



# ASTM A354

Scope - This specification covers the chemical and mechanical requirements of quenched and tempered alloy steel bolts, studs, and other externally threaded fasteners covering two strength levels, 4" diameter and smaller.

|               |         |                                    |
|---------------|---------|------------------------------------|
| <b>Grades</b> | A354 BC | Alloy Steel, quenched and tempered |
|               | A354 BD | Alloy Steel, quenched and tempered |

| <b>Mechanical Properties</b> | Grade | Markings | Size       | Tensile, ksi, min | Yield, ksi, min | Elong, %, min | RA, %, min | Hardness |
|------------------------------|-------|----------|------------|-------------------|-----------------|---------------|------------|----------|
|                              | BC    | BC       | ¼ to 2-½   | 125               | 109             | 16            | 50         | C26-C36  |
|                              |       |          | 2-5/8 to 4 | 115               | 99              | 16            | 45         | C22-C33  |
|                              | BD    | BD       | ¼ to 2-½   | 150               | 130             | 14            | 40         | C33-C39  |
| 2-5/8 to 4                   |       |          | 140        | 115               | 14              | 40            | C33-C39    |          |

| <b>Recommended Mating Materials</b> | Element         | Sizes ¼ to 1-½ | Sizes above 1-½ |
|-------------------------------------|-----------------|----------------|-----------------|
|                                     | Carbon          | 0.30 – 0.53    | 0.35 – 0.53     |
|                                     | Phosphorus, max | 0.035          | 0.035           |
|                                     | Sulfur, max     | 0.04           | 0.05            |

| <b>Recommended Mating Materials</b> | <b>Nuts</b>     |                   |                  | <b>Washers</b> |
|-------------------------------------|-----------------|-------------------|------------------|----------------|
|                                     | <b>Grade BC</b> |                   | <b>Grade BD</b>  |                |
|                                     | <b>Plain</b>    | <b>Galvanized</b> | <b>Plain</b>     |                |
|                                     | A563C Heavy Hex | A563DH Heavy Hex  | A563DH Heavy Hex |                |