.00-4192 USA: sone: +1 765 6/07-5400; Fixx +1 765 607-5291 had: info@entlandsta.com	

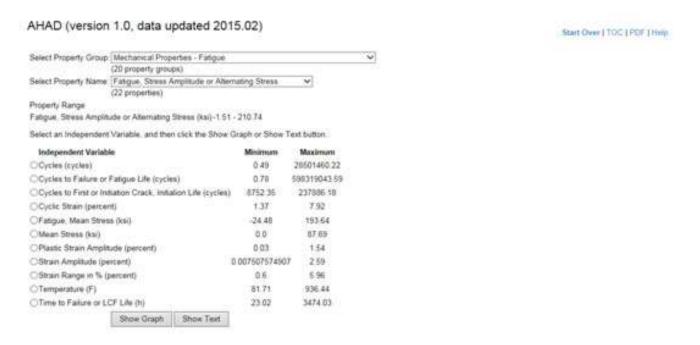
瀏覽:使用下拉式功能表,逐層向下查找所需的材料和屬性。



AHAD資料庫含有25個材料類別、338種金屬合金材料,以及20個屬性類別、760種屬性。

B. 選定資訊

選擇: 自變量



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C. 查看資訊

使用者可以在同一張圖表上比較多種材料的同一種屬性。

步驟一: 選擇材料

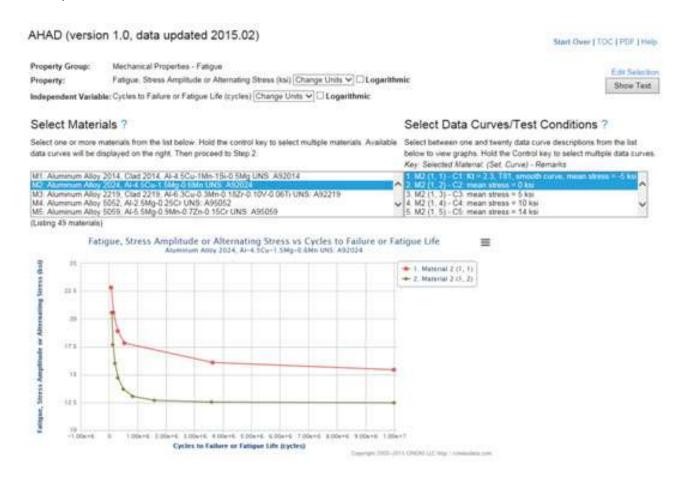
步驟二: 選擇資料曲線/測試條件

注:使用者可以隨時點擊"Show text(顯示文本)"按鈕,查看各個數據點的具體數值、相關資訊的文字 說明,以及所引用的參考資料,等等。



D. 客製化資訊的顯示形式:圖表和數字

- 近102,700條資料曲線
- 不同的資料曲線採用不同的顏色和標記繪製、標註
- 同一圖表上可以顯示不同材料、相同屬性的多條資料曲線
- 將游標停留在各個數據點上,會自動顯示相應的X和Y數值
- 可以在X和Y變數的各種常用單位之間快速地進行單位轉換(包括所有常用的英制或國際單位制單



材料交叉索引

AHAD**資料庫的材料交叉索引檔涵蓋了資料庫**內所有金屬合金的商用名和別名。**材料交叉索引檔可讓使用者在 只知道材料的商品名或商用名的情況下**,也能迅速查到所需的金屬合金。

MCode	MName	Commercial and Alternate Designations
1201	High Strength Steel #150	4130; AISI 4130; SAE 4130; 4130H; UNS G41300.
1203	High Strength Steel 4140	4140: AISI 4140: SAE 4140 4140H, UNS G41450
1204	High Strength Steel 4330V	4330V, 4330, 4330 Mod, 4330V Mod, 4330V Mod
1206	High Strength Steel 4340	4340; AISI 4340; GAE 4340; E 4340; 4340 H; UNS
1208	High Strength Steel 9630	8630; AISI 8630; EAE 8630; 8630H; UNB J13042.
1218	High Strength Steel H-11 Mat	H-11 Mod, Allil Type H-11, SAE Type H-11, UNS
1225	High Strength Steel 18Ni (300) Managing	18Ni Maraging Steet: 18Ni-Co-Mo; 18-9-5; Vascom
1226	High Strength Steel Managing 1-250	Maraging T-250, Maraging MS 250, Maraging Free
1230	High filterigth Steel H-13	Grade CH-12, GX40CrMoV5-1, X40CrMoV5, ESR
1301	Stanvess Steel Types 501 and 302	Type 301: EAE 30301: UNIS 30100
1306	Stanvess Steel Types 310, 3105	Type 310 (UNS 531000), 3106 (UNS 531008), CK
1367	Stanyess Steels Types 316 and 317	Type 316, 316L, 317, 317L, CF3M, CF6M
1306	Stanylets Steel Type 321	Type 321, 321H (11); UNG J82630, 832102, 83213
1311	Stances Size 19-9Dt.	16-6 OL AID 651 LING JOZEAN MESTOR MESTOR
1312	Stainlass Steel Type 201	Type 201, AISI 201, UNB 520100; SAE 30201
1314	Starriess Steet 21-0-9	21-6-9; Naronic 42: ASTM XM-11; UND 521004; A
1330	Stairmann Steel 15-159-ID, ISCF 260, Datatoy 2	Capertier 15-15HS, Corpertor SCF 260 Alley, ATI

