

SA 453M 662

NICKEL ALLOY

CLASS B

BOLTING MATERIAL FOR HIGH TEMPERATURE SERVICE

SA 453M covers five grades of bolting materials such as grade 660, 651, 662, 665 & 668 with Twelve classes of yield strength ranging from 50 to 120 ksi for use in high-temperature service such as fasteners for pressure vessel and valve flanges. The term "bolting material" as used in SA 453M 662 Class B, covers rolled, forged, or hot-extruded bars; bolts, nuts, screws, washers, studs and stud bolts. SA 453M 662 Class B expressed in both inch-pound units and in SI units. The values stated in each system are not exact equivalents; therefore, each system must be used independently of the other. Combining values from the two systems may result in nonconformance with the specification.

Chemical Properties

| C | Mn | P | S | Si | Cr | Mo | Ni | Cu | Ti | Al | B |
|----------|-----------|-----------|-----------|-----------|-----------|---------|-----------|----------|-----------|----------|-------------|
| 0.08 Max | 0.40-1.00 | 0.040 Max | 0.030 Max | 0.40-1.00 | 12.0-15.0 | 2.0-3.5 | 24.0-28.0 | 0.50 Max | 1.80-2.10 | 0.35 Max | 0.001-0.010 |

Mechanical Properties

| Yield strength | Tensile strength | Elongation | Reduction | Hardness | | |
|----------------|------------------|------------|-----------|----------|-----|-----|
| Mpa | Mpa | % | % | BHN | HRB | HRC |
| min | min | min | min | | | |
| 550 | 860 | 15 | 18 | 248-321 | 99 | 35 |

STREE RUPTURE REQUIREMENTS

| Grade | Class | Test Temperature | Stress, Min | | Time to Rupture | Elongation |
|-------|-------|------------------|-------------|-----|-----------------|------------|
| | | Deg F [Deg C] | Ksi | Mpa | Min, h* | Min % |
| 662 | B | 1200 [650] | 55 | 380 | 100 | 5 |

Heat Treatment

Solution treated @ 1950°C ± 25°F hold 2 h, & liquid quenched and Hardened @ 730°C to 760°C, hold 20 h, furnace cool to 1200 ± 25°F (650±14°C) hold 20 h, air cool

Equivalent Designation

UNS 66220

CUSTOMER ASSISTANCE : customer@TorqBolt.com