



# FASTENERS NUTS

Product Sheet

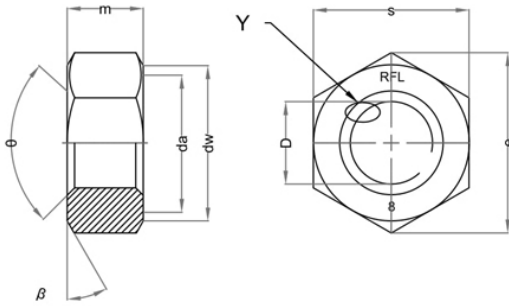


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## Stainless Steel Nuts

**Description** - Our Stainless-Steel Nuts are globally recognized for their superior grip, durability, and longevity. These nuts are meticulously crafted to meet the diverse needs of our customers across various industries. Available in a variety of grades, structures, dimensions, and sizes, these nuts are known for their precision, complete finish, and customized dimensions. The nuts are fabricated using the best raw materials to sustain the quality and are tested by conducting various destructive and non-destructive tests to ensure their efficiency and strength. With their high tensile strength and excellent resistance to corrosion, these nuts are perfect for industrial use.



### Stainless Steel Nuts Specifications

| Stainless Steel Grade | Nut Standards    | Universal Nut Standards | Length         | Nut Size                           |
|-----------------------|------------------|-------------------------|----------------|------------------------------------|
| SS 304                |                  |                         |                |                                    |
| SS 310                |                  |                         |                |                                    |
| SS 316                |                  |                         |                |                                    |
| SS 317                | ASTM A194 / ASME | DIN, ASTM, BS and all   | 3 mm to 200 mm | M3 - M56, 3/6" to 2", Custom Sizes |
| SS 321                | SA194, ASTM F594 | International Standards |                |                                    |
| SS 347                |                  |                         |                |                                    |
| SS 410                |                  |                         |                |                                    |
| SS 904L               |                  |                         |                |                                    |

### Features

**Weldability:** Our Stainless Steel 304 Nuts are known for their excellent weldability. They can be seamlessly integrated into various structures, making them a top choice for industries that require robust and reliable fastening solutions.

**Machinability:** The Stainless Steel 310 Nuts are recognized for their high machinability. They can be easily shaped and modified to fit specific requirements, making them suitable for a wide range of applications, including petrochemical equipment, food processing, and chemical processing equipment.

**Heat Treatment Resistance:** The Stainless Steel 316 Nuts are renowned for their excellent resistance to heat treatment. They maintain their strength and integrity even under high temperatures, making them ideal for use in various industrial sectors.

**Solution Treatment Compatibility:** Our nuts are compatible with solution treatment processes. This feature enhances their corrosion resistance and makes them suitable for use in harsh environments such as marine applications.

**Durability and Strength:** Our nuts are known for their durability, strength, and excellent resistance to atmospheric corrosion, mild acids, and freshwater. They are suitable for use in petrochemical processes, petroleum refiners, heat exchangers, and more.

**High Corrosion Resistance:** The nuts are well-built, durable, and designed for high corrosion, pitting, and crevice resistance. They are perfect for use in various industrial sectors, such as seawater cooling equipment, condenser tubes, heat exchangers, and chemical processing.

## Chemical Composition

| Stainless Steel Grade | Cr (%)  | Ni (%)  | Mo (%)   | Mn MAX (%) | Si MAX (%) | C MAX (%) | P MAX (%) | S MAX (%) | Fe (%)   | Other     |
|-----------------------|---------|---------|----------|------------|------------|-----------|-----------|-----------|----------|-----------|
|                       | SS 304  | 18 - 20 | 8 - 10.5 | -          | 2          | 0.75      | 0.08      | 0.045     | 0.03     | Balance   |
| SS 310                | 24 - 26 | 19 - 21 | 0.1 max  | 2          | 0.15       | 0.015     | 0.020     | 0.015     | 54.7 min | -         |
| SS 316                | 16 - 18 | 11 - 14 | 2 - 3    | 2          | 1          | 0.08      | 0.045     | 0.03      | 67.8 min | -         |
| SS 317                | 18 - 20 | 11 - 15 | 3 - 4    | 2          | 1          | 0.08      | 0.045     | 0.03      | 57.8 min | -         |
| SS 321                | 17 - 19 | 9 - 12  | -        | 2          | 1          | 0.08      | 0.045     | 0.03      | Balance  | 0.7 Ti    |
| SS 347                | 17 - 20 | 9 - 13  | -        | 2          | 1          | 0.08      | 0.045     | 0.03      | 62.7 min | 1 Nb + Ta |
| SS 410                | 17 - 20 | 9 - 13  | -        | 1          | 1          | 0.08      | 0.04      | 0.03      | Balance  | -         |
| SS 904L               | 19 - 23 | 23 - 28 | 4 - 5    | 2          | 1          | 0.02      | 0.04      | 0.03      | Balance  | 1-2 Cu    |

