

Valve Casting Material Metallurgical Chemical & Mechanical Specification

Duplex Stainless Steel A890/A995

Alloy/ Common Name	ASTM	Type	Chemical Composition				Physical Properties	
255SS, UNS J93370, CD4MCu	A890 1A*	25Cr-5Ni-Mo-Cu	Carbon	0.04% Max	Nickel	4.75 - 6.0%	Tensile Strength	100,000 PSI Min
			Manganese	1.00% Max	Chromium	24.5 - 26.5%	Yield Strength	70,000 PSI Min
			Silicon	1.00% Max	Molybdenum	1.75 - 2.25%	Elongation at 2in.	16.0% Min
			Phosphorus	0.04% Max	Copper	2.75 - 3.25%		
			Sulfur	0.04% Max	Iron	Balance		
UNS J93372, CD4MCuN	A890 1B†(A) A995 1B	25Cr-5Ni-Mo-Cu-N	Carbon	0.04% Max	Nickel	4.7 - 6.0%	Tensile Strength	100,000 PSI Min
			Manganese	1.0% Max	Chromium	24.5 - 26.5%	Yield Strength	70,000 PSI Min
			Silicon	1.0 % Max	Molybdenum	1.7 - 2.3%	Elongation at 2in.	16.0% Min
			Phosphorus	0.04% Max	Copper	2.7 - 3.3%		
			Sulfur	0.04% Max	Nitrogen	0.15 - 0.25%		
UNS J93373, CD3MCuN	A890 1C*(B)	25Cr-6Ni-Mo-Cu-N	Carbon	0.03% Max	Nickel	5.6 - 6.7%	Tensile Strength	100,000 PSI Min
			Manganese	1.20% Max	Chromium	24.0 - 26.7%	Yield Strength	65,000 PSI Min
			Silicon	1.10% Max	Molybdenum	2.9 - 3.8%	Elongation at 2in.	25.0% Min
			Phosphorus	0.03% Max	Copper	1.40 - 1.9%		
			Sulfur	0.03% Max	Nitrogen	0.22 - 0.33%		
UNS J93345, CE8MN	A890 2A† A995 2A	24Cr-10Ni-Mo-N	Carbon	0.08% Max	Nickel	8.0 - 11.0%	Tensile Strength	95,000 PSI Min
			Manganese	1.00% Max	Chromium	22.5 - 25.5%	Yield Strength	65,000 PSI Min
			Silicon	1.50% Max	Molybdenum	3.0 - 4.5%	Elongation at 2in.	25.0% Min
			Phosphorus	0.04% Max	Nitrogen	0.10 - 0.30%		
			Sulfur	0.04% Max				
UNS J93371, CD6MN	A890 3A† A995 3A	25Cr-5Ni-Mo-N	Carbon	0.06% Max	Nickel	4.0 - 6.0%	Tensile Strength	95,000 PSI Min
			Manganese	1.00% Max	Chromium	24.0 - 27.0%	Yield Strength	65,000 PSI Min
			Silicon	1.00% Max	Molybdenum	1.75 - 2.5%	Elongation at 2in.	25.0% Min
			Phosphorus	0.04% Max	Nitrogen	0.15 - 0.25%		
			Sulfur	0.04% Max				
2205SS, UNS J92205, CD3MN	A890 4A† A995 4A	22Cr-5Ni-Mo-N	Carbon	0.03% Max	Nickel	4.5 - 6.5%	Tensile Strength	90,000 PSI Min
			Manganese	1.50% Max	Chromium	21.0 - 23.5%	Yield Strength	60,000 PSI Min
			Silicon	1.00% Max	Molybdenum	2.5 - 3.5%	Elongation at 2in.	25.0% Min
			Phosphorus	0.04% Max	Copper	1.00% Max		
			Sulfur	0.02% Max	Nitrogen	0.10 - 0.30%		
UNS J93404, CE3MN (Super Duplex)	A890 5A† (B) A995 5A (B)	25Cr-7Ni-Mo-N	Carbon	0.03% Max	Nickel	6.0 - 8.0%	Tensile Strength	100,000 PSI Min
			Manganese	1.50% Max	Chromium	24.0 - 26.0%	Yield Strength	75,000 PSI Min
			Silicon	1.00% Max	Molybdenum	4.0 - 5.0%	Elongation at 2in.	18.0% Min
			Phosphorus	0.04% Max	Nitrogen	0.10 - 0.30%		
			Sulfur	0.04% Max				
UNS J93380, CD3MWCuN (Super Duplex)	A890 6A† (B) A995 6A (B)	25CR-7Ni-Mo-N	Carbon	0.03% Max	Chromium	24.0 - 26.0%	Tensile Strength	100,000 PSI Min
			Manganese	1.00% Max	Molybdenum	3.0 - 4.0	Yield Strength	65,000 PSI Min
			Silicon	1.00% Max	Copper	0.5 - 1.0%	Elongation at 2in.	25.0% Min
			Phosphorus	0.03% Max	Tungsten	0.5 - 1.0%		
			Sulfur	0.025% Max	Nitrogen	0.20 - 0.30%		
UNS J93379 (Zeron 100™) (Super Austenitic/Duplex)	A890 7A† (B) A995 7A (B)	27Cr-Ni-Mo-Cu-N	Nickel	6.5 - 8.5%				
			Carbon	0.03% Max	Molybdenum	2.0 - 3.5%	Tensile Strength	100,000 PSI Min
			Manganese	1.00 - 3.00%	Copper	1.00% Max	Yield Strength	75,000 PSI Min
			Silicon	1.00% Max	Tungsten	3.0 - 4.0%	Elongation at 2in.	20.0% Min
			Phosphorus	0.03% Max	Nitrogen	0.30 - 0.40%		
			Sulfur	0.02% Max	Barium	0.0002 - 0.010%		
			Nickel	6.0 - 8.0%	Boron	0.0010 - 0.010%		
Chromium	26.0 - 28.0%	Ce + La	0.005 - 0.03%					

