

The following is a summary of nominal compositions of cast superalloys, including links or references to the source of that information.

Would you like to submit more information on these alloys or on another alloy?

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ALLOY	DESCRIPTION	COMPOSITION (WT%)													REFERENCE
		Ni	Cr	Co	Mo	Fe	Al	Ti	Ta	W	Zr	C	B	Others	
B1900	Common equiaxed casting alloy	64	8	10	6	...	6	1	4	...	0.10	0.1	0.015	B-1900+Hf also contains 1.5% Hf	M. J. Donachie and S. J. Donachie, Superalloys: A Technical Guide, 2 nd . Edition, ASM International, 2002
C263	Wrought Alloy.	bal.	20	20	5.8	0.7	0.45	2.15	...	...	...	0.06	...	0.6 Mn, 0.4 Si	Superalloys 2000: Isothermal and Thermomechanical Fatigue of Superalloy C263 pp. 545-552 Y. H. Zhang and D. M. Knowles
CM186LC	Ni-base superalloy, contains Re, outstanding castability, used in as-cast & double aged condition, designed for use in the directionally solidified form	bal.	6	9	0.5	...	5.7	0.7	3	8	0.005	0.07	0.015	1.4 Hf, 3 Re	C-M Group: Nickel Base DS Alloy Index
CMSX-10	Nickel-base single crystal, known for strength and castability. Contains Re.	bal.	2	3	0.4	....	5.7	0.2	8	5	...	...	...	0.1 Nb, 0.03 Hf, 6 Re	C-M Group: Nickel Base Single Crystal Alloy Index
		bal.	1.5	3	0.4	...	5.8	0.1	8	5	...	...	...	0.05 Nb, 0.03 Hf, 7 Re	C-M Group: Nickel Base Single Crystal Alloy Index
CMSX-3	Hf addition to CMSX-2	bal.	8	5	0.6	...	5.6	1	6	8	...	...	....	0.1 Hf	C-M Group: Nickel Base Single Crystal Alloy Index
CMSX-4	"single crystal material hardened by about 70 vol%-gamma' with solid solution strengthening of the gamma channels in-between the cuboidal gamma' particles due to the addition of 3 wt% Re" (Schubert, Rieck, and Ennis)	bal.	6.5	9	0.6	...	5.6	1	6.5	6	...	...	...	0.1 Hf, 3 Re, 0.002 La+Y	C-M Group: Nickel Base Single Crystal Alloy Index
CMSX486	Nickel-base single crystal superalloy. Grain boundary strengthened By B, C, Hf & Zr. Resistant to thermal fatigue, low-cycle fatigue and oxidation.	bal.	5	9	0.7	...	5.7	0.7	4.5	9	0.005	0.07	0.015	1 Hf, 3 Re	C-M Group: Nickel Base Single Crystal Alloy Index
GTD 222	polycrystalline, Ni-Co-Cr-W	bal.	22.5	19	...	...	1.2	2.3	1	2	0.012	0.10	0.005	0.8 Nb	C-M Group: Nickel Base Equiax Alloy Index
Inconel 713C	high temperature ductility and strength, no heat treatment necessary for attaining required properties, candidate for continuous casting	bal.	13.5	...	4.5	...	6	0.8	...	...	0.06	0.10	0.010	2 Nb	C-M Group: Nickel Base Equiax Alloy Index
Inconel 713LC	Nickel-base equiaxed cast alloy.	bal.	12	...	4.3	...	5.8	0.7	0.06	0.06	0.007	2 Nb	C-M Group: Nickel Base Equiax Alloy Index

