

Cast steel: Group of ASTM standards for steel castings and forgings

Abstract:

This group of ASTM specifications covers standard properties of steel and iron castings and forgings for valves, flanges, fittings, and other pressure containing parts for high-temperature and low-temperature service.

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Additionally, in the table below standards for evaluating the microstructure of graphite in iron castings and methods for mechanical testing of cast irons are presented.

STEEL CASTINGS

A27	A27/A27M-95	Specification for Steel Castings, Carbon, for General Application
A47	A47/A47M-99	Specification for Ferritic Malleable Iron Castings
A48M	A48M-94e1	Specification for Gray Iron Castings [Metric]
A48	A48-94ae1	Specification for Gray Iron Castings
A74	A74-98	Specification for Cast Iron Soil Pipe and Fittings
A126	A126-95e1	Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings
A128	A128/A128M-93 (1998)	Specification for Steel Castings, Austenitic Manganese
A148	A148/A148M-93b (1998)	Specification for Steel Castings, High Strength, for Structural Purposes
A159	A159-83 (1993)	Specification for Automotive Gray Iron Castings
A216	A216/A216M-93 (1998)	Specification for Steel Castings, Carbon, Suitable for Fusion Welding, for High- Temperature Service
A217	A217/A217M-99	Specification for Steel Castings, Martensitic Stainless and Alloy, for Pressure- Containing Parts, Suitable for High-Temperature Service
A247	A247-67 (1998)	Test Method for Evaluating the Microstructure of Graphite in Iron Castings
A278M	A278M-93e1	Specification for Gray Iron Castings for Pressure-Containing Parts for Temperatures Up to 350°C
A278	A278-93	Specification for Gray Iron Castings for Pressure-Containing Parts for Temperatures Up to 650°F

A297	A297/A297M-97 (1998)	Specification for Steel Castings, Iron-Chromium and Iron-Chromium-Nickel, Heat Resistant, for General Application
A319	A319-71 (1995)	Specification for Gray Iron Castings for Elevated Temperatures for Non-Pressure Containing Parts
A327M	A327M-91 (1997)	Test Methods for Impact Testing of Cast Irons (Metric)
A327	A327-91 (1997)	Test Methods for Impact Testing of Cast Irons
A351	A351/A351M-94a (1999)	Specification for Castings, Austenitic, Austenitic-Ferritic (Duplex), for Pressure-Containing Parts
A352	A352/A352M-93 (1998)	Specification for Steel Castings, Ferritic and Martensitic, for Pressure-Containing Parts, Suitable for Low-Temperature Service
A356	A356/A356M-98e1	Specification for Steel Castings, Carbon, Low Alloy, and Stainless Steel, Heavy-Walled for Steam Turbines
A367	A367-60 (1999)	Test Methods of Chill Testing of Cast Iron
A389	A389/A389M-93 (1998)	Specification for Steel Castings, Alloy, Specially Heat-Treated, for Pressure-Containing Parts, Suitable for High-Temperature Service
A395	A395/A395M-99	Specification for Ferritic Ductile Iron Pressure-Retaining Castings for Use at Elevated Temperatures
A426	A426-92 (1997)	Specification for Centrifugally Cast Ferritic Alloy Steel Pipe for High-Temperature Service
A436	A436-84 (1997) e1	Specification for Austenitic Gray Iron Castings
A438	A438-80 (1997)	Test Method for Transverse Testing of Gray Cast Iron
A439	A439-83 (1999)	Specification for Austenitic Ductile Iron Castings
A447	A447/A447M-93 (1998)	Specification for Steel Castings, Chromium-Nickel-Iron Alloy (25-12 Class), for High-Temperature Service
A451	A451-93 (1997)	Specification for Centrifugally Cast Austenitic Steel Pipe for High-Temperature Service
A476M	A476M-84 (1993)	Specification for Ductile Iron Castings for Paper Mill Dryer Rolls [Metric]
A476	A476-90 (1997)	Specification for Ductile Iron Castings for Paper Mill Dryer Rolls
A487	A487/A487M-93 (1998)	Specification for Steel Castings Suitable for Pressure Service
A488	A488/A488M-99	Practice for Steel Castings, Welding, Qualifications of Procedures and Personnel
A494	A494/A494M-00	Specification for Castings, Nickel and Nickel Alloy
A518	A518/A518M-99	Specification for Corrosion-Resistant High-Silicon Iron Castings