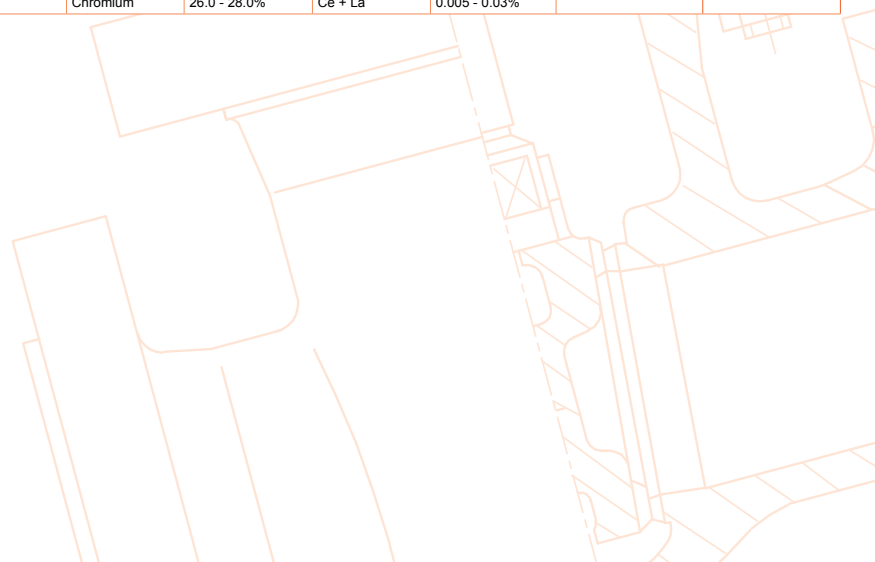
* A890 1A No longer referenced by API, A990 1C is not referenced in A995.

† Still in use but optionally superseded by A995.

A995-13 Current edition as of January 2017.

(A) % Cr + 3.3% Mo + 16% N ≥ 40.

(B) % CR + 3.3 (% Mo + 0.5 % W) + 16 % N ≥ 45.