## Mechanical Properties

| Stainless Steel Grade | Tensile Strength (MPa) | Yield Strength 0.2% Proof (MPa) | Elongation (% in 50mm) | Hardness Rockwell B (HR B) | Hardness Brinell (HB) |
|-----------------------|------------------------|---------------------------------|------------------------|----------------------------|-----------------------|
| SS 304                | 515                    | 205                             | 40                     | 92                         | 201                   |
| SS 310                | 515                    | 205                             | 40                     | 95                         | 217                   |
| SS 316                | 515                    | 205                             | 35                     | 95                         | 217                   |
| SS 317                | 515                    | 205                             | 35                     | 95                         | 217                   |
| SS 321                | 515                    | 205                             | 35                     | 95                         | 217                   |
| SS 347                | 515                    | 205                             | 35                     | 95                         | 201                   |
| SS 410                | 480                    | 275                             | 16                     | 95                         | 201                   |
| SS 904L               | 490                    | 220                             | 36                     | 70-90                      | 150-166               |

## Physical Properties

| Stainless Steel Grade | Density (G/Cm <sup>3</sup> ) | Melting Point (°C) | Thermal Expansion (Mm/M°C) | Thermal Conductivity (W/M·K) | Electrical Resistivity (Nø·M) | Specific Heat (J/Kg·K) |
|-----------------------|------------------------------|--------------------|----------------------------|------------------------------|-------------------------------|------------------------|
| SS 304                | 8.0                          | 1400 - 1455        | 17.2                       | 16.2                         | 720                           | 500                    |
| SS 310                | 7.9                          | 1400 - 1455        | 14.2                       | 14.2                         | 720                           | 500                    |
| SS 316                | 8.0                          | 1390 - 1450        | 15.9                       | 16.3                         | 740                           | 500                    |
| SS 317                | 7.9                          | 1390 - 1450        | 15.9                       | 14.6                         | 740                           | 500                    |
| SS 321                | 8.0                          | 1450               | 16.6                       | 16.1                         | 720                           | 500                    |
| SS 347                | 7.96                         | 1450               | 16.0                       | 16.3                         | 720                           | 500                    |
| SS 410                | 7.74                         | 1400 - 1450        | 9.9                        | 24.9                         | 570                           | 460                    |
| SS 904L               | 7.98                         | 1300 - 1390        | 15.0                       | 11.5                         | 950                           | 450                    |

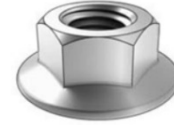
## Nut Shapes



HEX NUT



SQUARE NUT



HEX NUT WITH FLANGE



LOCK NUT



CASTLE NUT



CAP NUT



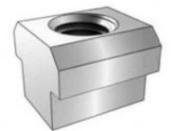
WING NUT



SLOTTED ROUND NUT



12-POINTS NUT



T NUT

## Comparasion of Grades

### Available Nut Types

- Hex Nut
- Heavy Hex Nut
- Lock Nut
- Nylock Nut
- Weld Nut
- Dome Nut
- Square Nut
- Flange Nut
- Eye Nut

- Hex Machine Nut
- T - Nut
- Slotted Hex Nut
- Nylon Insert Lock Nut
- Knurled Thumb Nut
- Coupling Nut
- Cap Nut
- Keys-k Lock Nut