A532	A532/A532M-93a (1999) e1	Specification for Abrasion-Resistant Cast Irons
A536	A536-84 (1999) e1	Specification for Ductile Iron Castings
A560	A560/A560M-93 (1998)	Specification for Castings, Chromium-Nickel Alloy
A571M	A571M-84 (1997)	Specification for Austenitic Ductile Iron Castings for Pressure-Containing Parts Suitable for Low-Temperature Service [Metric]
A571	A571-84 (1997)	Specification for Austenitic Ductile Iron Castings for Pressure-Containing Parts Suitable for Low-Temperature Service
A583	A583-93 (1999)	Specification for Cast Steel Wheels for Railway Service
A597	A597-87 (1999)	Specification for Cast Tool Steel
A602	A602-94 (1998)	Specification for Automotive Malleable Iron Castings
A608	A608-91a (1998)	Specification for Centrifugally Cast Iron-Chromium-Nickel High-Alloy Tubing for Pressure Application at High Temperatures
A609	A609/A609M-91 (1997)	Practice for Castings, Carbon, Low-Alloy, and Martensitic Stainless Steel, Ultrasonic Examination Thereof
A644	A644-98	Terminology Relating to Iron Castings
A667	A667/A667M-87 (1998)	Specification for Centrifugally Cast Dual Metal (Gray and White Cast Iron) Cylinders
A703	A703/A703M-99	Specification for Steel Castings, General Requirements, for Pressure-Containing Parts
A732	A732/A732M-98	Specification for Castings, Investment, Carbon and Low Alloy Steel for General Application, and Cobalt Alloy for High Strength at Elevated Temperatures
A743	A743/A743M-98ae1	Specification for Castings, Iron-Chromium, Iron-Chromium-Nickel, Corrosion Resistant, for General Application
A744	A744/A744M-98a	Specification for Castings, Iron-Chromium-Nickel, Corrosion Resistant, for Severe Service
A747	A747/A747M-99	Specification for Steel Castings, Stainless, Precipitation Hardening
A748	A748/A748M-87 (1998)	Specification for Statically Cast Chilled White Iron-Gray Iron Dual Metal Rolls for Pressure Vessel Use
A757	A757/A757M-00	Specification for Steel Castings, Ferritic and Martensitic, for Pressure-Containing and Other Applications, for Low-Temperature Service
A781	A781/A781M-99a	Specification for Castings, Steel and Alloy, Common