Austenitic Stainless Steel A351/A743/A744

Alloy/ Common Name	ASTM	Type	Chemical Composition				Physical Properties	
304SS, UNS J92600	A351 CF8 A743 CF8 A744 CF8	19Cr-9Ni	Carbon	0.08% Max	Sulfur	0.04% Max	Tensile Strength	70,000 PSI Min
			Manganese	1.50% Max	Nickel	8.0 - 11.0%	Yield Strength	30,000 PSI Min
			Silicon	2.00% Max	Chromium	18.0 - 21.0%	Elongation at 2in.	35.0% Min
			Phosphorus	0.04% Max	Molybdenum	0.50% Max		
304LSS, UNS J92500	A351 CF3 A743 CF3 A744 CF3	19Cr-9Ni	Carbon	0.03% Max	Sulfur	0.04% Max	Tensile Strength	70,000 PSI Min
			Manganese	1.50% Max	Nickel	8.0 - 12.0%	Yield Strength	30,000 PSI Min
			Silicon	2.00% Max	Chromium	17.0 - 21.0%	Elongation at 2in.	35.0% Min
			Phosphorus	0.04% Max	Molybdenum	0.50% Max		
316SS, UNS J92900	A351 CF8M A743 CF8M A744 CF8M	19Cr-10Ni-2Mo	Carbon	0.08% Max	Sulfur	0.04% Max	Tensile Strength	70,000 PSI Min
			Manganese	1.50% Max	Nickel	9.0 - 12.0%	Yield Strength	30,000 PSI Min
			Silicon	1.50% Max	Chromium	18.0 - 21.0%	Elongation at 2in.	30.0% Max
			Phosphorus	0.04% Max	Molybdenum	2.0 - 3.0%		
316LSS, UNS J92800	A351 CF3M A743 CF3M A744 CF3M	19Cr-10Ni-2Mo	Carbon	0.03% Max	Sulfur	0.04% Max	Tensile Strength	70,000 PSI Min
			Manganese	1.50% Max	Nickel	9.0 - 13.0%	Yield Strength	30,000 PSI Min
			Silicon	1.50% Max	Chromium	17.0 - 21.0%	Elongation at 2in.	30.0% Min
			Phosphorus	0.04% Max	Molybdenum	2.0 - 3.0%		
316ModSS, UNS J92804	A351 CF3MN A743 CF3MN	19Cr-10Ni-2-Mo-N	Carbon	0.03% Max	Nickel	9.0 - 13.0%	Tensile Strength	75,000 PSI Min
			Manganese	1.50% Max	Chromium	17.0 - 21.0%	Yield Strength	37,000 PSI Min
			Silicon	1.50% Max	Molybdenum	2.0 - 3.0%	Elongation at 2in.	35.0% Min
			Phosphorus	0.04% Max	Nitrogen	0.10 - 0.20%		
			Sulfur	0.04% Max				
UNS J93401	A351 CH10 A743 CH10		Carbon	0.04 - 0.10%	Sulfur	0.04% Max	Tensile Strength	70,000 PSI Min
			Manganese	1.50% Max	Nickel	12.0 - 15.0%	Yield Strength	30,000 PSI Min
			Silicon	2.00% Max	Chromium	22.0 - 26.0%	Elongation at 2in.	30.0% Min
			Phosphorus	0.04% Max	Molybdenum	0.50% Max		
UNS J93402	A351 CH20 A744 CH20	25Cr-13Ni	Carbon	0.04 - 0.20%	Sulfur	0.04% Max	Tensile Strength	70,000 PSI Min
			Manganese	1.50% Max	Nickel	12.0 - 15.0%	Yield Strength	30,000 PSI Min
			Silicon	2.00% Max	Chromium	22.0 - 26.0%	Elongation at 2in.	30.0% Min
			Phosphorus	0.04% Max	Molybdenum	0.50% Max		
UNS J94204	A351 HK40		Carbon	0.35 - 0.45%	Sulfur	0.04% Max	Tensile Strength	62,000 PSI Min
			Manganese	1.50% Max	Nickel	19.0 - 22.0%	Yield Strength	35,000 PSI Min
			Silicon	1.75% Max	Chromium	23.0 - 27.0%	Elongation at 2in.	10.0% Min
			Phosphorus	0.04% Max	Molybdenum	0.50% Max		
Alloy 20, UNS J95150	A351 CN7M A743 CN7M A744 CN7M	20Cr-29Ni-3Cu-2Mo	Carbon	0.07% Max	Nickel	27.5 - 30.5%	Tensile Strength	62,000 PSI Min
			Manganese	1.50% Max	Chromium	19.0 - 22.0%	Yield Strength	25,000 PSI Min
			Silicon	1.50% Max	Molybdenum	2.0 - 3.0%	Elongation at 2in.	35.0% Min
			Phosphorus	0.04% Max	Copper	3.0 - 4.0%		
			Sulfur	0.04% Max				
317LSS, UNS J92999	A351 CG3M A743 CG3M A744 CG3M	19Cr-11Ni-3Mo	Carbon	0.03% Max	Sulfur	0.04% Max	Tensile Strength	75,000 PSI Min
			Manganese	1.50% Max	Nickel	9.0 - 13.0% Max	Yield Strength	35,000 PSI Min
			Silicon	1.50% Max	Chromium	18.0 - 21.0% Max	Elongation at 2in.	25.0% Min
			Phosphorus	0.04% Max	Molybdenum	3.0 - 4.0% Max		
317SS, UNS J93000	A351 CG8M A743 CG8M A744 CG8M	19Cr-11Ni-3Mo	Carbon	0.08% Max	Sulfur	0.04% Max	Tensile Strength	75,000 PSI Min
			Manganese	1.50% Max	Nickel	9.0 - 13.0%	Yield Strength	35,000 PSI Min
			Silicon	1.50% Max	Chromium	18.0 - 21.0%	Elongation at 2in.	25.0% Min
			Phosphorus	0.04% Max	Molybdenum	3.0 - 4.0%		
218SS, UNS J92972, Nitronic 60	A351 CF10SMnN A742 CF10SMnN	17Cr-8.5Ni-N	Carbon	0.10% Max	Sulfur	0.03% Max	Tensile Strength	85,000 PSI Min
			Manganese	7.00 - 9.00%	Nickel	8.0 - 9.0%	Yield Strength	42,500 PSI Min
			Silicon	3.90 - 4.50%	Chromium	16.0 - 18.0%	Elongation at 2in.	30.0% Min
			Phosphorus	0.06% Max	Nitrogen	0.08 - 0.18%		
Duplex, 254SMO, UNS J93254	A351 CK3MCuN A743 CK3MCuN A744 CK3MCuN	20Cr-18Ni-6Mo-Cu-N	Carbon	0.025% Max	Nickel	17.5 - 19.5% Max	Tensile Strength	80,000 PSI Min
			Manganese	1.20% Max	Chromium	19.5 - 20.5%	Yield Strength	38,000 PSI Min
			Silicon	1.00% Max	Molybdenum	6.0 - 7.0%	Elongation at 2in.	35.0% Min
			Phosphorus	0.045% Max	Copper	0.50 - 1.00%		
			Sulfur	0.010% Max	Nitrogen	0.18 - 0.24%		