| Stainless Steel Grade | Advantages   | Disadvantages   | Typical Applications                               |
|-----------------------|--|---|--|
| SS 304                | Excellent corrosion resistance, good formability, good weldability                                   | Lower strength at high temperatures, not suitable for extremely corrosive environments              | Kitchen equipment, architecture, medical equipment |
| SS 310                | High temperature resistance, excellent toughness at cryogenic temperatures                           | More expensive, less readily available  | Heat treatment industry, furnace parts             |
| SS 316                | Excellent corrosion resistance, especially against chlorides and other industrial solvents           | More expensive than SS 304  | Marine applications, chemical processing           |
| SS 317                | More resistant to corrosion and pitting than 316, especially in chloride environments                | High cost, less readily available   | Chemical and petrochemical processing              |
| SS 321                | Improved intergranular corrosion resistance due to added titanium                                    | Not as readily available as 304, more expensive   | Aerospace, high temperature applications           |
| SS 347                | Enhanced high-temperature service due to the addition of columbium and tantalum                      | High cost, less readily available   | Aerospace, high temperature applications           |
| SS 410                | Excellent hardness after heat treatment, good corrosion resistance for a martensitic stainless steel | Poor corrosion resistance compared to austenitic grades, must be hardened for maximum effectiveness | Cutlery, dental and surgical instruments           |
| SS 904L               | Super austenitic, hence improved resistance to strong reducing acids, particularly sulfuric acid     | More expensive, less readily available  | Chemical processing, pollution control equipment   |



# Material Options

## High Nickel Nuts

**Description** - These nuts deliver unparalleled mechanical strength, resistance to corrosion and heat, and durability across wide temperature ranges. They can handle various industrial applications, ranging from oil and gas, nuclear power plants, and the food and dairy industry to chemical processing plants and pollution control equipment. With varied grades at our disposal, our product line offers diverse properties such as exceptional resistance to corrosive forces, high tensile strength, and robust solution strength.

### Features

**Superior Weldability:** Our nuts' superb weldability makes them perfect for use in complex structures and demanding industrial applications. The grades that excel in this feature are Inconel 625, Inconel 718, and Titanium Grade 5.

**Outstanding Machinability:** We ensure our nuts can be easily processed and modified into various designs, which is a direct result of their exceptional machinability. Monel 400 and Titanium Grade 2 stand out in this feature.

**Exceptional Heat Treatment Resistance:** Our range of nuts is known for their heat treatment resistance, retaining strength and stability even at elevated temperatures. The Inconel 800, Incoloy 825, and Hastelloy C-2000 grades shine in this category.

**Corrosion Resistance:** The alloys used in our nuts provide high corrosion resistance, making them durable in the harshest and most corrosive environments. Nickel 201, Monel K-500, and Hastelloy C276 are the top performers in corrosion resistance.

**High Tensile Strength:** All our nuts exhibit high tensile strength, but Inconel 718 and Titanium Grade 5 are particularly known for their outstanding tensile strength.

**Diverse Application Suitability:** Our nuts are designed to withstand various demanding industrial applications, including oil & gas, chemical, and nuclear power plants. Nickel 200 and Incoloy 925 demonstrate excellent versatility in this regard.

### High Nickel Nut Specifications

| High Nickel Group       | Nut Standards                    | Universal Nut Standards                       | Length         | Nut Size                           |
|-------------------------|----------------------------------|---|----------------|------------------------------------|
| Ni 200/201              | ASTM B 160 / ASME SB 160         |   |                |                                    |
| Monel 400               | ASTM B 166,164 / ASME SB 166,164 |   |                |                                    |
| Monel K500              |                                  |   |                |                                    |
| Inconel 600/601/625     | ASTM B 166, ASME SB 166          |   |                |                                    |
| Inconel 718             | ASTM B 166 / ASME SB 166         | DIN, ASTM, BS and all International Standards | 3 mm to 200 mm | M3 - M56, 3/6" to 2", Custom Sizes |
| Incoloy 800/800H/ 800HT | ASTM B 408, ASME SB 408          |   |                |                                    |
| Incoloy 825             | ASTM B 425 / ASME SB 425         |   |                |                                    |
| Incoloy 925             | ASTM B 425 / ASME SB 425         |   |                |                                    |
| Hastelloy C276          | ASTM B 574 / ASME SB 574         |   |                |                                    |
| Hastelloy C2000         | ASTM B 574/575, ASME SB 574/575  |   |                |                                    |
| Hastelloy C22           | ASTM B 574 / ASME SB 574         |   |                |                                    |
| Titanium 2              | ASTM F 467 / ASME SF 467         |   |                |                                    |
| Titanium 5              | ASTM B 348 / ASME SB 348         |   |                |                                    |



# High Tensile Nuts

**Description** - Our High Tensile Nuts, incorporating Grades 5, 8, and 2H, offer exceptional performance across a variety of industries. Known for their advanced mechanical properties, these grades possess extraordinary tensile strength, exceptional resistance to heat and corrosion, and unmatched durability. These nuts have been meticulously engineered for sectors such as petrochemicals, engineering, construction, and marine. Their high mechanical strength, remarkable heat resistance, and unparalleled durability ensure flawless performance in high-pressure environments and elevated temperatures.