PDF線上手冊

AHAD資料庫還提供了互動式的、	線上版的印刷手冊。	PDF線上手冊中包含了各種金屬合金的大量補充資訊,	亟
大地豐富了 AHAD 資料庫的 內容。			
PDF 線上手冊 內容:			
概況			
商用名			
別名			
金屬規格			
成分			
熱處理			
類型和條件			
熔化和鑄造			
加工			
金屬處理			
等等			



AEROSPACE AND HIGH PERFORMANCE -ALLOYS DATABASE



Ferrous • FeUH H-13

August 2008

Author: J. C. Benedyk

Composition limits of H-13 based on the AISI/ UNS (T20813) standards are (mass %): 0.32-0.45 C, 0.20-0.50 Mn, 0.80-1.20 Si, 4.75-5.50 Cr, 0.30 max Ni, 1.10-1.75 Mo, 0.80-1.20 V, 0.250 max Cu, 0.03 max P, and 0.03 max S. Where specified, as resulfurized H-13, sulfur may be increased to 0.06-0.15% to improve machinability. Besides the standard H-13 grade, various modified, premium, and superior grades of H-13 are

Besides the standard H-13 grade, various modified, premium, and superior grades of H-13 are available from hot work steel producers, usually with limiting phosphorus and/or sulfur levels that are below the standard composition limits to improve toughness and thermal fatigue resistance and containing principle alloying elements in particular ranges that may be outside the T20813 standard. Also, the premium grades of H-13 within T20813 composition limits are generally produced by special refining and metallurgical practices to control microstructure and especially carbide size and distribution.

1.0 General

This medium alloy, marteristic, air hardening, ultrahigh-strength steel is similar to H-11 and H-11 Mod in composition, heat treatment, and many properties. The steels H-11, H-11 Mod, and H-13 exhibit several properties that are important in airframe and landing gear applications, including the ability to be heat treated to an ultimate tensile strength of 300 ksi while having excellent thermal shock resistance. These grades are typically hardened by austenitizing and cooling in air, flowing inert gas, oil, or hot salt bath. Upon

H-13, which leads to a greater dispersion of variadium carbides and higher wear resistance. The H-13 steel also has a slightly wider range of the other principal alloying elements, allowing producers flexibility in tailoring mechanical properties for given heat Fe 5.0 Cr 1.5 Mo 1.0 V 0.35 C

treatments and applications. Premium and superior grades of H-13 have carefully controlled compositions with low levels of sulfur and phosphorus and are produced by special melting, refining, and hot forging/rolling schedules primarily to achieve a fine microstructure and improve toughness and thermal fatigue resistance over conventionally produced H-13 grades. In a few cases, some H-13 producers employ long term, high temperature, homogenization techniques with controlled cooling to refine the carbide distribution and produce a more isotropic microstructure. Powder/particle metallurgy grades of H-13 are available with significantly refined distributions of carbides and sulfides (for the high sulfur, free machining grade) to improve toughness and thermal fatigue and wear resistance relative to conventional H-13 steel that is normally produced by ingot metallurgy. Careful consideration of H-13 supply will assure a cost effective selection of steel grade for a given application.

對於 AHAD 資料庫, 我們充滿信心

AHAD **資料庫的檢索快捷、高效**,內容不斷更新。**目前,越來越多的企業、大學和研究機構正在使用** AHAD **資料** 庫。

◆ 本資料庫在台灣由智泉國際事業有限公司(VI Services Ltd. iGroup Taiwan)代理。