Aerospace & High Performance Alloys Database(AHAD)
航空宇宙及び高性能合金データベース

Data Type: データベース
Subject：治金
Publisher：CINDAS LLC
URL: https://cindasdata.com

AHADは、航空産業、オイル・ガス産業、電力産業、化学プロセッシング産業向けに2015年より開発されたWebベースの物性データベースで、CINDASのASMD(Aerospace Structural Metals Database)とHPAD(High Performance Alloys Database)の組み合わせのバージョンのWebベースの物性ファクト・データベースです。

特徴

- CINDASの集大成として、2018年も材料を追加中
- 専門家のレビューを受けた情報を提供
- AHADは航空／宇宙関連や大規模なエンジンやタービンなどの開発者のための物性にフォーカスしたファクトデータベースを提供
- 18,950ページのPDFのテキストページ、97,000以上のデータカーブと298の合金
- 10,500のレファレンス, 27000以上のデータセット
- アメリカの治金の歴史的遺産と最新の材料を融合したデータベース
- 世界中で最も大きな根拠のある金属物性ファクト・データベース
- ブラウザ（Firefox, Chrome, Safariサポート) とJavaスクリプト、Cookieのみで、参照可能
- IP認証

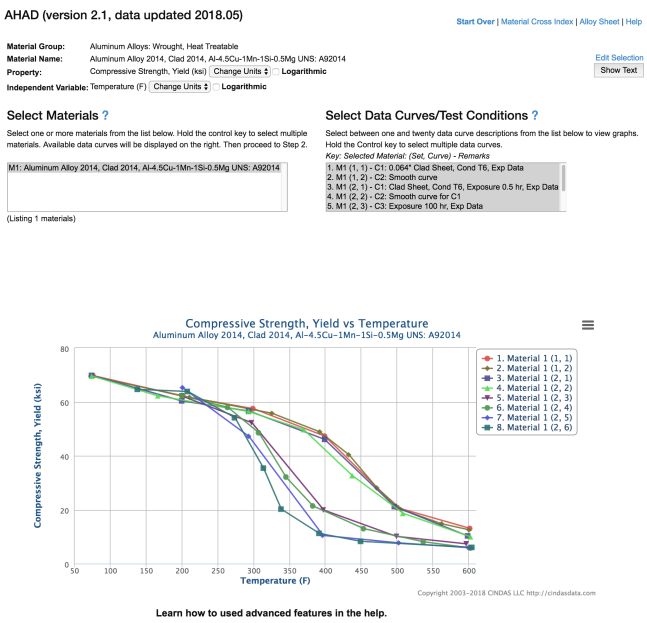
収録例：

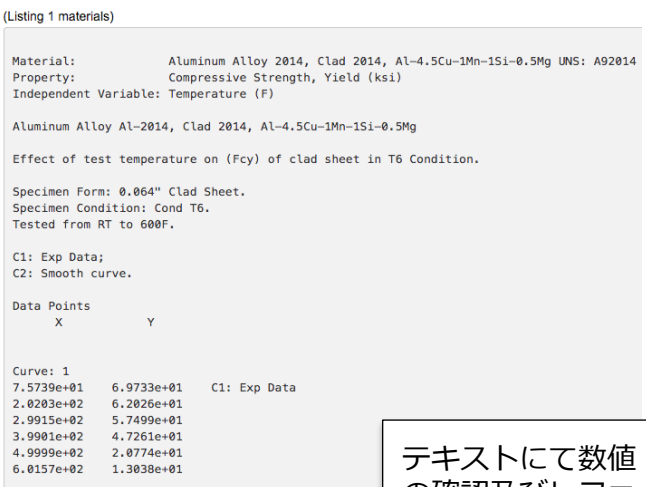
Material Group(材料グループ): Aluminum, Titanium, Nickel Alloys, Stainless Steels, etc.
Material Name(材料名): Al6061, Ti-6Al-4V, Inconel 706, etc
Property Group(物性グループ): Mechanical, Thermophysical, etc
Property Name (物性名): Yield Strength(耐力強度), Elongation(延伸), Fracture Toughness (破砕強度), Corrosion Rate(腐食度), etc

物性グループ：

Thermophysical(熱物性), Thermoradiative (熱放射物性), Electrical and Nuclear (電気的及び核物性), Mechanical Properties(機械的物性) (Strength(力学), Stress(圧力), Hardness(硬度), Fatigue & Crack Growth(疲労及び亀裂増大), Impact Energy(衝突エネルギー), Strain(ひずみ), Area Reduction(断面収縮), Deformation(変形) and others) Temperature (温度), Time, Life to Failure (時間及び機能停止までの時間), Corrosion(腐食), Oxidation(酸化), and Weight Change(重量変化) , Length(力), Thickness(厚み), Diameter(直径), Size(大きさ), and Grain Size(粒径) Content of Component(構成要素の中身), Phase(位相) など

内容のイメージ：





テキストにて数値の確認及びレファレンス確認

AEROSPACE AND HIGH PERFORMANCE ALLOYS DATABASE (AHAD)