Martensitic Stainless Steel A217/A487/A743

Alloy/ Common Name	ASTM	Type	Chemical Composition				Physical Properties	
UNS J91150	A217 CA15 A487 CA15 A743 CA15	Cr, Martensitic Cr, 12Cr	Carbon	0.15% Max	Sulfur	0.04% Max	Tensile Strength	90,000 PSI Min
			Manganese	1.00% Max	Nickel	1.00% Max	Yield Strength	65,000 PSI Min
			Silicon	1.50% Max	Chromium	11.5 - 14.0%	Elongation at 2in.	18.0% Min
			Phosphorus	0.04% Max	Molybdenum	0.15 - 1.0%	Reduction of area	30.0% Min
410 Mod., UNS J91540	A352 CA6NM A486 CA6NM A&B A743 CA6NM	12.5Cr-4Ni-Mo, Martensitic Cr-Ni	Carbon	0.06% Max	Chromium	11.5 - 14.0%	Tensile Strength	100,000 PSI Min
			Manganese	1.00% Max	Molybdenum	0.4 - 1.0%	Yield Strength	75,000 Psi Min
			Silicon	1.00% Max	Copper	0.50% Max	Elongation at 2in.	17% Min
			Phosphorus	0.04% Max	Vanadium	0.05% Max	Reduction of area	35% Min
			Sulfur	0.03% Max	Tungsten	0.05% Max		
			Nickel	3.5 - 4.5%	Total residual elements	0.50%		

