## Contents

## SELECTED ASTM STANDARDS FOR STRUCTURAL STEEL FABRICATION INCLUDING STRUCTURAL STAINLESS STEEL, 2022 EDITION

•

In the serial designations prefixed to the following titles, the number following the dash indicates the year of original issue, or in the case of revision, the year of last revision. Thus, standards adopted or revised during the year 2019 have as their final number 19. A letter following this number indicates more than one revision during that year, that is, 19a indicates the second revision in 2019, 19b the third revision, etc. Standards that have been reapproved without change are indicated by the year of last reapproval in parentheses as part of the designation number, for example, (2019). A superscript epsilon (<sup>6</sup>) indicates an editorial change since the last revision or reapproval—<sup>61</sup> for the first change, for the second change, etc.

A6/A6M 19	Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling	1
A36/A36M 19	Specification for Carbon Structural Steel	64
A53/A53M - 20	Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless	67
A123/A123M - 17	Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products	90
A143/A143M - 07(2020)	Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement	99
A182/A182M – 21	Specification for Forged or Rolled Alloy and Stainless Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service	103
A193/A193M – 20	Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications	120
A194/A194M – 20a	Specification for Carbon Steel, Alloy Steel, and Stainless Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both	134
A216/A216M – 18	Specification for Steel Castings, Carbon, Suitable for Fusion Welding, for High- Temperature Service	146
A240/A240M – 20a	Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications	150
A276/A276M – 17	Specification for Stainless Steel Bars and Shapes	162
A283/A283M - 18	Specification for Low and Intermediate Tensile Strength Carbon Steel Plates	170
A307 – 21	Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength	173
A312/A312M – 21	Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes	179
A320/A320M - 21a	Specification for Alloy-Steel and Stainless Steel Bolting for Low-Temperature Service	192
$A351/A351M - 18^{\epsilon 1}$	Specification for Castings, Austenitic, for Pressure-Containing Parts	200
$A354 - 17^{\varepsilon 2}$	Specification for Quenched and Tempered Alloy Steel Bolts, Studs, and Other Externally Threaded Fasteners	207
A370 - 20	Test Methods and Definitions for Mechanical Testing of Steel Products	215
A380/A380M 17	Practice for Cleaning, Descaling, and Passivation of Stainless Steel Parts, Equipment, and Systems	265
A384/A384M - 07(2019)	Practice for Safeguarding Against Warpage and Distortion During Hot-Dip Galvanizing of Steel Assemblies	278
A385/A385M - 20	Practice for Providing High-Quality Zinc Coatings (Hot-Dip)	281
A435/A435M – 17	Specification for Straight-Beam Ultrasonic Examination of Steel Plates	291
A449 – 14(2020)	Specification for Hex Cap Screws, Bolts and Studs, Steel, Heat Treated, 120/105/90 ksi Minimum Tensile Strength, General Use	294
A453/A453M – 17	Specification for High-Temperature Bolting, with Expansion Coefficients Comparable to Austenitic Stainless Steels	301
A473 – 19	Specification for Stainless Steel Forgings	308
A479/A479M – 20	Specification for Stainless Steel Bars and Shapes for Use in Boilers and Other Pressure Vessels	314