		Requirements, for General Industrial Use
A799	A799/A799M-92 (1997)	Practice for Steel Castings, Stainless, Instrument Calibration, for Estimating Ferrite Content
A800	A800/A800M-91 (1997) e1	Practice for Steel Casting, Austenitic Alloy, Estimating Ferrite Content Thereof
A802	A802/A802M-95 (1996)	Practice for Steel Castings, Surface Acceptance Standards, Visual Examination
A823	A823-99	Specification for Statically Cast Permanent Mold Gray Iron Castings
A834	A834-95	Specification for Common Requirements for Iron Castings for General Industrial Use
A842	A842-85 (1997)	Specification for Compacted Graphite Iron Castings
A872	A872-91 (1997)	Specification for Centrifugally Cast Ferritic/Austenitic Stainless Steel Pipe for Corrosive Environments
A874	A874/A874M-98	Specification for Ferritic Ductile Iron Castings Suitable for Low-Temperature Service
A888	A888-98e1	Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications
A890	A890/A890M-99	Specification for Castings, Iron-Chromium-Nickel-Molybdenum Corrosion-Resistant, Duplex (Austenitic/Ferritic) for General Application
A897M	A897M-90 (1997)	Specification for Austempered Ductile Iron Castings [Metric]
A897	A897-90 (1997)	Specification for Austempered Ductile Iron Castings
A903	A903/A903M-99	Specification for Steel Castings, Surface Acceptance Standards, Magnetic Particle and Liquid Penetrant Inspection
A915	A915/A915M-93 (1998)	Specification for Steel Castings, Carbon, and Alloy, Chemical Requirements Similar to Standard Wrought Grades
A942	A942-95	Specification for Centrifugally Cast White Iron/Gray Iron Dual Metal Abrasion- Resistant Roll Shells
A957	A957-96	Specification for Investment Castings, Steel and Alloy, Common Requirements, for General Industrial Use
A958	A958-96e1	Specification for Steel Castings, Carbon, and Alloy, with Tensile Requirements, Chemical Requirements Similar to Standard Wrought Grades
A985	A985-98a	Specification for Steel Investment Casting General Requirements, for Pressure-Containing Parts
A993	A993-98	Test Method for Dynamic Tear Testing of Cast Irons to Establish Transition Temperature

A1002	A1002-99	Specification for Castings, Nickel-Aluminum Ordered Alloy
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FORGINGS

A105	A105/A105M-98	Specification for Carbon Steel Forgings for Piping Applications
A181	A181/A181M-95b	Specification for Carbon Steel Forgings, for General-Purpose Piping
A182	A182/A182M-99	Specification for Forged or Rolled Alloy-Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service
A266	A266/A266M-99	Specification for Carbon Steel Forgings for Pressure Vessel Components
A275	A275/A275M-98	Test Method for Magnetic Particle Examination of Steel Forgings
A288	A288-91 (1998)	Specification for Carbon and Alloy Steel Forgings for Magnetic Retaining Rings for Turbine Generators
A289	A289/A289M-97	Specification for Alloy Steel Forgings for Nonmagnetic Retaining Rings for Generators
A290	A290-95 (1999)	Specification for Carbon and Alloy Steel Forgings for Rings for Reduction Gears
A291	A291-95 (1999)	Specification for Steel Forgings, Carbon and Alloy, for Pinions, Gears and Shafts for Reduction Gears
A314	A314-97	Specification for Stainless Steel Billets and Bars for Forging
A336	A336/A336M-99	Specification for Alloy Steel Forgings for Pressure and High-Temperature Parts
A350	A350/A350M-99	Specification for Carbon and Low-Alloy Steel Forgings, Requiring Notch Toughness Testing for Piping Components
A369	A369/A369M-92	Specification for Carbon and Ferritic Alloy Steel Forged and Bored Pipe for High-Temperature Service
A372	A372/A372M-99	Specification for Carbon and Alloy Steel Forgings for Thin-Walled Pressure Vessels
A388	A388/A388M-95	Practice for Ultrasonic Examination of Heavy Steel Forgings
A418	A418-99	Test Method for Ultrasonic Examination of Turbine and Generator Steel Rotor Forgings
A456	A456/A456M-99	Specification for Magnetic Particle Examination of Large Crankshaft Forgings
A469	A469-94a (1999)	Specification for Vacuum-Treated Steel Forgings for Generator Rotors

