

WILFLEY®

HEAVY DUTY CENTRIFUGAL PUMPS

Materials in Common Use

Material	ASTM Specification	Hardness HBN	Minimum Tensile Strength psi (MPa)	Minimum Yield Strength psi (MPa)	Minimum Elongation	Chemical Composition (Weight %)									
						C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Fe
304L	ASTM A743 Grade CF-3	170	75,000 (517)	30,000 (207)	35%	0.03 max.	1.5 max.	2.0 max.	0.04 max.	0.04 max.	17.0 - 21.0	8.0 - 12.0	-	-	Balance
316L	ASTM A743 Grade CF-3M	180	70,000 (483)	30,000 (207)	30%	0.03 max.	1.5 max.	1.5 max.	0.04 max.	0.04 max.	17.0 - 22.0	9.0 - 13.0	2.0 - 3.0	-	Balance
Alloy 20	ASTM A743 Grade CN7M	125-160	62,000 (427)	25,000 (172)	35%	0.07	1.5 max.	1.5 max.	0.04 max.	0.04 max.	19 - 22	27.5 - 30.5	2.0 - 3.0 max.	3.0 - 4.0	Balance
Alloy B	ASTM A494 Grade N7M Mod.	190-210	76,000 (524)	40,000 (276)	20%	0.03 max.	0.8 max.	0.8 max.	0.04 max.	0.03 max.	1.0 max.	Balance	27.5 - 33.0	-	2.0 max.
Alloy C	ASTM A494 Grade CW-2M	140-170	72,000 (796)	40,000 (276)	20%	0.02 max.	1.0 max.	0.8 max.	0.03 max.	0.03 max.	15.0 - 17.5	Balance	15.0 - 17.0	-	2.0 max.
Alloy C Max	ASTM A494 Grade CW-2M	140-170	72,000 (796)	40,000 (276)	60%	0.02 max.	1.0 max.	0.8 max.	0.03 max.	0.03 max.	15.0 - 17.5	Balance	15.0 - 17.0	-	2.0 max.
Alloy G	ASTM A494 Grade CX2MW Mod.	190-250	80,000 (552)	45,000 (310)	30%	0.03 max.	1.5 max.	0.8 max.	0.04 max.	0.025 max.	28.0 - 31.5	Balance	4.0 - 6.0	1.0 - 2.4	13.0 - 17.0
CD4MCuN	ASTM A890 Grade 1B	245-265	100,000 (689)	70,000 (483)	16%	0.04 max.	1.0 max.	1.0 max.	0.04 max.	0.04 max.	24.5 - 26.5	4.75 - 6.0	1.75 - 2.25	2.75 - 3.25	Balance
WCD4™	ASTM A890 Grade 1B	320-370	164,000 (1,131)	113,000 (779)	16%	0.04 max.	1.0 max.	1.0 max.	0.04 max.	0.04 max.	24.5 - 26.5	4.75 - 6.0	1.75 - 2.25	2.75 - 3.25	Balance
MAXALLOY® 2	ASTM A532 Class II, Type B	650-720	-	-	-	2.0 - 3.3	2.0 max.	1.5 max.	0.1 max.	0.06 max.	14.0 - 18.0	2.5 max.	3.0 max.	1.2 max.	Balance
MAXALLOY® 5	ASTM A532 Class III, Type A	550-675	-	-	-	2.0 - 3.3	2.0 max.	1.5 max.	0.1 max.	0.06 max.	23.0 - 30.0	2.5 max.	3.0 max.	1.2 max.	Balance
MAXALLOY® 5A	ASTM A532 Class III, Type A	700-800	-	-	-	2.0 - 3.3	2.0 max.	1.5 max.	0.1 max.	0.06 max.	23.0 - 30.0	2.5 max.	3.0 max.	1.2 max.	Balance
NiHard	ASTM A532 Class I, Type D	600-655	-	-	-	2.5 - 3.6	2.0 max.	2.0 max.	0.1 max.	0.15 max.	7.0 - 11.0	4.5 - 7.0	1.5 max.	-	Balance
White Iron	Similar to A532	400 - 460	-	-	-	3.1 - 3.4	0.6 - 0.9	0.2 - 0.5 max.	0.1 max.	0.1 max.	1.75 - 2.25	-	1.0 max.	-	Balance
Ductile Iron	ASTM A536 Grade 65-45-12	140-180	-	-	-	3.4 - 3.9	0.4 max.	2.4 - 2.9	0.08 max.	0.02 max.	0.3 max.	1.0 max.	1.0 max.	0.3 max.	Balance

NOTES:

1. Alloy C and Alloy C Max also contain 1.0% max. tungsten (W)
2. Alloy G also contains 5.0% max. cobalt (Co), 2.5% - 3.5% tungsten (W), and 0.35% max. vanadium (V)
3. CD4MCuN and WCD4™ also contain 0.1% - 0.25% nitrogen (N)