High Performance Alloys Database(HPAD)
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

HPADは、オイル・ガス産業、電力産業、化学プロセッシング産業、輸送産業向けに2015年より開発されたWebベースの物性データベースです。従来より、CINDAS社で提供するASMD(Aerospace Structural Metals Database）の航空宇宙産業と異なる産業向けのWebベースの物性ファクト・データベースです

特徴

- CINDASの主要製品の一つとして、2016年に提供開始、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
- HPADは高性能合金を設計する技術者向けに、腐食性能や接合などの詳細な物性にフォーカスしたファクトデータベースを提供
- 9,700PDFのテキストページ、46,950以上のデータカーブと137の合金
- アメリカの治金の歴史的遺産と最新の材料料を融合したデータベース
- 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

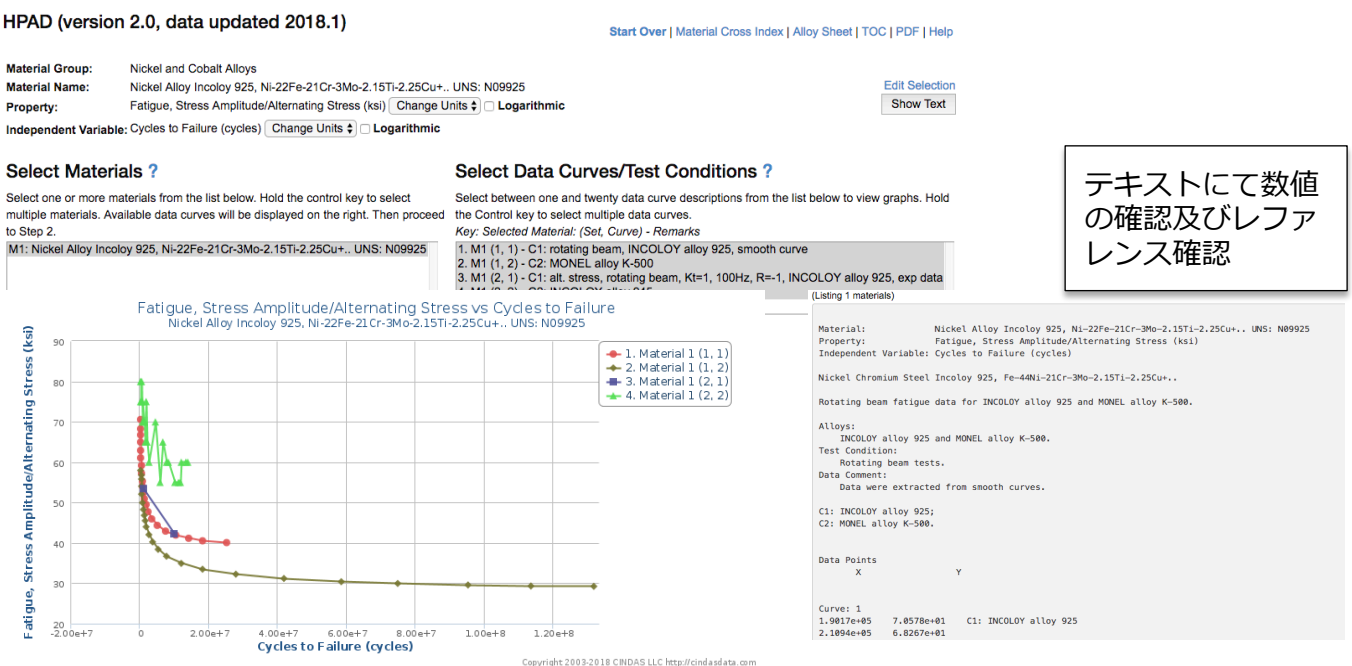
収録例：

Material Group(材料グループ): Aluminum, Titanium, Nickel Based Alloys, Stainless Steels, など.
Material Name(材料名): Al6061, Ti-6Al-4V, Inconel 706, など
Property Group(物性グループ): Mechanical, Thermophysical, など
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：