A471	A471-94 (1999)	Specification for Vacuum-Treated Alloy Steel Forgings for Turbine Rotor Disks and Wheels
A472	A472-98	Test Method for Heat Stability of Steam Turbine Shafts and Rotor Forgings
A473	A473-99	Specification for Stainless Steel Forgings
A484	A484/A484M-98	Specification for General Requirements for Stainless Steel Bars, Billets, and Forgings
A493	A493-95	Specification for Stainless Steel Wire and Wire Rods for Cold Heading and Cold Forging
A503	A503/A503M-99	Specification for Ultrasonic Examination of Large Forged Crankshafts
A508	A508/A508M-95 (1999)	Specification for Quenched and Tempered Vacuum-Treated Carbon and Alloy Steel Forgings for Pressure Vessels
A522	A522/A522M-95b	Specification for Forged or Rolled 8 and 9% Nickel Alloy Steel Flanges, Fittings, Valves, and Parts for Low-Temperature Service
A541	A541/A541M-95 (1999)	Specification for Quenched and Tempered Carbon and Alloy Steel Forgings for Pressure Vessel Components
A565	A565-97	Specification for Martensitic Stainless Steel Bars, Forgings, and Forging Stock for High-Temperature Service
A579	A579-99	Specification for Superstrength Alloy Steel Forgings
A592	A592/A592M-89 (1999)	Specification for High-Strength Quenched and Tempered Low-Alloy Steel Forged Fittings and Parts for Pressure Vessels
A638	A638/A638M-00	Specification for Precipitation Hardening Iron Base Superalloy Bars, Forgings, and Forging Stock for High-Temperature Service
A646	A646-95 (1999)	Specification for Premium Quality Alloy Steel Blooms and Billets for Aircraft and Aerospace Forgings
A649	A649/A649M-99	Specification for Forged Steel Rolls Used for Corrugating Paper Machinery
A668	A668/A668M-96e1	Specification for Steel Forgings, Carbon and Alloy, for General Industrial Use
A694	A694/A694M-00	Specification for Carbon and Alloy Steel Forgings for Pipe Flanges, Fittings, Valves, and Parts for High-Pressure Transmission Service
A705	A705/A705M-95	Specification for Age-Hardening Stainless Steel Forgings
A707	A707/A707M-00	Specification for Forged Carbon and Alloy Steel Flanges for Low-Temperature Service

A711	A711-92 (1996) e1	Specification for Steel Forging Stock
A723	A723/A723M-94 (1999)	Specification for Alloy Steel Forgings for High-Strength Pressure Component Application
A727	A727/A727M-97	Specification for Carbon Steel Forgings for Piping Components with Inherent Notch Toughness
A730	A730-93 (1999)	Specification for Forgings, Carbon and Alloy Steel, for Railway Use
A745	A745/A745M-94 (1999)	Practice for Ultrasonic Examination of Austenitic Steel Forgings
A765	A765/A765M-98a	Specification for Carbon Steel and Low-Alloy Steel Pressure-Vessel-Component Forgings with Mandatory Toughness Requirements
A768	A768-95	Specification for Vacuum-Treated 12% Chromium Alloy Steel Forgings for Turbine Rotors and Shafts
A788	A788-98a	Specification for Steel Forgings, General Requirements
A831	A831/A831M-95	Specification for Austenitic and Martensitic Stainless Steel Bars, Billets, and Forgings for Liquid Metal Cooled Reactor Core Components
A836	A836/A836M-95b	Specification for Titanium-Stabilized Carbon Steel Forgings for Glass-Lined Piping and Pressure Vessel Service
A837	A837-91 (1996) e1	Specification for Steel Forgings, Alloy, for Carburizing Applications
A859	A859/A859M-95 (1999)	Specification for Age-Hardening Alloy Steel Forgings for Pressure Vessel Components
A891	A891-98	Specification for Precipitation Hardening Iron Base Superalloy Forgings for Turbine Rotor Disks and Wheels
A909	A909-94 (1999)	Specification for Steel Forgings, Microalloy, for General Industrial Use
A921	A921/A921M-93 (1999)	Specification for Steel Bars, Microalloy, Hot-Wrought, Special Quality, for Subsequent Hot Forging
A952	A952/A952M-98	Specification for Forged Grade 80 and Grade 100 Steel Lifting Components and Welded Attachment Links
A961	A961-99	Specification for Common Requirements for Steel Flanges, Forged Fittings, Valves, and Parts for Piping Applications
A965	A965/A965M-99	Specification for Steel Forgings, Austenitic, for Pressure and High Temperature Parts
A966	A966/A966M-96	Test Method for Magnetic Particle Examination of Steel Forgings Using Alternating Current