Nickel Base Steel A494

Alloy/ Common Name	ASTM	Type	Chemical Composition				Physical Properties	
Ni210, N02100	A494 CZ100	95Ni	Carbon	1.00% Max	Sulfur	0.02% Max	Tensile Strength	50,000 PSI Min
			Manganese	1.5% Max	Nickel	95.0% Max	Yield Strength	18,000 PSI Min
			Silicon	2.00% Max	Copper	1.25% Max	Elongation at 2in.	10.0% Min
			Phosphorus	0.03% Max	Iron	3.00% Max		
Monel 400, N24130	A494 M30C	63Ni-29Cu-2Cb	Carbon	0.30% Max	Nickel	Balance	Tensile Strength	65,000 PSI Min
			Manganese	1.50% Max	Copper	26.0 - 33.0%	Yield Strength	32,500 PSI Min
			Silicon	1.0 - 2.0%	Columbium	3.50% Max	Elongation at 2in.	25.0% Min
			Phosphorus	0.03% Max	Iron	1.0 - 3.0%		
			Sulfur	0.02% Max				
Ni'B', N30007, Hastalloy B2	A494 N7M	65Ni-28Mo-2Fe	Carbon	0.07% Max	Nickel	Balance	Tensile Strength	76,000 PSI Min
			Manganese	1.00% Max	Chromium	1.0% Max	Yield Strength	40,000 PSI Min
			Silicon	1.00% Max	Molybdenum	30.0 - 33.0%	Elongation at 2in.	20.0% Min
			Phosphorus	0.03% Max	Iron	3.00% Max		
			Sulfur	0.02% Max				
Ni'C' Mod., N30002, Hastalloy C	A494 CW12MW	55Ni-17Mo-16Cr-4W	Carbon	0.12% Max	Chromium	15.5 - 17.5%	Tensile Strength	72,000 PSI Min
			Manganese	1.00% Max	Molybdenum	16.0 - 18.0%	Yield Strength	40,000 PSI Min
			Silicon	1.00% Max	Vanadium	0.20 - 0.40%	Elongation at 2in.	4.0% Min
			Phosphorus	0.03% Max	Tungsten	3.75 - 5.25%		
			Sulfur	0.02% Max	Iron	4.5 - 7.5%		
			Nickel	Balance				
Ni'C' Mod., N26455, Hastalloy 4	A494 CW2M	61Ni-16Cr-16Mo	Carbon	0.02% Max	Nickel	Balance	Tensile Strength	72,000 PSI Min
			Manganese	1.00% Max	Chromium	15.0 - 17.5%	Yield Strength	40,000 PSI Min
			Silicon	0.80% Max	Molybdenum	15.0 - 17.5%	Elongation at 2in.	20.0% Min
			Phosphorus	0.03% Max	Tungsten	1.0% Max		
			Sulfur	0.02% Max	Iron	2.0% Max		
Inconel 625	A494 CW6MC	58Ni-21Cr-8.5Mo-3.4Cb-2Fe	Carbon	0.06% Max	Nickel	Balance	Tensile Strength	70,000 PSI Min
			Manganese	1.00% Max	Chromium	2.0 - 23.0%	Yield Strength	40,000 PSI Min
			Silicon	1.00% Max	Molybdenum	8.0 - 10.0%	Elongation at 2in.	25.0% Min
			Phosphorus	0.015% Max	Columbium	3.15 - 4.50%		
			Sulfur	0.015% Max	Iron	5.0% Max		

