

The American Society for Testing and Materials is an international standards organization that develops and publishes voluntary consensus technical standards for a wide range of materials, products, systems, and services.

ASTM A572 High strength, low-alloy structural steel shapes, plates, and bars.

ASTM A572 covers five grades of high strength, low-alloy structural steel shapes, plates, and bars. All grades are intended for riveted, bolted, or welded structures, with the exception that grades 60 and 65 are not intended for welded bridge applications.

A572 Mechanical Requirements

Grade	Yield, min ksi	Tensile, min ksi	Elongation, min % in 8"	Elongation, min % in 2"
42	42	60	20	24
50	50	65	18	21
55	55	70	17	20
60	60	75	16	18
65	65	80	15	17

A572 Chemical Requirements

Grade	Maximum Diameter, inches	Carbon, max%	Manganese, max%	Phosphorus, max%	Sulfur, max%	Silicon, max%
42	6	0.21	1.35	0.04	0.05	0.40
50	4	0.23	1.35	0.04	0.05	0.40
55	2	0.25	1.35	0.04	0.05	0.40
60	1-1/4	0.26	1.35	0.04	0.05	0.40
65	½ to 1-1/4	0.23	1.65	0.04	0.05	0.40
65	Below ½	0.26	1.35	0.04	0.05	0.40

This abridged table shows only the chemical requirements for bars. The complete table including shapes and plates can be found in the ASTM standard at www.astm.org

Alloy Content

In addition to the chemical requirements above, the material shall also contain enough alloying elements to meet the requirements of one of the below alloy types.

Type	Elements	Heat Analysis, %
1	Columbium	0.005 – 0.05
2	Vanadium	0.01 – 0.15
3	Columbium	0.005 – 0.05
	Vanadium	0.01 – 0.15
	Columbium plus Vanadium	0.02 – 0.15
5	Titanium	0.006 – 0.04
	Nitrogen	0.003 – 0.015
	Vanadium	0.06 max