GRADE	UNS
STAINLESS STEELS	
Austenitic	
19-9DL	J92843/K63198/K63199
20Cb-3®, INCOLOY® 20	**N08020**
203EZ	S20300
21-6-9	S21904
22Cr-13Ni-5Mn, NITRONIC® 50	**S20910**
254 SMO	**S31254**
654 SMO	**S32654**
904L	**N08904**
AL-6XN	N08367
CF8C-Plus	J92604
Datalloy 2®, 15-15 HS & LC, SCF 260	**None**
INCOLOY® 28	**N08028**
Nitronic® 60	S20162/S21800
Type 201	S20100
Types 301 & 302	S30100/S30200
Types 303/303 Se	S30300/S30323
Types 304/304L	S30400/S30403
Type 305	S30500
Types 310/310S	S31000/S31008
Type 314	S31400
Types 316 & 317	S31600/S31603 & S31700/S31703
Type 321	S32100
Types 347 & 348	S34700/S34800
Martensitic	
410Cb	S41040
9Cr-1Mo	**S50400**
AM-363	S36300
F6NM, 1.4313	**S41500**
Ferrium S53	S10500
Greek Ascoloy	S41800
Types 403, 410 & 416	S40300/S41000/S41600
Type 420	S42000
Type 422	S42200
Type 431	S43100

GRADE	UNS
STAINLESS STEELS (continued)	
Duplex	
Lean duplex family 2202, 2003, 2304, 2102	**S32202/S32003/S32304/S82011**
2205	**S31803/S32205**
2507, 4501, Zeron 100	**S32750/S32760**
FERRALLIUM® 255	**S32550**
Ferritic	
AL 29-4C	**S44735**
430	**S43000**
INCOLOY® MA 956	S67956
ALUMINUM ALLOYS	
Cast	
355/C355	A33550
380	**A13380**
390	**A13390**
A201	A02010
A356/356	A03560/A13560
A357	A13570
Wrought/Heat Treatable	
2014 & Clad 2014	A92014
2024	A92024
2024 Clad	A92024
2048	A92048
2090	A92090
2098	None
2124	A92124
2195	A92095
2219 & Clad 2219	A92219
2297	None
2519	A92519
2618	A92618
6013	A96013
6061	A96061
6069	A96069
6082	A96082

GRADE	UNS
ALUMINUM ALLOYS (continued)	
Wrought/Non-Heat Treatable	
5052	A95052
5059	A95059
5083	A95083
5090	None
5456	A95456
905XL	None
LOW ALLOY STEELS	
T-1	None
ULTRA HIGH STRENGTH STEELS	
17-22A(S)/17-22A(V)	K23015
18Ni Maraging (200 Grade)	K92810
18Ni Maraging (250 Grade)	K92890/K92940
18Ni Maraging (300 Grade)	K93120/K93160
300-M	K44220/K44540
4130	G41300
4140	G41400/J14046
4330V	J23260/K23080
4335V Mod	K33517
4340	G43400
52100	G52986
8630	G86300/J13042/J13050
9Ni Steel	K81340
9Ni-4Co	K91283
AerMet 100	K92580
AF 1410	K92571
D6A/D6AC	K24728/K24729
E9310	G93106
H-11 Mod	T20811
H-13	T20813
Hy-130/140/5Ni-Cr-Mo-V	K51255
Hy-Tuf	K32550
M50/M50 NiL Steels	K88165/T11350
Maraging T-250	K92150
Nitralloy 135 Mod	K24065
COBALT ALLOYS	

AEROSPACE AND HIGH PERFORMANCE ALLOYS DATABASE

Non-Ferrous • Ni
Haynes® 230®

Author: Dwaine Klarstrom

January 2009

1.0 General

HAYNES 230 alloy is an austenitic Ni-Cr alloy that is solid-solution strengthened by additions of tungsten and molybdenum. In addition, the precipitation of chromium-rich $M_{23}C_6$ carbides on glide dislocations enhances the high temperature creep strength of the alloy. The alloy possesses excellent resistance to oxidizing environments at temperatures up to 2100F due to its high chromium content in combination with the minor elements silicon, manganese and lanthanum. Its low coefficient of thermal expansion provides the alloy with excellent resistance to thermal fatigue. The alloy has a balanced composition that avoids the formation of intermetallic phases such as sigma, mu or laves phases that could significantly reduce the ductility of the alloy. The alloy retains high levels of ductility and toughness following long term exposures in the 1200–1600F range. This leads to good resistance to thermal fatigue after long service exposures and good repairability characteristics. The microstructure consists of a face-centered cubic matrix and a large number of primary, tungsten-rich, M_6C carbides which control grain size and constrain grain growth when the alloy is exposed to very high temperatures for prolonged periods of time. Due to its high nickel content, the alloy also possesses good resistance to carburizing and nitriding environments. The alloy was commercialized in 1984 for high temperature components requiring excellent creep strength and oxidation resistance. Primary applications include combustors, transition ducts and temperature sensors in gas turbine engines and nozzles for rocket engines. Other applications include catalyst grid

1.5 Heat Treatment

HAYNES 230 alloy is supplied in the solution heat-treated condition unless otherwise specified. The alloy is solution heat treated in the temperature range of 2150F to 2250F and rapidly cooled or water quenched for optimum properties. Annealing the alloy at lower temperatures will result in carbide precipitation which may marginally affect the alloy's strength and ductility. (Ref. 2)

	Ni
22.0	Cr
14.0	W
2.0	Mo
0.65	Mn
0.5	Si
0.35	Al
0.1	C
0.0275	La

1.6 Hardness

1.6.1 *[Table]* HAYNES 230 alloy: Hardness of various product forms

1.6.2 *[Table]* HAYNES 230 alloy: Hardness after imposed coldwork

1.7 Forms and Conditions Available

HAYNES 230 alloy is available in the forms of sheet, strip, foil, plate, bar, billet, wire, pipe and tubing. It is furnished in the solution heat treated condition. (Ref. 2)

■ニッケル鋼,クロム系ステンレス鋼、アルミ合金、マグネシウム合金、ニッケル基合金、スーパーアロイまで収録

■商用製品との対照表も提供