

ASTM A193 B8T / A194 8T – SS 321 (UNS S32100)

CHEMICAL & MECHANICAL PROPERTIES

HIGH TEMPERATURE STRENGTH | CORROSION RESISTANCE | RELIABLE FASTENING SOLUTIONS

1 MATERIAL IDENTIFICATION

Specification	Material Identification
ASTM A193 Grade B8T	Type 321 / UNS S32100, austenitic stainless steel bolting.
ASTM A194 Grade 8T	Type 321 / UNS S32100, stainless steel nuts for high-pressure/high-temperature service.



2 CHEMICAL COMPOSITION, wt.% (ASTM A193 B8T / A194 8T)

C	Mn	P	S	Si	Cr	Ni	Ti	N	Fe
≤ 0.08	≤ 2.00	≤ 0.045	≤ 0.030	≤ 1.00	17.0 – 19.0	9.0 – 12.0	5 × (C + N) min. to 0.70 max.	≤ 0.10	Balance

3 ASTM A193 B8T MECHANICAL REQUIREMENTS, CLASS 1, CARBIDE SOLUTION TREATED

Property	Metric Units	Imperial Units
Tensile strength, minimum	515 MPa	75 ksi
Yield strength, 0.2% offset, minimum	205 MPa	30 ksi
Elongation in 4D, minimum	30 %	—
Reduction of area, minimum	50 %	—
Hardness, maximum	223 HBW	96 HRB

4 ASTM A194 GRADE 8T NUT REQUIREMENTS

Property	Requirement
Completed nuts hardness	126 – 300 HBW
Rockwell B hardness	60 – 105 HRB

Note: Strain-hardened nuts (Grade 8TA) have different hardness requirements. Grade 8T should be identified separately.

Metric Proof-Load (Reference Values for Applicable Metric Series)

Nominal Size (M)	Heavy Hex Nut Proof Load (kN)	Hex Nut Proof Load (kN)
M12	46.4	43.4
M16	86.4	80.9
M20	134.8	126.2
M24	194.2	181.8
M30	308.6	288.9
M36	449.4	420.8

5 SOLUTION ANNEALING / CARBIDE SOLUTION TREATMENT

Material	Heat Treatment Requirement
UNS S32100 / Type 321	Minimum 1040 °C (1900 °F), followed by water quenching or other rapid cooling sufficient to prevent carbide reprecipitation.

Note: ASTM A193 uses the term "carbide solution treated"; exact heat-treatment requirements must be verified against the current purchased edition and product form.

6 KEY FEATURES / APPLICATIONS

Key Features

- Titanium-stabilized austenitic stainless steel
- Good resistance to intergranular corrosion after welding
- Suitable for elevated-temperature service
- Excellent strength and corrosion resistance
- Reliable performance in demanding environments

Typical Applications

- Petrochemical and chemical processing plants
- Power generation equipment
- Heat exchangers and boilers
- Furnace and heat-treatment equipment
- Process equipment and pressure vessels
- High-temperature and corrosive service environments

Values shown are specification requirements/reference values. Verify current ASTM edition, product size, class, condition and purchase-order requirements before certification.