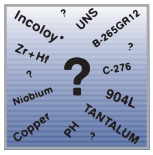
PAI USA
PETROLEUM ACCESSORIES, INC
11261 RICHMOND AVENUE - SUITE G 110
HOUSTON TEXAS 77082
PH : 1 281 . 589 . 9337 - FX : 1 281 . 589 . 7706
E-mail : info@paihouston.com - Website : www.paihouston.com



PAI FRANCE
PRODUITS ET ACCESSOIRES INDUSTRIELS S.A.S
21, Route départementale 940
76930 OCTEVILLE SUR MER
PH : 33(0)2 35 20 80 60 - FX : 33(0)2 35 55 04 40
E-mail : info@paifrance.com - Website : www.paifrance.com

Cross Over Chart Alloys

Compilation of technical data.
PAI does not assume any responsibility.

Steel Grade :

- chemical composition may vary according the different forms of products (bar, plate, casting, forging, seamless or welded products)
- chemical / mechanical properties variances may occure between the correspondances

STAINLESS STEEL/ACIERS INOXYDABLES ET REFRACTAIRES

CROSS OVER				AISI	CHEMICAL COMPOSITION/COMPOSITION CHIMIQUE, % (2)							
Uns	Euro/din	AFNOR	Werkstoff		C (1)	Mn max	P max	S max	Si max	Ni (1)	Cr	Mo	Others
S 41000	X12Cr13	Z10C13	1,4006	410	0,15	1,00	0,040	0,030	0,75	0,50	11,5-13,5		
S 43000	X6Cr17	Z8C17	1,4016	430	0,12	1,00	0,040	0,030	0,75	0,50	16,0-18,0		
S 43036/ S 43900	X5CrTi17	Z4CT17	1,4510	430 Ti	0,10	1,00	0,040	0,030	1,00	0,75	16,00-19,50		5xc≤Ti≤0,75
S 30400	X5CrNi18.10	Z6CN18.09	1,4301	304	0,08	2,00	0,040	0,030	0,75	8,00-11,0	18,0-20,0		
S 30409	X6CrNi18.11	Z6CN18.11	1,4948	304 H	0,04-0,10	2,00	0,040	0,030	0,75	8,00-11,0	18,0-20,0		
S 30403	X2CrNi19.11	Z3CN19.11 Z3CN18.10	1,4306	304 L	0,035	2,00	0,040	0,030	0,75	8,00-13,0	18,0-20,0		
S 31000	X15CrNiSi25.20	Z15CNS25.20	1,4841	310	0,15	2,00	0,040	0,030	0,75	19,0-22,0	24,0-26,0		
S 31600	X5CrNiMo17.12.2	Z7CND17.11.02	1,4401	316	0,08	2,00	0,040	0,030	0,75	11,0-14,0(3)	16,0-18,0	2,00-3,00	
S 31609	X6CrNiMo17.13	Z6CND 17.12	1,4919	316 H	0,04-0,10	2,00	0,040	0,030	0,75	11,0-14,0(3)	16,0-18,0	2,00-3,00	
S 31603	X2CrNiMo17.13.2	Z3CND18.12.02	1,4404	316 L	0,035	2,00	0,040	0,030	0,75	10,0-15,0	16,0-18,0	2,00-3,00	
S 31635	X6CrNiMoTi17.12.2	Z6CNDT 17.12	1,4571	316 Ti	0,08	2,00	0,045	0,030	1,00	10,0-14,00	16,0-18,0	2,00-3,00	5x(c+n)≤Ti≤0,70: N≤0,10
S31700	X5CrNiMo17.13	Z6CND17.12.04	1,4449	317	0,08	2,00	0,040	0,030	0,75	11,0-14,0	18,0-20,0	3,00-4,00	
S 31703	X2CrNiMo18.16.4	Z3CND19.15.04	1,4438	317 L	0,035	2,00	0,040	0,030	0,75	11,0-15,0	18,0-20,0	3,00-4,00	
S 32100	X6CrNiTi18.10	Z6CNT18.10	1,4541	321	0,08	2,00	0,040	0,030	0,75	9,00-13,0	17,0-20,0		5xc≤Ti≤0,70
S 32109	X12CrNiTi18.9	Z6CNT18.12	1,4878	321 H	0,04-0,10	2,00	0,040	0,030	0,75	9,00-13,0	17,0-20,0		4xc≤Ti≤0,60
S 34700	X6CrNiNb18.10	Z6CNNb18.10	1,4550	347	0,08	2,00	0,040	0,030	0,75	9,00-13,0	17,0-20,0		10xc≤(nb+ta)≤1,00