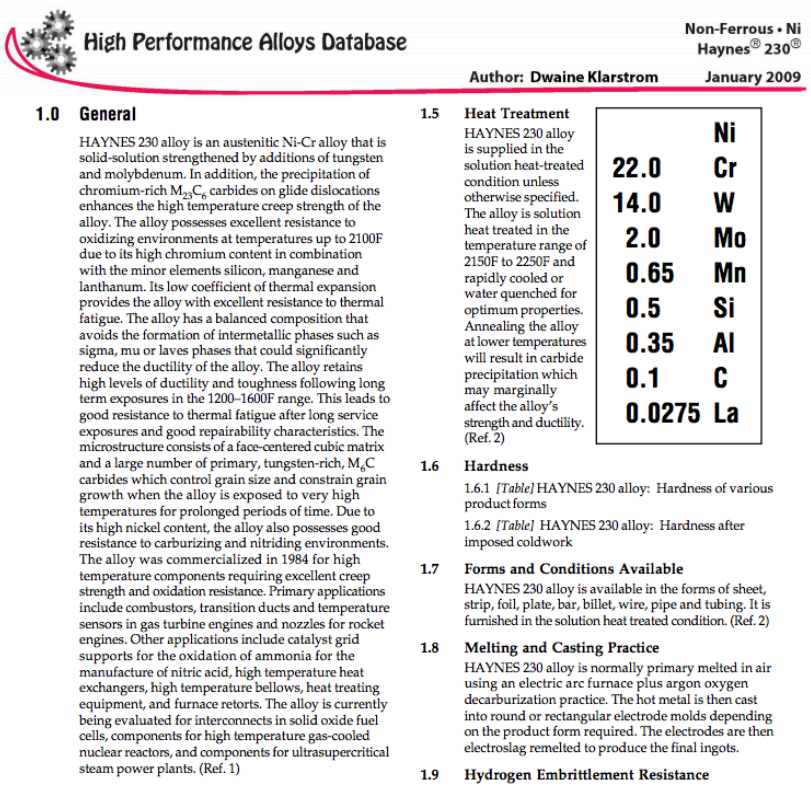


HIGH PERFORMANCE ALLOYS DATABASE (HPAD)

GRADE	UNS
STAINLESS STEELS	
Austenitic	
19-9DL	J92843/K63198/K63199
20Cb-3®, INCOLOY® 20	N08020
20Mo-6® HS	N08036
21Cr-6Ni-9Mn	S21904
22Cr-13Ni-5Mn, NITRONIC® 50	S20910
254 SMO	S31254
654 SMO	S32654
904L	N08904
AL-6XN	N08367
Datalloy 2®, 15-15 HS & LC, SCF 260	None
INCOLOY® 28	N08028
INCOLOY® 800	N08800
INCOLOY® 800H	N08810
INCOLOY® A-286	K66286/S66286
NITRONIC® 60	S20162/S21800
Type 201	S20100
Types 301 & 302	S30100/S30200/S30430
Types 303/303 Se	S30300/S30323
Types 304/304L	S30400/S30403
Type 310/310S	S31000
Types 316 & 317	S31600/S31603 & S31700/S31703
Type 321	S32100
Types 347 & 348	S34700/S34800
Martensitic	
9Cr-1Mo	S50400
F6NM, 1.4313	S41500
Types 403, 410 & 416	S40300/S41000/S41600
Type 420	S42000
Precipitation Hardening	
15-5PH	J92100/S15500
17-4PH	S17400

GRADE	UNS
STAINLESS STEELS (continued)	
Ferritic	
AL 29-4C	S44735
430	S43000
INCOLOY® MA 956	S67956
NICKEL AND COBALT ALLOYS	
ATI 718Plus®	N07818
Custom Age 625 Plus®	N07716
HASTELLOY® B-3®	N10675
HASTELLOY® C-22HS®	N07022
HASTELLOY® C-276	N10276
HASTELLOY® C-2000®	N06200
HASTELLOY® X	N06002
HAYNES® 188	R30188
HAYNES® 230®	N06230
HAYNES® 242®	N10242
HAYNES® 263	N07263
HAYNES® 282®	N07208
HAYNES® G-35®	N06035
HAYNES® HR-120®	N08120
HAYNES® HR-160®	N12160
INCOLOY® 825	N08825
INCOLOY® 901	N09901
INCOLOY® 925	N09925
INCONEL® 601	N06601
INCONEL® 617	N06617
INCONEL® 625	N06625
INCONEL® 690	N06690
INCONEL® 706	N09706
INCONEL® 718	N07718
INCONEL® 783	R30783
INCONEL® X-750	N07750
L-605, HAYNES® 25	R30605

GRADE	UNS
MAGNESIUM ALLOYS	
Wrought	
AZ31A, C & D	M11311/M11312
AZ31B	M11311/M11312
ZK60A	M16600
Cast	
AZ91	M11910
ALUMINUM ALLOYS	
Wrought	
2014 & Clad 2014	A92014
2024	A92024
2024 Clad	A92024
2219 & Clad 2219	A92219
2519	A92519
2618	A92618
5059	A95059
5083	A95083
5456	A95456
6061	A96061
7050	A97050
7075 & Clad 7075	A97075
7129/7029	A97129
Cast	
A201	A02010
A357	A13570
355	A13550
356	A13560
380	A13380
390	A13390
HIGH STRENGTH STEELS	
18Ni Maraging (250 Grade)	K92890/K92940



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 supports for the oxidation of ammonia for the manufacture of nitric acid, high temperature heat exchangers, high temperature bellows, heat treating equipment, and furnace retorts. The alloy is currently being evaluated for interconnects in solid oxide fuel cells, components for high temperature gas-cooled nuclear reactors, and components for ultrasupercritical steam power plants. (Ref. 1)

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)

1.8 Melting and Casting Practice

HAYNES 230 alloy is normally primary melted in air using an electric arc furnace plus argon oxygen decarburization practice. The hot metal is then cast into round or rectangular electrode molds depending on the product form required. The electrodes are then electroslag remelted to produce the final ingots.

1.9 Hydrogen Embrittlement Resistance

■ニッケル・コバルト鋼,オーステナイト系ステンレス鋼、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

■商用利用の製品との対照表も提供

お問合せ先

iJapan株式会社
[iGroup Asia Pacific Japan]

〒101-0047
東京都千代田区内神田1-5-16 アルテ大手町9F

Tel: 03-5577-4899
Fax: 03-5577-4809
Mail: info@igroupjapan.com
Web: www.igroupjapan.com