## CONTENTS

	Mark -		
	A480/A480M – 20a	Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip	322
	A484/A484M – 20b	Specification for General Requirements for Stainless Steel Bars, Billets, and Forgings	348
	A500/A500M – 21	Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes	362
	A501/A501M - 14	Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing	368
	A502 – 03(2015)	Specification for Rivets, Steel, Structural	377
TO THE	A514/A514M – 18 <sup>£1</sup>	Specification for High-Yield-Strength, Quenched and Tempered Alloy Steel Plate, Suitable	381
	A 500/A 500M 10	for Welding	204
	A529/A529M – 19	Specification for High-Strength Carbon-Manganese Steel of Structural Quality	384
S	A554 – 21	Specification for Welded Stainless Steel Mechanical Tubing	387
1	A563/A563M – 21	Specification for Carbon and Alloy Steel Nuts (Inch and Metric)	395
	A564/A564M – 19a	Specification for Hot-Rolled and Cold-Finished Age-Hardening Stainless Steel Bars and Shapes	406
	A568/A568M – 19a	Specification for Steel, Sheet, Carbon, Structural, and High-Strength, Low-Alloy, Hot-	414
	· ·	Rolled and Cold-Rolled, General Requirements for	
Ž	A572/A572M – 21ε1	Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel	444
	A588/A588M – 19	Specification for High-Strength Low-Alloy Structural Steel, up to 50 ksi [345 MPa] Mini-	448
Ö	at. Kost	mum Yield Point, with Atmospheric Corrosion Resistance	
	A606/A606M - 18	Specification for Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-	451
	**************************************	Rolled, with Improved Atmospheric Corrosion Resistance	
	A618/A618M - 04(2015)	Specification for Hot-Formed Welded and Seamless High-Strength Low-Alloy Structural	455
		Tubing	
	A666 – 15	Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar	459
	A668/A668M 20a	Specification for Steel Forgings, Carbon and Alloy, for General Industrial Use	467
W AS	A673/A673M – 17	Specification for Sampling Procedure for Impact Testing of Structural Steel	477
	A693 – 16	Specification for Precipitation-Hardening Stainless and Heat-Resisting Steel Plate, Sheet,	482
	A025 – 10	and Strip	402
	A705/A705M – 20 <sup>ε1</sup>	Specification for Age-Hardening Stainless Steel Forgings	490
) •	A706/A706M – 16	Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement	498
6 6.7	A709/A709M – 18	Specification for Structural Steel for Bridges	505
	A747/A747M – 18	Specification for Steel Castings, Stainless, Precipitation Hardening	514
/ \	A751 – 20	Test Methods and Practices for Chemical Analysis of Steel Products	518
ì	A759 – 10(2016)	Specification for Carbon Steel Crane Rails	524
7	A770/A770M – 03(2018)	Specification for Carbon Steel Clane Rans Specification for Through-Thickness Tension Testing of Steel Plates for Special Applica-	528
		tions	320
	A780/A780M – 20	Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings	533
į	A786/A786M – 15	Specification for Hot-Rolled Carbon, Low-Alloy, High-Strength Low-Alloy, and Alloy	537
		Steel Floor Plates	
	A790/A790M - 20	Specification for Seamless and Welded Ferritic/Austenitic Stainless Steel Pipe	547
	A847/A847M – 20	Specification for Cold-Formed Welded and Seamless High-Strength, Low-Alloy Structural	557
i.		Tubing with Improved Atmospheric Corrosion Resistance	
7	A890/A890M – 18a	Specification for Castings, Iron-Chromium-Nickel-Molybdenum Corrosion-Resistant, Duplex (Austenitic/Ferritic) for General Application	563
2.	A913/A913M – 19	Specification for High-Strength Low-Alloy Steel Shapes of Structural Quality, Produced	568
		by Quenching and Self-Tempering Process (QST)	
	A941 – 18	Terminology Relating to Steel, Stainless Steel, Related Alloys, and Ferroalloys	572
	A958/A958M - 17	Specification for Steel Castings, Carbon and Alloy, with Tensile Requirements, Chemical	580
1		Requirements Similar to Standard Wrought Grades	
	A962/A962M – 19	Specification for Common Requirements for Bolting Intended for Use at Any Temperature	585
		from Cryogenic to the Creep Range	505
	A967/A967M – 17	Specification for Chemical Passivation Treatments for Stainless Steel Parts	598
	A992/A992M – 20	Specification for Structural Steel Shapes	607
	A999/A999M – 18	Specification for General Requirements for Alloy and Stainless Steel Pipe	610
A	1008/A1008M – 21	Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy,	622
	21	High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution	022
٨	1011/4 10113 / 10	Hardened, and Bake Hardenable	
4	1011/A1011M – 18a	Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength	633
		Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High	
	101041-0	Strength	
A	1018/A1018M – 18	Specification for Steel, Sheet and Strip, Heavy-Thickness Coils, Hot-Rolled, Carbon,	642
		Commercial, Drawing, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy	
. :		with Improved Formability, and Ultra-High Strength	

