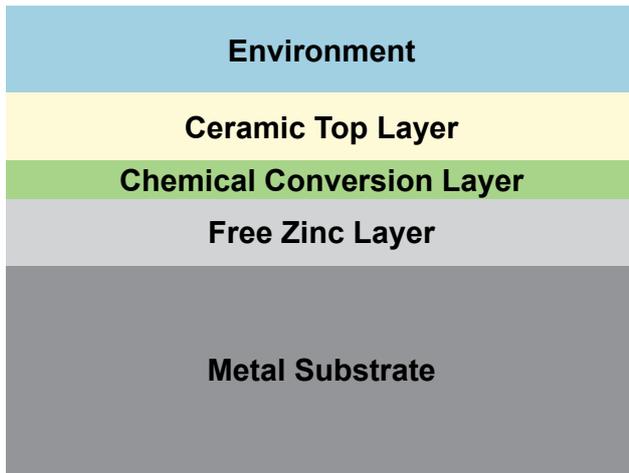


Ruspert® Coating

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Ruspert® is a high-grade protective coating applied to metals to prevent environmental corrosion. First developed in the mid 1980's to improve the performance of electroplated fasteners. Ruspert® is most commonly found on fasteners and small metal parts such as fishing hooks. Ruspert® coatings are typically a silver colour but can come in range of colours depending on the application.

Ruspert® is a multi-layered coating, with each layer contributing to the overall protection of the metal substrate. In contact with the base metal, a free zinc layer prevents corrosion of the base metal through sacrificial galvanic protection. A top coat of baked ceramic acts as a physical barrier, protecting the zinc layer and base metal from the environment and abrasions. In between these layers is a chemical conversion layer that chemically binds the zinc and ceramic together. This prevents the layers from separating, maintaining the physical barrier and protecting the underlying zinc for longer.



Ruspert® Coating for Fasteners

The strong adhesion and resistance to mechanical damage of the ceramic top layer makes this coating suitable for fasteners that require extra protection from abrasion. Ruspert® coating can be found on concrete screw anchors such as Conxtract Pro® Bite Anchor and TX-CON® screws where the abrasive installation into concrete requires a coating that can withstand the intense forces experienced by the fastener cutting a

thread. Ruspert® is also used to protect softer materials such as on the bi-metal screw range. Cutting stainless steel threads into metal can lead to galling or leave fine scores on the screw surface which could result in crevice corrosion. The Ruspert® coating provides physical protection of the stainless steel base during installation as well as protecting the carbon steel drill point from corrosion.

Salt Spray and Corrosive Gas Performance

Ruspert® coatings are classified by their performance in a neutral salt spray test, typically 500 (R500), 1000 (R1000) or 1500 (R1500) hours before red rust is observed. All Hobson products with Ruspert® coating are R1000 or R1500 grade.

The ceramic coating protects the zinc layer and metal substrate from acid and alkaline attacks, an R1000 Ruspert® coating will conform to 12-15 cycles of the sulphur dioxide gas corrosion test (acid rain test) in accordance with DIN 50018. This makes an R1000 product comparable to class 3 screws, suitable for external use in mild to moderate industrial or marine environments. Additionally an R1500 coating is comparable to a class 4 screw suitable for use in severe marine environments.

Ruspert® Benefits	
Adhesion/Mechanical Damage Resistance	No loss of coating when cutting thread into hard surface such as concrete
Corrosion Resistance	Excellent corrosion resistance against salt water, acid/alkaline environments
Contact Corrosion Resistance	Reduced contact corrosion with other metals
Timber Preservative Resistance	Can be used with treated timbers (hardwood or softwood)
Low Processing Temperatures	Maintain mechanical properties of fastener.

Contact Corrosion Protection

Since the free zinc layer is protected from physical contact to other metallic surfaces by the non-conductive ceramic top layer, the free zinc layer only provides galvanic protection to the metal substrate. That is to say, fasteners with Ruspert® coating will not sacrifice its zinc coating to protect material outside of the fastener. This eliminates any contact corrosion issues when used with other metal or metallic coated materials in both wet and dry conditions.

Aluminium is often used in marine environments due to its cost effectiveness and corrosion resistance. Aluminium is dissimilar to carbon and stainless steels and will corrode quickly unless it is electrically separated from this material. Using Ruspert® coated stainless steel screws for this application extends the life of the connection.

Performance in Timber

Freshly treated timber with high moisture content and salt levels causes fasteners to corrode at a much faster rate. For screws at least a Class 3 coating is required for use in treated timber. Ruspert's® high resistance to high moisture, and salty conditions demonstrated through the salt spray test make it suitable for use in treated timber.

Fixing timber base plates to concrete requires a screw anchor that can withstand the abrasive installation into concrete and also the high moisture environment of the timber. Using a Ruspert® coating on these types of anchors ensures a long life connection.

Low Temperature Baking Process

Ruspert® uses a low temperature (<200°C) baking process to attach and harden the ceramic top layer. The low temperature prevents metallurgic changes from occurring in the metal substrate. This is particularly important for products with rolled threads that attribute their mechanical properties to the thread rolling process. Thread rolling work hardens the metal giving fasteners higher tensile strength and hardness. Baking these products at high temperature can re-temper the metal affecting ductility, hardness and tensile strength.

Ruspert®, Mechanically Galvanised or Zinc Plated

Product ranges that have Ruspert® coatings often come with other zinc based coatings such as zinc-plating and mechanically galvanised. As with all coatings their selection will depend on the application.

Zinc Plating has good adhesion but the thin coating (~5µm) means that it has poor corrosion resistance and is only suitable for indoor, low corrosion environments. Zinc Plating is not recommended for use into treated pines.

Mechanically Galvanised coating has good adhesion and improved corrosion resistance over zinc plating. However, mechanically galvanised coatings are susceptible to contact corrosion when used with other metals.

Ruspert's® good adhesion and corrosion protection makes it suitable for applications that require extra protection from the elements such as outdoor concrete anchoring and screw fixings.

	HDG	MGal	Zinc	Ruspert®
Typical Coating Thickness (µm)	40-50	40-50	5-12	15-25
Adhesion	Low	High	High	High
Corrosion Resistance	High	High	Low	High
Contact Corrosion Resistance	Low	Low	Low	High
Performance in Treated Timber	High	High	Low	High
Abrasion Resistance	Low	Moderate	Moderate	High