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Inconel 738 LC	gamma and gamma'-(Ni3Al)	bal.	16	8.5	1.7	...	3.5	3.5	1.7	2.5	0.05	0.09	0.010	2 Nb	C-M Group: Nickel Base Equiax Alloy Index
Inconel 939	Ni-Cr-Co casting alloy with improved strength at elevated temperatures, but not as amenable to weld repair as IN718.	bal.	22.4	19	...	...	1.9	3.7	1.4	1.6	0.1	0.15	0.010	1 Nb	C-M Group: Nickel Base Equiax Alloy Index
Mar M 200	Nickel-base equiaxed cast alloy.	bal.	9	10	...	...	5	2	...	12.5	0.05	0.15	0.015	1.8 Nb	C-M Group: Nickel Base Equiax Alloy Index
Mar M 246	Nickel-base equiaxed cast alloy.	bal.	9	10	2.5	...	5.5	1.5	1.5	10	0.05	0.15	0.015		C-M Group: Nickel Base Equiax Alloy Index
Mar M 247	Common nickel-based, equiaxed casting alloy, no Re	bal.	8.2	10	0.6	...	5.5	1	3	10	0.05	0.16	0.015	1.5 Hf	C-M Group: Nickel Base Equiax Alloy Index
Mar M 509	common equiaxed casting alloy, Cobalt-based	10.0	23.4	bal.	...	...	...	0.2	3.5	7.0	0.5	0.6	...		Superalloys 2004: A New Method of Metal Temperature Estimation For Service-Run Blades and Vanes [pp. 759-768] K. A. Ellison, J. A. Daleo, K. Hussain
PWA 1480	Nickel base single crystal alloy.	bal.	10	5	...	...	5	1.5	12	4	...	...	0.003		C-M Group: Nickel Base Single Crystal Alloy Index
PWA 1484	Ni-Co-Cr-Al-Ta-W-Mo-Re single crystal alloy (no Ti)	bal.	5.0	10.1	1.9	...	5.7	...	8.7	5.9	...	...	...	3.0 Re	Oxidation Improvements of Low Sulfur Processed Superalloys [pp. 387-392] T.M. Simpson and A.R. Price
Rene 220	Nickel-base equiaxed cast alloy with enhanced temperature capability and weldability with respect to 718. As compared to 718, Rene 220 has Co instead of Fe and the latter also has Ta.	51.46 - 59.08	18 - 22	11 - 13	3 - 3.4	...	...	0.9 - 1.1	3 - 3.5	...	...	0.02 - 0.04	...	5 - 5.5 Nb	Matweb
Rene 80	Cast nickel-base superalloy. Has been studied in conventionally cast form and in directionally solidified and single crystal forms.	bal.	14	9.5	4	...	3	5	...	4	0.03	0.16	0.015		C-M Group: Nickel Base Equiax Alloy Index
Rene N4	single crystal cast Ni based superalloy	bal.	10	8	2	...	4.2	3.5	5	6	0.5 Nb, 0.2 Hf	C-M Group: Nickel Base Single Crystal Alloy Index

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Rene N5	single crystal cast Ni based superalloy	bal.	7	8	2	...	6.2	...	6	5	0.2 Hf, 3 Re	C-M Group: Nickel Base Single Crystal Alloy Index
Rene N6	single crystal cast Ni based superalloy	bal.	4	12	1	...	5.8	...	7	6	...	...	...	0.2 Hf, 5 Re	C-M Group: Nickel Base Single Crystal Alloy Index
TMS-138	NIMS' 4th generation Ni-Co-Cr-Mo-W-Al-Ta single crystal alloy to which Re & Ru was added. High volume fraction of gamma'	bal.	3.2	5.8	2.8	...	5.9	...	5.6	5.9	...	...	...	0.1 Hf, 5.0 Re, 2.0 Ru	NIMS
TMS-162	NIMS' newest Ni-Co-Cr-Mo-W-Al-Ta single crystal alloy to which Re & Ru was added. High volume fraction of gamma'.	bal.	2.9	5.8	3.9	...	5.8	...	5.6	5.8	...	...	...	0.1 Hf, 4.9 Re, 6.0 Ru	Superalloys 2004: Creep Deformation Mechanisms in Some Modern Single-Crystal Superalloys [pp. 189-195] J.X. Zhang, T. Murakumo, H. Harada, Y. Koizumi, T. Kobayashi
TMS-75	NIMS' 3rd generation Ni-Co-Cr-Mo-W-Al-Ta single crystal alloy containing Re additions. High volume fraction of gamma'.	bal.	3	12	2	...	6	...	6	6	...	...	...	0.1 Hf, 5 Re	NIMS