

# Sex Bolt Material Selection Guide

**Tip:** Set your PDF viewer to "Actual size" before printing to maintain scale.

## Material Properties Comparison

Material	Strength	Corrosion Resistance	Cost	Appearance	Best Applications
Brass	Moderate (softer than steel)	Excellent - develops natural patina	Moderate to High	Gold/yellow, polishes well, ages beautifully	Decorative, marine, traditional leather goods
Stainless Steel 304	High strength	Excellent in most conditions	Moderate	Bright silver, modern look	Outdoor, food service, general corrosion resistance
Stainless Steel 316	High strength	Superior - marine grade	High	Bright silver	Salt water, chemical exposure, harsh environments
Aluminum	Moderate (lightweight)	Good when anodized	Moderate	Can be anodized in colors	Weight-critical, colored applications, electronics
Steel (Zinc Plated)	High strength	Moderate - indoor only	Low	Bright silver, can rust if damaged	Indoor general purpose, economical choice
Nylon	Low (light duty only)	Excellent - non-metallic	Low	Natural white or black	Electrical insulation, chemical resistance, light loads

## Finish Options and Characteristics

Finish	Base Material	Appearance	Durability	Best For
Polished	Brass, SS	Mirror bright, reflective	Shows fingerprints	Decorative, high-end
Brushed/Satin	SS, Aluminum	Matte, directional grain	Hides fingerprints	Modern furniture, signage
Antique Brass	Brass	Aged, darkened patina	Hides wear well	Traditional, vintage leather
Black Oxide	Steel	Matte black	Moderate - can wear	Industrial, modern aesthetic
Zinc Plated	Steel	Bright silver	Good for indoor	Economical general purpose
Nickel Plated	Brass, Steel	Bright silver	Good durability	Traditional, corrosion
Anodized	Aluminum	Various colors	Excellent - hard surface	Colored, electronics
Chrome	Brass, Steel	Mirror bright chrome	Excellent durability	High-end, automotive

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## Material Selection by Environment

- Indoor Dry:** Steel with zinc or nickel plating is economical and adequate. Brass for decorative. Aluminum for lightweight. Nylon for electrical insulation.
- Outdoor/Weather:** Stainless steel 304 for general outdoor. Brass develops protective patina. Anodized aluminum for colored outdoor. Avoid plain steel.
- Marine/Salt Water:** Stainless steel 316 is marine grade - best choice. Brass acceptable but corrodes faster. Avoid aluminum in salt water. Never mix dissimilar metals.
- Chemical/Food Service:** Stainless steel 304 or 316 depending on chemical. Nylon for many chemicals. Brass NOT recommended for acidic environments.
- High Temperature:** Stainless steel handles highest temperatures. Brass suitable for moderate heat. Aluminum has lower melting point. Nylon limited to ~200°F maximum.

## Cost vs. Performance Trade-offs

- Budget-Conscious (Lowest Cost):**
- Zinc-plated steel for indoor general purpose. Acceptable for most non-critical applications. May tarnish or rust if finish is scratched. Best when appearance is secondary to function.
- Mid-Range (Best Value):**
- Brass for decorative applications - good balance of cost and appearance. Stainless steel 304 for corrosion resistance needs. Anodized aluminum for colored applications. Covers vast majority of applications well.
- Premium (Highest Performance):**
- Stainless steel 316 for marine or harsh chemical environments. Chrome-plated brass for highest-end decorative applications. Custom finishes and materials for specific requirements. Use when environment demands or appearance critical.

## Relative Load Capacity by Material

Material	Tensile Strength	Thread Stripping	Suitable For
Steel (any finish)	Highest	Excellent	Structural, heavy loads
Stainless Steel 304/316	High	Excellent	Structural with corrosion needs
Brass	Moderate	Fair - strips easier	Decorative, moderate loads
Aluminum	Moderate	Fair - softer threads	Lightweight, moderate loads
Nylon	Low	Poor - light duty only	Non-structural, insulation

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## Care and Maintenance by Material

- Brass:** Polish with brass cleaner to maintain shine, or allow natural patina for vintage look. Lacquered brass needs no polishing. Avoid abrasive cleaners.
- Stainless Steel:** Clean with mild soap and water. Use stainless cleaner for fingerprints on polished finishes. Avoid chlorine bleach which can cause pitting. Brushed finishes hide fingerprints better.
- Aluminum:** Anodized aluminum requires little maintenance. Clean with mild soap - avoid harsh chemicals. Natural aluminum will oxidize to dull gray. Don't use steel wool.
- Plated Steel:** Keep finish intact - any scratches will rust. Clean gently to avoid damaging plating. Touch up damaged areas with clear lacquer. Replace if rust develops.
- Nylon:** Clean with soap and water. Resistant to most chemicals. Avoid high heat which can deform. Replace if cracked or damaged - cannot be repaired.

## Quick Selection Decision Matrix

Use Brass when:	Decorative appearance is priority, traditional aesthetic desired, or marine use (with maintenance)
Use Stainless Steel 304 when:	Corrosion resistance needed, outdoor use, food service, or modern aesthetic
Use Stainless Steel 316 when:	Salt water exposure, harsh chemicals, or maximum corrosion resistance required
Use Aluminum when:	Weight is critical, colored finishes desired, or good thermal conductivity needed
Use Zinc-Plated Steel when:	Budget is tight, indoor use only, and appearance is secondary
Use Nylon when:	Electrical insulation required, chemical resistance needed, or only light loads involved