Heat Resistant Steel A297

Alloy/ Common Name	ASTM	Type	Chemical Composition				Physical Properties	
309SS, UNS J93503	A297 HH	25Cr-12Ni	Carbon	0.20 - 0.50%	Sulfur	0.04% Max	Tensile Strength	75,000 PSI Min
			Manganese	2.00% Max	Nickel	11.0 - 14.0%	Yield Strength	35,000 PSI Min
			Silicon	2.00% Max	Chromium	24.0 - 28.0%	Elongation at 2in.	10.0% Min
			Phosphorus	0.04% Max	Molybdenum	0.50%		
310SS, UNS J94224	A297 HK	25Cr-20Ni	Carbon	0.20 - 0.60%	Sulfur	0.04% Max	Tensile Strength	65,000 PSI Min
			Manganese	2.00% Max	Nickel	18.0 - 22.0%	Yield Strength	35,000 PSI Min
			Silicon	2.00% Max	Chromium	24.0 - 28.0%	Elongation at 2in.	10.0% Min
			Phosphorus	0.04% Max	Molybdenum	0.50%		
312SS, UNS J93403	A297 HE	29Cr-9Ni	Carbon	0.20 - 0.50%	Sulfur	0.04% Max	Tensile Strength	85,000 PSI Min
			Manganese	2.00% Max	Nickel	8.0 - 11.0%	Yield Strength	40,000 PSI Min
			Silicon	2.00% Max	Chromium	26.0 - 30.0%	Elongation at 2in.	9.0% Min
			Phosphorus	0.04% Max	Molybdenum	0.50% Max		
330SS	A297 HT	15Cr-35Ni	Carbon	0.35 - 0.75%	Sulfur	33.0 - 37.0%	Tensile Strength	65,000 PSI Min
			Manganese	2.00% Max	Nickel	15.0 - 19.0%	Elongation at 2in.	4.0% Min
			Silicon	2.50% Max	Chromium	15.0 - 19.0%		
			Phosphorus	0.04% Max	Molybdenum	0.50% Max		

Precipitation Hardened Steel A747

Alloy/ Common Name	ASTM	Type	Chemical Composition				Physical Properties	
17-4PH, UNS J92180, 5355	A747 CB7Cu-1	16Cr-4Ni-3Cu	Carbon	0.07% Max	Nickel	3.60 - 4.60%		
			Manganese	0.70% Max	Chromium	15.50 - 17.70%		
			Silicon	1.00% Max	Copper	2.50 - 3.20%		
			Phosphorus	0.035% Max	Nitrogen	0.05% Max		
			Sulfur	0.03% Max	Columbium	0.15 - 0.35%		
15-5PH, UNS J92110, 5346	A747 CB7Cu-2	16Cr-5Ni-3Cu	Carbon	0.07% Max	Nickel	4.50% Max		
			Manganese	0.70% Max	Chromium	14.0 - 15.5%		
			Silicon	1.00% Max	Copper	2.5 - 3.20%		
			Phosphorus	0.035% Max	Nitrogen	0.05% Max		
			Sulfur	0.03% Max	Columbium	0.15 - 0.35%		

Alloy Steels (Chrome-Moly) A217

Alloy/ Common Name	ASTM	Type	Chemical Composition				Physical Properties	
4118 Mod., UNS J12072	A217 WC6	C-Mo	Carbon	0.05 - 0.20%	Chromium	1.00 - 1.50%	Tensile Strength	70,000 - 95,000 PSI
			Manganese	0.50 - 0.80%	Molybdenum	0.45 - 0.65%	Yield Strength	40,000 PSI Min
			Silicon	0.60% Max	Copper	0.50% Max	Elongation at 2in.	20% Min
			Phosphorus	0.035% Max (C)	Tungsten	0.10% Max	Reduction of area	35% Min
			Sulfur	0.035% Max (C)	Total of residual elements	1.00% Max		
			Nickel	0.50% Max				
4115 Mod., UNS J21890	A217 WC9	Cr-Mo	Carbon	0.05 - 0.18%	Chromium	2.00 - 2.75%	Tensile Strength	70,000 - 95,000 PSI
			Manganese	0.40 - 0.70%	Molybdenum	0.90 - 1.20%	Yield Strength	40,000 PSI Min
			Silicon	0.60% Max	Copper	0.50% Max	Elongation at 2in.	20% Min
			Phosphorus	0.035% Max	Tungsten	0.10% Max	Reduction of area	35% Min
			Sulfur	0.035% Max (C)	Total of residual elements	1.00% Max		
			Nickel	0.50% Max				
UNS J42045	A217 C5	Cr-Mo	Carbon	0.20% Max	Chromium	4.00 - 6.50%	Tensile Strength	90,000 - 115,000 PSI
			Manganese	0.40 - 0.70%	Molybdenum	0.45 - 0.65%	Yield Strength	60,000 PSI Min
			Silicon	0.75% Max	Copper	0.50% Max	Elongation at 2in.	18% Min
			Phosphorus	0.04% Max (C)	Tungsten	0.10% Max	Reduction of area	35.0% Min
			Sulfur	0.045% Max (C)	Total of residual elements	1.00% Max		
			Nickel	0.50% Max				
UNS J82090	A217 C12		Carbon	0.20% Max	Chromium	8.00 - 10.00%	Tensile Strength	90,000 - 115,000 PSI
			Manganese	0.35 - 0.65%	Molybdenum	0.90 - 1.20%	Yield Strength	60,000 PSI Min
			Silicon	1.00% Max	Copper	0.50% Max	Elongation at 2in.	18% Min
			Phosphorus	0.035% Max (C)	Tungsten	0.10% Max	Reduction of area	35.0% Min
			Sulfur	0.035% Max (C)	Columbium	0.03% Max		
			Nickel	0.50% Max	Total of residual elements	1.00% Max		
	A217 C12A		Carbon	0.08 - 0.12%	Molybdenum	0.85 - 1.05%	Tensile Strength	85,000 - 110,000 PSI
			Manganese	0.30 - 0.60%	Vanadium	0.18 - 0.25%	Yield Strength	60,000 PSI Min
			Silicon	0.20 - 0.50%	Nitrogen	0.030 - 0.07%	Elongation at 2in.	18% Min
			Phosphorus	0.25% Max	Aluminium	0.02% Max	Reduction of area	45% Min
			Sulfur	0.01% Max	Columbium	0.06 - 0.10%		
			Nickel	0.40% Max	Titanium	0.01% Max		
			Chromium	8.0 - 9.5%	Zirconium	0.01% Max		