## CONTENTS

A1043/A1043M – 18	Specification for Structural Steel with Low Yield to Tensile Ratio for Use in Buildings	650
A1049/A1049M – 18	Specification for Stainless Steel Forgings, Ferritic/Austenitic (Duplex), for Pressure Ves-	653
	sels and Related Components	
A1065/A1065M - 18	Specification for Cold-Formed Electric-Fusion (Arc) Welded High-Strength Low-Alloy	657
111003/2110031/1	Structural Tubing in Shapes, with 50 ksi [345 MPa] Minimum Yield Point	
$A1066/A1066M - 11(2015)^{\epsilon 2}$	Specification for High-Strength Low-Alloy Structural Steel Plate Produced by Thermo-	663
A1000/A1000W - 11(2013)		005
1100011100014 10	Mechanical Controlled Process (TMCP)	667
A1069/A1069M – 19	Specification for Laser and Laser Hybrid Welded Stainless Steel Bars, Plates, and Shapes	
A1082/A1082M – 16	Specification for High Strength Precipitation Hardening and Duplex Stainless Steel Bolt-	673
	ing for Special Purpose Applications	650
A1085/A1085M – 15	Specification for Cold-Formed Welded Carbon Steel Hollow Structural Sections (HSS)	679
B695 – 04(2016)	Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel	684
C567/C567M – 19	Test Method for Determining Density of Structural Lightweight Concrete	690
D4417 – 21	Test Methods for Field Measurement of Surface Profile of Blast Cleaned Steel	694
D7127 – 17	Test Method for Measurement of Surface Roughness of Abrasive Blast Cleaned Metal	701
	Surfaces Using a Portable Stylus Instrument	
E119 – 20	Test Methods for Fire Tests of Building Construction and Materials	707
E165/E165M – 18	Practice for Liquid Penetrant Testing for General Industry	743
E709 – 21	Guide for Magnetic Particle Testing	762
F436/F436M 19	Specification for Hardened Steel Washers Inch and Metric Dimensions	810
F593 – 17	Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs	818
F594 – 09(2020)	Specification for Stainless Steel Nuts	827
F606/F606M - 21	Test Methods for Determining the Mechanical Properties of Externally and Internally	835
	Threaded Fasteners, Washers, Direct Tension Indicators, and Rivets	
F788 – 20	Specification for Surface Discontinuities of Bolts, Screws, Studs, and Rivets, Inch and	854
1.00 20	Metric Series	
F836M – 20	Specification for Style 1 Stainless Steel Metric Nuts (Metric)	860
F844 19	Specification for Washers, Steel, Plain (Flat), Unhardened for General Use	867
F959/F959M – 17a	Specification for Compressible-Washer-Type Direct Tension Indicators for Use with Struc-	871
17535/17535101 — 174	tural Fasteners, Inch and Metric Series	0,1
771.470 10	Practice for Fastener Sampling for Specified Mechanical Properties and Performance	876
F1470 – 19	• • • •	670
71.554 00	Inspection	000
F1554 - 20	Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength	882
F2329/F2329M – 15	Specification for Zinc Coating, Hot-Dip, Requirements for Application to Carbon and	890
	Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners	
F3043 – 15	Specification for "Twist Off" Type Tension Control Structural Bolt/Nut/Washer Assem-	895
	blies, Alloy Steel, Heat Treated, 200 ksi Minimum Tensile Strength	
F3111 16	Specification for Heavy Hex Structural Bolt/Nut/Washer Assemblies, Alloy Steel, Heat	909
	Treated, 200 ksi Minimum Tensile Strength	
F3125/F3125M - 19 <sup>e2</sup>	Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel,	924
	Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and	
•	Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength	
F3148 – 17a	Specification for High Strength Structural Bolt Assemblies, Steel and Alloy Steel, Heat	938
15146 - 174	Treated, 144ksi Minimum Tensile Strength, Inch Dimensions	750
(101 04/2020)		949
G101 04(2020)	Guide for Estimating the Atmospheric Corrosion Resistance of Low-Alloy Steels	グサブ