

STEEL CASTINGS - TECHNICAL DATA

CARBON & LOW ALLOY STEELS

Monmet helps our customers solve their problems with an unmatched expertise in alloy and process selection.



ALLOY	ASTM SPECIFICATION	CHEMICAL COMPOSITION (Maximum unless range specified)							MINIMUM MECHANICAL PROPERTIES					EQUIVALENT FOREIGN SPECS		CHARACTERISTICS & APPLICATIONS
		C %	Si %	Mn %	Ni %	Cr %	Mo %	Other %	CHARPY "V" NOTCH ft. lb.	TENSILE STRENGTH (KSI)	YIELD STRENGTH (KSI)	ELONGATION %	REDUCTION OF AREA %	BRITISH STANDARD	GERMAN STANDARD	
CARBON STEEL	A27: N-1	0.25	0.80	0.75												These grades of low carbon steel castings are intended for general applications that require up to 70 ksi tensile strength. These grades are suitable for assembly with other steel parts by fusion welding. They are also exhibit good machineability.
	A27: N-2	0.35	0.80	0.60												
	A27: U 60-30	0.25	0.80	0.75						60	30	22	30			
	A27: 60-30	0.30	0.80	0.60						60	30	24	35		1020	
	A27: 65-35	0.30	0.80	0.70						65	35	24	35			
	A27: 70-36	0.35	0.80	0.70						70	36	22	30		1030	
	A27: 70-40	0.25	0.80	1.20						70	40	22	30			These low carbon alloys are used for valves, flanges, fittings, or other pressure-containing parts for high-temperature service. They are suitable for assembly with other castings or wrought steel parts by fusion welding.
	A216: WCA	0.25	0.60	0.70	0.50	0.50	0.20	V 0.03, Cu 0.3		60-85	30	24	35			
	A216: WCB	0.30	0.60	1.00	0.50	0.50	0.20	V 0.03, Cu 0.3		70-95	36	22	35			
	A216: WCC	0.25	0.60	1.20	0.50	0.50	0.20	V 0.03, Cu 0.3		70-95	40	22	35			
	A352: LCA	0.25	0.60	0.70	0.50	0.50	0.20	V 0.03, Cu 0.3	13 (-25 F)	60-85	36	24	35	GS-CK16		
	A352: LCB	0.30	0.60	1.00	0.50	0.50	0.20	V 0.03, Cu 0.3	13 (-50 F)	65-90	35	24	35			
	A352: LCC	0.25	0.60	1.20	0.50	0.50	0.20	V 0.03, Cu 0.3	13 (-50 F)	70-95	40	22	35			The low carbon steel is suitable for heavy-walled castings for steam turbine applications.
	A356: Grade 1	0.35	0.60	0.70						70	36	20				
	A915: SC 1020	0.18-0.23	0.30-0.60	0.40-0.80												
	A915: SC 1025	0.22-0.28	0.30-0.60	0.40-0.80												
	A915: SC 1030	0.28-0.34	0.30-0.60	0.50-0.90												
	A915: SC 1040	0.37-0.44	0.30-0.60	0.50-0.90												
LOW ALLOY STEEL	A915: SC 1045	0.43-0.50	0.30-0.60	0.50-0.90												The chemical composition of these carbon steel grades is similar to the standard wrought grades.
	A217: WC1	0.25	0.60	0.50-0.80			0.45-0.65			60-90	35	24	35			
	A217: WC4	0.05-0.20	0.60	0.50-0.80	0.70-1.10	0.50-0.80	0.45-0.65			70-95	40	20	35			
	A217: WC5	0.05-0.20	0.60	0.40-0.70	0.60-1.0	0.50-0-0.90	0.90-1.20			70-95	40	20	35			
	A217: WC6	0.05-0.20	0.60	0.50-0.80		1.0-1.50	0.45-0.65			70-95	40	20	35			
	A217: WC9	0.05-0.18	0.60	0.40-0.70		20.0-2.75	0.90-1.20			70-95	40	20	35			Low carbon steels for pressure containing parts. These alloys are also suitable for high-temperature applications. They exhibit good weldability, good machineability, as well as superior mechanical properties when compared with carbo steels intended for the same type of applications.
	A217: WC11	0.15-0.21	0.30-0.60	0.50-0.80		1.0-1.50	0.45-0.65			80-105	50	18	45			
	A217: C5	0.20	0.75	0.40-0.70		4.0-6.50	0.45-0.65			90-115	60	18	35			
	A217: C12	0.20	1.00	0.35-0.65		8.0-10.0	0.90-1.20			90-115	60	18	35			
	A217: C12A	0.12	0.20-0.50	0.30-0.60	0.40	8.0-9.5	0.85-1.05	Cb 0.06-0.10		85-110	65	20	45			
	A352: LC1	0.25	0.60	0.50-0.80			0.45-0.65		13 (-75 F)	65-90	35	24	35			C12A is a relatively new alloy. It allows the use of martensitic 9% Cr 1% Mo grade at high temperatures.