(C) For lower maximum phosphorus or sulfur contents, see ASTM A217/ A217M-14 Supplementary Requirement S52.

Carbon Steel A216

Alloy/ Common Name	ASTM	Type	Chemical Composition				Physical Properties	
1025	A216 WCB		Carbon	0.30% Max	Chromium	0.50% Max	Tensile Strength	70,000 - 95,000 PSI
			Manganese	1.00% Max	Molybdenum	0.20% Max	Yield Strength	36,000 PSI Min
			Silicon	0.60% Max	Copper	0.30% Max	Elongation at 2in.	22.0% Min
			Phosphorus	0.035% Max	Vanadium	0.03% Max	Reduction of area	35.0% Min
			Sulfur	0.035% Max	Total of residual elements	1.00% Max		
			Nickel	0.50% Max				
1020	A216 WCC		Carbon	0.25% Max	Chromium	0.50% Max	Tensile Strength	70,000 - 95,000 PSI
			Manganese	1.20% Max	Molybdenum	0.20%	Yield Strength	40,000 PSI Min
			Silicon	0.60% Max	Copper	0.30	Elongation at 2in.	22.0% Min
			Phosphorus	0.035% Max	Vanadium	0.03% Max	Reduction of area	35.0% Min
			Sulfur	0.035% Max	Total of residual elements	1.00% Max		
			Nickel	0.50% Max				

Carbon Steel - Low Temp A352

Alloy/ Common Name	ASTM	Type	Chemical Composition				Physical Properties	
1025	A352 LCB	C	Carbon	0.30% Max	Nickel	0.50% Max	Tensile Strength	65,000 - 90,000 PSI
			Manganese	1.00% Max	Chromium	0.50% Max	Yield Strength	35,000 PSI Min
			Silicon	0.60% Max	Molybdenum	0.20% Max	Elongation at 2in.	24.0% Min
			Phosphorus	0.04% Max	Copper	0.30% Max	Reduction of area	35.0% Min
			Sulfur	0.045%	Vanadium	0.03% Max		
1020	A352 LCC	C, Mn	Carbon	0.25% Max	Nickel	0.50% Max	Tensile Strength	70,000 - 95,000 PSI
			Manganese	1.20% Max	Chromium	0.50% Max	Yield Strength	40,000 PSI Min
			Silicon	0.60% Max	Molybdenum	0.20% Max	Elongation at 2in.	22.0% Min
			Phosphorus	0.04% Max	Copper	0.30% Max	Reduction of area	35.0% Min
			Sulfur	0.045%	Vanadium	0.03% Max		

~ Short lead time valve manufacturer. Supplying world wide ~

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Valve Casting Material Types - AS