## Features

**Optimized Weldability:** The enhanced weldability of our High Tensile Nuts make them ideal for complex structures and demanding applications, with Grades 5 and 8 showcasing this attribute prominently.

**Advanced Machinability:** Offering superior machinability, our nuts can be effortlessly adapted into a wide array of designs. Grade 8 is particularly distinguished in this facet.

**Remarkable Heat Endurance:** Known for their impressive heat treatment resistance, our nuts retain their strength and stability under high temperatures. Grade 2H is the standout performer in this category.

**Exceptional Anti-Corrosion Properties:** Demonstrating high corrosion resistance, particularly Grades 5 and 2H, our High Tensile Nuts promise longevity even in the most corrosive environments.

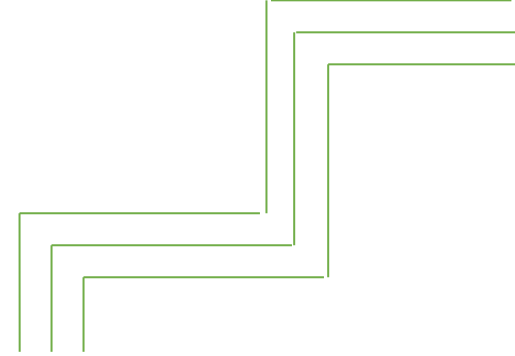
**Superior Tensile Strength:** All our grades display high tensile strength, with Grade 5 notably excelling in this field.

| High Tensile Grades | Nut Standards         | Universal Nut Standards                       | Length         | Nut Size     |
|---------------------|-----------------------|---|----------------|--------------|
| Grade 5             | ASTM A194, ASME SA194 | DIN, ASTM, BS and all International Standards | 3 mm to 200 mm | M3 - M56,    |
| Grade 8             |                       |   |                | 2",          |
| 2H                  |                       |   |                | Custom Sizes |

## High Tensile Nut Specifications

# Duplex & Super Duplex Steel Nuts

**Description** - These nuts are renowned for their superior mechanical properties, high corrosion resistance, and exceptional tensile strength. Suitable for harsh applications such as the chemical, petrochemical, power generation, food processing, and oil and gas industries, Duplex Steel Nuts provide reliable solutions, boasting exceptional corrosion resistance and resistance to pitting and cracking. The enhanced mechanical properties derived from the high content of chromium, molybdenum, nickel, and nitrogen make them ideal for various industrial applications.



## Features

**Incredible Weldability:** The Duplex 31803 grade, known for its exceptional weldability, makes it a prime choice for applications involving complex structures and high stress.

**High Corrosion Resistance:** The Duplex F60 and Super Duplex 32750 grades provide excellent resistance against corrosion in most environments, making them highly suited for heavy-duty industrial applications.

**Excellent Resistance to Stress Cracking:** Grades such as Duplex 31803 and Duplex F60 exhibit superior resistance to chloride-induced stress cracking, a critical feature in certain industrial applications.

**Superior Mechanical Strength:** Super Duplex 32750 and Super Duplex Zeron 100 grades, fortified by high chromium, molybdenum, and nickel content, are celebrated for their high mechanical strength and low thermal expansion.

**Exceptional Resistance to Environmental Acids:** Super Duplex Zeron 100's high chromium and molybdenum content makes it extremely resistant to environmental acids, making it ideal for applications in the chemical industry and marine environments.

**High Tensile Strength:** All the mentioned grades exhibit high tensile strength, with Super Duplex Zeron 100 known for its exceptional durability and tensile strength.

## Duplex and Super Duplex Steel Specifications

| D and Super D Steel Nuts | Nut Standards       | Universal Nut Standards | Length  | Nut Size     |
|--------------------------|---------------------|-------------------------|---------|--------------|
| D S31803 (F51)           |                     |                         |         | M3 - M56,    |
| D S32205 (F60)           | ASTM A182, A479 /   | DIN, ASTM, BS and all   | 3 mm to | 3/6" to      |
| SD S32750 (F53)          | ASME SA 182, SA 479 | International Standards | 200 mm  | 2",          |
| SD S32760 (F55)          |                     |                         |         | Custom Sizes |



# Mild Steel & Carbon Steel Nuts

**Description** - Mild Steel Nuts, praised for their corrosion resistance and high tensile strength, are preferred for their ductility and malleability in the piping and petrochemical industries. They offer excellent finish, durability, and strength, ensuring high quality.