	A352: LC2	0.25	0.60	0.50-0.80	2.0-3.0				15 (-100 F)	70-95	40	24	35			
	A352: LC2-1	0.22	0.60	0.55-0.75	2.50-3.50	1.35-1.85	0.30-0.60		30 (-100 F)	105-130	80	18	30			
	A352: LC3	0.15	0.60	0.50-0.80	3.0-4.0				15 (-150 F)	70-95	40	24	35			
	A352: LC4	0.15	0.60	0.50-0.80	4.0-5.0			Cu 0.30	15 (-175 F)	70-95	40	24	35			
	A352: LC9	0.13	0.45	0.90	8.50-10.0	0.50	0.20	V 0.03	20 (-320 F)	85	75	20	30			
	A356: Grade 2	0.25	0.60	0.70			0.45-0.65			65	35	22	35			These low alloy ferritic streets are intended for cylinders (shells), valve chests, throttle valves, and other heavy-walled castings for steam turbine applications.
	A356: Grade 5	0.25	0.60	0.70		0.40-0.70	0.40-0.60			70	40	22	35			
	A356: Grade 6	0.20	0.60	0.50-0.80		1.0-1.50	0.45-0.65			70	45	22	35			
	A356: Grade 8	0.20	0.20-0.60	0.50-0.90		1.0-1.50	0.90-1.20	V 0.05-0.15		80	50	18	45			
	A356: Grade 9	0.20	0.20-0.60	0.50-0.90		1.0-1.50	0.90-1.20	V 0.20-0.35		85	60	15	45			
	A356: Grade 10	0.20	0.60	0.50-0.80		2.0-2.75	0.90-1.20			85	55	20	35			These alloys are suitable for pressure containing parts when used in normalized and tempered or quenched and tempered conditions.
	A487: Grade 1	0.30	0.80	1.00				V 0.04-0.12		85-115	55-85	22	40-45			
	A487: Grade 2	0.30	0.80	1.0-1.40			0.10-0.30			85-115	53-65	22	35-40			
	A487: Grade 4	0.30	0.80	1.00	0.40-0.80	0.40-0.80	0.15-0.30			90-130	60-95	18-15	35-40			
	A487: Grade 6	0.05-0.38	0.80	1.30-1.70	0.40-0.80	0.40-0.80	0.30-0.40			115-120	80-95	18-12	25-30			
	A487: Grade 7	0.05-0.20	0.80	0.60-1.0	0.70-1.0	0.40-0.80	0.40-0.60	V 0.03-0.1		115	100	15	30			The weldability of the grades varies from readily weldable to weldable only with adequate precautions. Users should note that hardenability of some of the grades may restrict thee maximum size at which the mechanical properties are obtained (ex. Grade 7)
	A487: Grade 8	0.05-0.20	0.80	0.50-0.90		2.0-2.75	0.90-1.10			85-110	55-85	20-17	30-35			
	A487: Grade 9	0.05-0.33	0.80	0.60-1.0		0.75-1.10	0.15-0.30			90-115	60-95	18-15	35			
	A487: Grade 10	0.30	0.80	0.60-1.0	1.40-2.0	0.55-0.90	0.20-0.40			100-125	70-100	18-15	35			
	A487: Grade 11	0.05-0.20	0.60	0.50-0.80	0.70-1.10	0.50-0.80	0.45-0.65			70-130	40-85	20-17	35			
	A487: Grade 12	0.05-0.20	0.60	0.40-0.70	0.60-1.0	0.50-0.90	0.90-1.20			70-130	40-85	20-17	35			This specification (ASTM A915) was developed to help purchasers and suppliers order products based on the more familiar AISI/SAE designations. While the cast graders are similar, they are not identical to the wrought materials, particularly in the instances of Si and Mn content.
	A487: Grade 13	0.30	0.60	0.80-1.10	1.40-1.75		0.20-0.30			90-130	60-85	18-17	35			
	A487: Grade 14	0.55	0.60	0.80-1.10	1.40-1.75		0.20-0.30			120-145	95	14	30			
	A487: Grade 16	0.12	0.50	2.10	1.0-1.40					70-95	40	22	35			
	A915: SC 4130	0.28-0.33	0.30-0.60	0.50-1.10		0.80-1.10	0.15-0.25									
	A915: SC 4140	0.38-0.43	0.30-0.60	0.70-1.10		0.80-1.10	0.15-0.25									
	A915: SC 4330	0.28-0.33	0.30-0.60	0.60-0.90	1.65-2.0	0.70-0.90	0.20-0.30									
	A915: SC 4340	0.38-0.43	0.30-0.60	0.60-0.90	1.65-2.0	0.70-0.90	0.20-0.30									
	A915: SC 8620	0.18-0.23	0.30-0.60	0.60-1.0	0.40-0.70	0.40-0.60	0.15-0.25									
	A915: SC 8625	0.23-0.28	0.30-0.60	0.60-1.0	0.40-0.70	0.40-0.60	0.15-0.25									
	A915: SC 8630	0.28-0.33	0.30-0.60	0.60-1.0	0.40-0.70	0.40-0.60	0.15-0.25									

Monmet can supply a complete range of carbon and low alloy steels.

Carbon Steel
Low Alloy Steel