SPECIAL STAINLESS-HIGH CORROSION/ACIERS INOX SPECIAUX-CORROSION SEVERE

CROSS OVER				commercial terms	CHEMICAL COMPOSITION/COMPOSITION CHIMIQUE, %								
Uns	Euro/din	AFNOR	Werkstoff		C (1)	Mn max	P max	S max	Si max	Ni (1)	Cr	Mo	Others
N08904	X1NiCrMoCu25.20.5	Z2NCDU 25.20	1,4539	URANUS B6®, 254 SLX®, 904 L®, 2 RK 65®, Cronifer 19.25 LC®	0,020	2,0	0,045	0,035	1,00	23,00-28,00	19,00-23,00	4,00-5,00	Cu=1,00-2,00
S31254	X1CrNiMoCuN20.18.7	Z1CNDU20.18AZ	1,4547	254 SMO®	0,020	1,0	0,030	0,010	0,80	17,50-18,50	19,50-20,50	6,00-6,50	Cu=0,50-1,00 N=0,18-0,22
S31803/ S32205	X2CrNiMoN22.5.3	Z3CND22.05AZ	1,4462	DUPLEX 22.05®, SAF22.05®, 223 FAL®, URANUS 45 N® Cronifer 22.05LCN®	0,030	2,0	0,030	0,020	1,00	4,50-6,50	21,00-23,00	2,50-3,50	N=0,08-0,20
N08028	X1NiCrMoCu31.27.4	Z1NCDU31.27.03	1,4563	Sanicro 28®, Nicrofer 31.27 LC®	0,030	2,5	0,030	0,030	1,00	29,50-32,50	26,00-28,00	3,00-4,00	Cu=0,60-1,40

ALLOY STEEL NICKEL & TITANE/ALLIAGES DE NICKEL ET TITANE

CROSS OVER				COMMON TERMS	CHEMICAL COMPOSITION/COMPOSITION CHIMIQUE, % (3)						
Uns	Euro/din	AFNOR	Werkstoff		C (1)	Ni	Cr	Mo	Fe	Cu	Others
N02200	Ni99.2	Ni99.2	2,4066	NICKEL 200®	0,15	99,0 min			0,40 max	0,25 max	
N02201	Lc.Ni99	LC-Ni99	2,4068	NICKEL 201®	0,02	99,0 min			0,40 max	0,25 max	
N04400	NiCu30Fe	Nu30	2,4360	MONEL 400®	0,3	63,0 min			2,5 max	28,0-34,0	
N06600	NiCr15Fe	Nc15Fe	2,4816	INCONEL 600®	0,15	72,0 min	14,0-17,0		6,0-10,0	0,5 max	
N06601	NiCr23Fe	NC23Fe	2,4851	INCONEL 601®	0,10	58,0-63,0	21,0-25,0		Bal	1,0 max	Al=1,0-1,7
N06625	NiCr22Mo9Nb	NC22DNb	2,4856	INCONEL 625®	0,10	58,0 min	20,0-23,0	8,0-10,0	5,0 max		Nb+Ta=3,15-4,15
N08800	X10NiCrAlTi32.20	Z10NC32.21	1,4876	INCOLOY 800®	0,10	30,0-35,0	19,0-23,0		39,5 min	0,75 max	Al=0,15-0,60 Ti=0,15-0,60
N08810	X5NiCrAlTi31.20	Z10NC32.21	1,4958	INCOLOY 800 H®	0,05-0,10	30,0-35,0	19,0-23,0		39,5 min	0,75 max	Al=0,15-0,60 Ti=0,15-0,60
N08825	NiCr21Mo	NC21FeDu	2,4858	INCOLOY 825®	0,05	38,0-46,0	19,5-23,5	2,5-3,5	22,0 min	1,5-3,0	Al=0,2 max Ti=0,6-1,2
N08330	X12NiCrSi35.16	Z20NCS33.16	1,4864	INCOLOY DS®	0,10	34,0-37,0	17,0-20,0		Bal	1,00 max	Si=0,75-1,50
N10001			2,4800	HASTELLOY B®	0,05	Bal	1,0 max	26,0-30,0	4,0-6,0		Co≤2,5 v=0,2-0,4
N10665	NiMo28		2,4617	HASTELLOY B-2®	0,02	Bal	1,0 max	26,0-30,0	2,0 max		Co≤1,0
N06455	NiMo16Cr16Ti		2,4610	HASTELLOY C-4®	0,015	Bal	14,0-18,0	14,0-17,0	3,0 max		Co≤2,0 Ti≤0,7
N10276	NiMo16Cr15W	NiMo16Cr15	2,4819	HASTELLOY C-276®	0,010	Bal	14,5-16,5	15,0-17,0	4,0-7,0		w=3,0-4,5 Co≤2,5
N08020	NiCr20CuMo		2,4660	CARPENTER 20 Cb3®	0,07	32,0-38,0	19,0-21,0	2,0-3,0	Bal	3,0-4,0	8xC (Nb+Ta)≤1,00
Grade 2			3,7035	Ti UT 40®	0,10	Pure Titanium			0,30 max		N≤0,03 H≤0.015, O≤0,25

1. Maximum value if only one value is indicated
2. The characteristics are pulled from following :
   - for ferritic steel of the ASTM A268-85A
   - for austenitic steel of the ASTM A312-85A except for the grade 316Ti
   - for the grade 316Ti of the ASTM A240-85
3. The characteristics are pulled from the first ASTM specifications designed for pipes.