In contrast, Carbon Steel Nuts, crafted from steel with up to 2.1% carbon content, gain enhanced strength and toughness after heat treatment. They offer robustness at the cost of reduced weldability and slightly lower melting points, providing a variety of applications due to multiple available grades.



## Features

**Corrosion Resistance:** Mild Steel Nuts demonstrate excellent resistance to corrosion, pitting, and crevice corrosion, guaranteeing longevity in different conditions.

**Tensile Strength and Thermal Resilience:** Both types of Nuts exhibit high tensile strength, with Mild Steel Bolts being particularly resistant to high temperatures.

**Ductility and Malleability:** Mild Steel Nuts are known for their ductility and malleability, making them versatile for various industrial uses.

**Heat Treatment Enhancement:** Carbon Steel nuts, when subjected to heat treatment, display significantly improved toughness and strength due to the higher carbon content.

**Quality and Durability:** Both Mild Steel and Carbon Steel Nuts are manufactured to the highest quality standards, offering great finishing, durability, and strength.

**Variety of Grades:** Carbon Steel Nuts are available in multiple grades, providing flexibility for diverse applications.

**Enhanced Strength:** The higher carbon content in Carbon Steel Nuts results in enhanced strength, despite a slight reduction in weldability and the melting point.

| Mild Steel & Carbon Steel | Nut Standards         | Universal Nut Standards                       | Length         | Nut Size                 |
|---------------------------|-----------------------|---|----------------|--------------------------|
| Mild Steel                | ASTM A194, ASME SA194 | DIN, ASTM, BS and all International Standards | 3 mm to 200 mm | M3 - M56,                |
| Carbon Steel              |                       |   |                | 3/6" to 2", Custom Sizes |

## Mild & Carbon Steel Specifications



# Copper Nickel Nuts

**Description** - These nuts are fabricated from high-quality raw materials and are appreciated for their high durability, excellent resistance to corrosion, stress cracking, and exceptional weldability. Perfect for use in elevated temperature applications, Copper Nickel Nuts find extensive usage across the marine, chemical, construction, pharmaceutical, engineering, food processing, electronics, aerospace, and fertilizer industries. The chemical composition of Copper, Nickel, Zinc, Ferrous, and Manganese gives these nuts their unique physical and mechanical properties and high resistance to various environmental factors, including seawater, brine water, organic compounds, salts, and diluted non-oxidizing acids.

## Features

**Outstanding Corrosion Resistance:** Copper Nickel 90/10 Nuts excel in corrosion resistance properties, making them ideal for applications exposed to harsh environmental conditions.

**Excellent Fabricability:** The Copper Nickel 90/10 grade is known for its good fabricability, enhancing its adaptability in various industrial applications.

**Superior Resistance to Befouling:** Cu-Ni 90/10 Nuts, recognized for their high inherent resistance to befouling, make them highly suitable for marine and related applications.

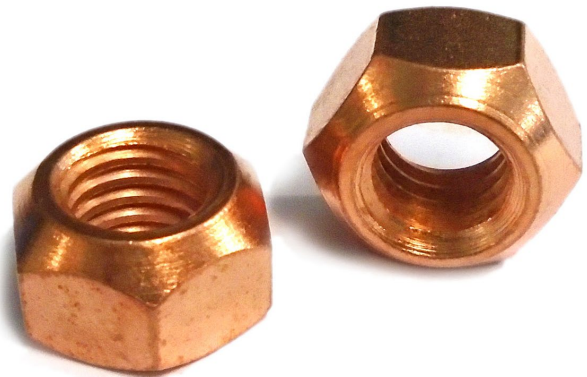
**Enhanced Durability:** Cu Ni 70/30 Nuts, manufactured with high-quality raw materials, are favored for their high durability, making them a reliable choice for engineering purposes.

**Exceptional Weldability:** The Copper Nickel 70/30 grade outperforms many of its counterparts with its excellent weldability, a critical factor in various industrial applications.

**Impressive Resistance to Stress Corrosion Cracking:** Cu Ni 70/30 Nuts offer superior resistance to general corrosion and stress corrosion cracking, adding to their industrial appeal.

