

SELECTING A FASTENER FINISH

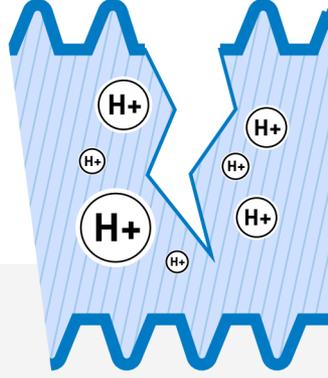
When selecting the best finish for your fasteners, consider the following factors:



Safety

Avoid hydrogen embrittlement!

Hydrogen embrittlement (HE) is a metal's loss of ductility and reduction of load bearing capability due to the absorption of hydrogen atoms or molecules by the metal.



To eliminate the risk of HE in these aforementioned fasteners:



avoid acid pickling



avoid electro-plating



Corrosion protection

Predict service life and operational environment!

SC1

Mild

Exposure to indoor atmospheres with rare condensation and subject to minimum wear or abrasion.

SC2

Moderate

Exposure mostly to dry indoor atmospheres but subject to occasional condensation, wear or abrasion.

SC3

Severe

Exposure to condensation, perspiration, infrequent wetting by rain, and cleaners.

SC4

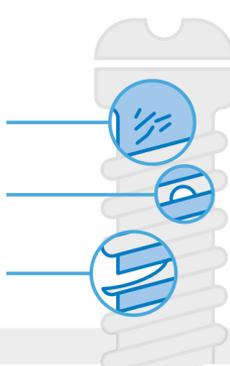
Very Severe

Exposure to harsh conditions, or subject to frequent exposure to moisture, cleaners, and saline solutions, plus likely damage by denting, scratching, or abrasive wear.



Resistance to handling damage

How do nicks & scrapes from handling and wrenching affect the finish?



Softer finishes or very brittle finishes will begin the corrosion cycle much sooner if care is not taken in the handling and assembly of these fasteners. How well the finish adheres to the fastener is also a key factor in maintaining good corrosion protection when subjected to handling.

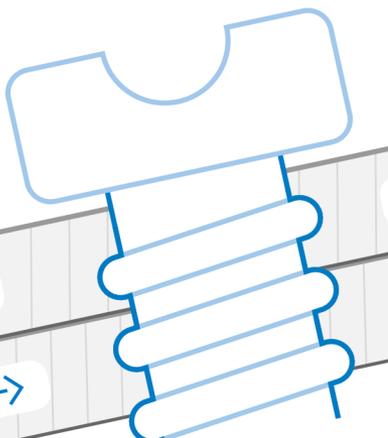


Criticality of the joint

Will the assembly fail if the joint comes loose?

Most joints are assembled using torque control, which relies on a consistent joint friction to produce a predictable and repeatable clamp load. Some finishes have known friction values while others do not.

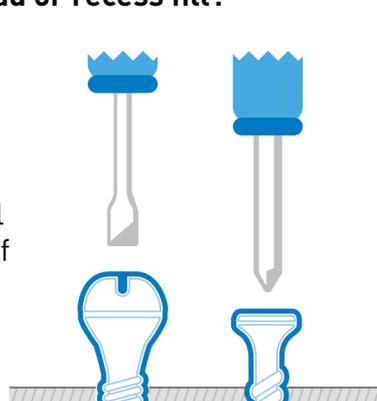
If consistent and repeatable clamp load is important to the joints survival, then coatings with a known friction should be used.



Functionality

Will the finish prevent my fasteners from assembling due to thread or recess fill?

Smaller diameter fasteners and those threaded fasteners with internal recess drives may not lend themselves well to certain finishes. The type of finish and the method of application may cause excess coating material in threads and/or recesses.



Availability

Is the finish readily available?

There are many exotic coatings which have been developed for specific applications, and more being produced every day. Commonly available finishes:

- ⊕ Electrodeposited Zinc ("commercial" zinc)
- ⊕ Electrodeposited Zinc Nickel
- ⊕ Mechanical Zinc
- ⊕ Zinc Flake
- ⊕ Hot Dip Galvanized
- ⊕ Epoxy Electrocoat



Cost

Is the finish cost effective for my assembly?

The selection of the coating will also have an impact on the cost of fastenings, thus on the entire cost of the production.