

corrosion specification guide

Overview



Corrosion is a serious issue that can hinder the performance of construction fasteners. It is important for a project planner to determine the appropriate fastener material to suit the specific application. This includes considerations regarding application material and environmental conditions.

Carbon Steel Zinc Plated

- Carbon Steel fasteners provide strong drill performance, but lack corrosive resistance. These fasteners are ideal for applications with limited exposure to exterior conditions.

Carbon Steel Silver Coated

- Carbon Steel fasteners provide strong drill performance for a large range of application thicknesses. An additional silver coating adds limited corrosion protection.

Zinc Alloy Capped

- Ideal for high humidity conditions, these capped parts provide the drilling capacity and strength of regular carbon steel fasteners with additional corrosion protection.

Stainless Steel Capped

- These fasteners provide the same performance specifications as standard carbon steel parts, but feature a stainless steel cap for corrosion protection.

300 Series Stainless Steel

- 300 Series stainless steel is ideal for applications with highly corrosive environments. Grade 304 is the most commonly available, but Grade 316 can be used in coastal construction.

400 Series Stainless Steel

- 400 Series stainless steel is ideal for applications that require limited corrosive protection and high strength characteristics.



Material Guide

The following chart matches SFS Fastener lines with their material classification. This is a simple reference tool, and all SFS spec sheets should be referenced for specific materials.

SFS Product Group	Fastener Material					
	Zinc Plated	Silver Coated	Zinc-Alloy Capped	Stainless Steel Capped	300 Series Stainless	400 Series Stainless
Clip Screws						
Most Clip Screws*	✓					
Stainless Pancake					✓	
Metal to Metal Self Drilling						
Impax HWH		✓				
Impax Sealer		✓				
Impax Utility		✓				
ZAC Impax			✓			
MAC Impax				✓		
SX HWH					✓	
Irius [®] SX					✓	
SX Dome Head					✓	
Bi-Met 300 Series					✓	
410 Stainless Steel						✓
Metal to Wood Self Drilling						
woodGrip Series		✓				
woodZAC Series			✓			
woodMac Series				✓		
woodGrip Stainless					✓	
EVERGRIP [®] Bi-Metal					✓	
Self Tapping Fasteners						
Carbon Steel Self Tapping		✓				
304 Stainless Self Tapping					✓	

*Excludes Stainless Pancake Screw



Application Guide

Metal Application Material	Fastener Material					
	Zinc Plated	Silver Coated	Zinc Alloy Cap	Stainless Steel Cap	300 Series Stainless	400 Series Stainless
Unpainted Galvanized Steel	✓	✓	✓	✓	✓	✓
Painted Galvanized Steel	✓	✓	✓	✓	✓	✓
Unpainted Galvalume Steel		✓	✓	✓	✓	✓
Painted Galvalume Steel		✓	✓	✓	✓	✓
Aluminum			✓	✓	✓	
Uncoated Copper					✓	
300 Stainless Steel			✓	✓	✓	

The above chart provides a reference guide for acceptable fastener to panel applications. This is an important consideration when aiming to limit corrosive damage. Information retrieved from Metal Construction Association Technical Bulletin, "Fastener Compatibility with Profiled Metal Roof and Wall Panels".



Environmental Guide

Environmental Conditions	Fastener Material					
	Zinc Plated	Silver Coated	Zinc Alloy Cap	Stainless Steel Cap	300 Series Stainless	400 Series Stainless
Indoor Grade C1	✓	✓	✓	✓	✓	✓
Rural Grade C2	✓	✓	✓	✓	✓	✓
Urban Grade C3		✓*	✓	✓	✓	✓*
Coastal Grade C4			✓*	✓*	✓*	
Severe Grade C5					✓**	

*Check with SFS for approval of specific application

**Only Grade 316 Stainless Steel

The above chart serves as a reference guide for acceptable fastener materials based on environmental conditions. There are many factors involved in determining the corrosive nature of an environment, so please contact manufacturers to confirm acceptance.

Condition Guide

Grade C1: Dry and heated building interiors
Ex: Home interiors, office spaces, retail environments

Grade C2: Rural areas with low levels of pollution
Ex: Sports stadiums, storage areas, rural outdoor structures

Grade C3: Urban or Industrial areas with moderate levels of pollution and high humidity
Ex: Restaurants, food production factories, laundromats

Grade C4: Industrial or Coastal areas with moderate salt content and high pollution levels
Ex: chemical production factories, shipyards

Grade C5: Industrial areas with high humidity and pollution levels - feature permanent condensation
Ex: Factories with high humidity conditions, offshore drilling operations