## Copper Nickel Nuts Specifications

| Copper Nickel Nuts | Nut Standards         | Universal Nut Standards                       | Length         | Nut Size                 |
|--------------------|-----------------------|---|----------------|--------------------------|
| CN 90/10           | ASTM B151, ASME SB151 | DIN, ASTM, BS and all International Standards | 3 mm to 200 mm | M3 - M56,                |
| CN 70/30           |                       |   |                | 3/6" to 2", Custom Sizes |



# Alloy 20, SMO 254 and Grade 660 Nuts

**Description** - Our Alloy 20 nuts, with their excellent resistance to general corrosion, pitting, and crevice corrosion, are ideal for challenging environments encountered in chemical, gasoline, pharmaceutical, synthetic, and food industries. The 254-SMO nuts, featuring high levels of chromium, nickel, and molybdenum with added copper, exhibit superior pitting and crevice corrosion resistance, making them perfect for high-chloride environments. Our ASTM A453 Grade 660 nuts, renowned for their high tensile and creep strength, good corrosion resistance, and dimensional accuracy, are the preferred choice for high-temperature environments in industries such as gas turbines, supercharger components, oil and gas, jet engines, and cryogenic applications.



## Features

**Superior Corrosion Resistance:** Our Alloy 20 nuts offer excellent resistance to general corrosion, pitting, and crevice corrosion, making them ideal for harsh environments.

**Robust Construction:** With its well-constructed body and excellent finishing, our Alloy 20 nuts deliver durability and aesthetics in equal measure.

**Optimal Pitting and Crevice Corrosion Resistance:** Our 254-SMO nuts, enriched with high levels of chromium, are ideal for high-chloride environments due to their superior pitting and crevice corrosion resistance.

**High Tensile and Creep Strength:** The ASTM A453 Grade 660 nuts are noted for their high tensile and creep strength, making them ideal for high-stress applications.

**Excellent Performance in High-Temperature Environments:** With their heat-resistant properties, our ASTM A453 Grade 660 nuts are a go-to choice for high-temperature environments.

| Other Types | Nut Standards                        | Universal Nut Standards                       | Length         | Nut Size                           |
|-------------|--------------------------------------|---|----------------|------------------------------------|
| Alloy 20    | ASTM B473, ASME SB 473               | DIN, ASTM, BS and all International Standards | 3 mm to 200 mm | M3 - M56, 3/6" to 2", Custom Sizes |
| SMO 254     | ASTM A193 / A194, ASME SA193 / SA194 |   |                |                                    |
| Grade 660   | ASTM A453, ASME SA453                |   |                |                                    |

## Alloy20, SMO 254 & Grade 660 Specifications

## Coating Solutions

We provide a wide range of coating solutions designed to enhance the performance and longevity of various industrial components. Our offerings include a variety of metallic coatings and PTFE coatings, each tailored to meet specific operational requirements and environmental conditions.

### Metallic Coatings

Metallic coatings, including Nickel, Zinc, Chromium, Gold, and Silver, offer corrosion resistance and other beneficial properties. They are widely used across various industries.

**Hot-Dip Galvanized Coatings:** These coatings provide dual corrosion protection for steel: barrier and galvanic. They act as a semi-impermeable barrier against corrosion-causing environmental elements.

**Mechanical Galvanizing:** This process, similar to hot-dip galvanizing, applies a zinc coating on bare steel, offering protective benefits.

**Silver-Plating:** Ideal for applications where lubricants can't be used or galling is a risk. Silver plating acts as a solid lubricant, reducing friction when used dry.

#### Types of Metallic Coatings

- Electro Zinc Plating (UNI 4721 - ASTM B633 - BS 1706)
- Hot-Dip Galvanizing (ASTM A153 - ISO 1461- UNI 3740- BS 729)
- Aluminizing (ISO 2063)
- Nickel Plating (ASTM B689)
- Silver Plating (ASTM B254 - B700)
- Chromium / Zinc Coating (Dacromet 320 / 500 - ASTM F1136)
- Electro Cadmium Plating (ASTM B766)
- Electroless Nickel Plating (ASTM B733)
- Zinc Phosphate Coating / Manganese Phosphate Coating (ASTM F1137)
- Electro Zinc/Nickel Plating (ASTM B841)
- Mechanical Zinc Coating (ASTM B695)

### PTFE Coatings

PTFE (Polytetrafluoroethylene) coatings, including Xylan, Teflon, and Fluorocarbon, are known for their corrosive chemical and heat resistance, and their low friction surface. PTFE coated bolts offer:

- Low Coefficient of Friction
- Nonwetting properties
- Heat Resistance up to 260°C/ 500 °F
- Cryogenic Stability down to -270°C/ -454 °F
- Chemical Resistance, except against molten alkali metals and highly reactive fluorinating agents.