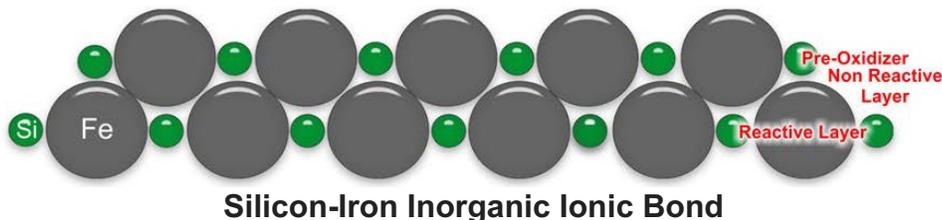


INFINIGUARD

ANTI-CORROSIVE COATINGS

What is INFINIGUARD®, why is it so special, what is a ceramic coating, does it actually grow on one surface and why is it different from spraying any other type of paint or coating?

In simple terms, traditional or organic coatings (polyurethanes, latex coatings, oil-based coatings, enamels, varnishes, lacquers and powder coatings) are composed of carbon-based molecules that are the same basic building blocks of all living organisms. Just as all living things die and decompose, carbon-based coatings experience faults in their structure, as well as faults in the adhesion that they share with the substrates or surfaces to which they are applied. Inorganic coatings (INFINIGUARD® glass / ceramic coating) are composed of silicon-based molecules that are the same basic building blocks of the rocks and minerals that make up our planet, and like our planet that is billions of years old, silicon-based coatings are almost impossible to break except by physical force and almost impossible to remove from the substrate or surface to which they are applied.



To explain the difference in adhesion to substrates or surfaces applied with traditional organic coatings and inorganic ceramic / glass coatings we must first have a brief lesson about inorganic, organic and metallic chemical bonding and observe a comparison between the atomic structure of silicon (Si) and carbon (C). While carbon and silicon contain 4 electrons or free ions available for binding in their atomic structure, the free ions in carbon are contained in a level equidistant from their nucleus, unlike free silicon ions that are 2 in one level and 2 on another level. When the carbon is ionically bound to a metal compound, everything is produced at a level with two points of attachment and only with a fundamental ionic bond between metal and non-metal. When Carbon is introduced to Iron, it traditionally increases strength and hardness, however it also increases the fragility and becomes more brittle. When silicon is ionically bound to a metal compound, it is produced at two levels with three points of attachment and, because silicon is a metalloid element, it is bonded both ionically and metallically. Now that we have created

INFINIGUARD

ANTI-CORROSIVE COATINGS

a transition metal, we have also introduced a dipole-dipole moment. Dipole moments happen when the negative charge of a metal are attracted to other positive charges. When this happens it lowers distance of separation between the two molecules. By lowering the distance, this increases the energy it takes to break this bond. This is why adding silicon to metal increases hardness and adhesion without sacrificing flexibility.

Then two questions arise:

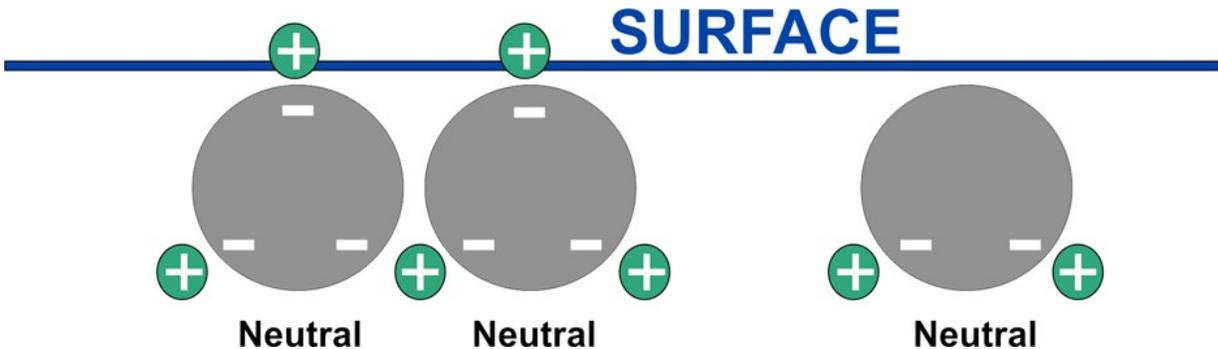
1. What happens when the environmental conditions are not normal, but are extreme as in many industrial or commercial places, such as at the bottom of a mine, or on the coast in an oil rig, or in a production plant of use of heavy chemicals like a paper mill?
2. What also happens when the metal to be coated with INFINIGUARD® already has a factory-applied metallic industrial primer (OEM), such as HVAC and industrial equipment, red iron beams or gray iron plate, or civil machinery (excavators, etc.)?

To answer these questions we must consider the ionic bond of the silicon atom compared to the ionic bond of the carbon atom. Previously we said that the organic carbon-based bonds only have two points of contact, while the bonds based on inorganic silicon contain three points of contact, and that the simple deduction is that being anchored at three points is much more solid than just being anchored at two points, while also considering the dipole-dipole interactions of the silicon and metal. Dipole-dipole interactions increase the energy of a bond between 60-80 kcal. Looking a little deeper into the contact points in the different types of ionic bonds we also find that because the carbon-based bonds have an even number of binding points, they always remain neutrally charged, on the contrary, silicon-based bonds that have an odd number of anchor points exhibit a slightly positive charge. This slight positive charge repels materials in close proximity to coated surfaces, thus removing dust, dirt and other environmental factors that amplify the corrosive effect. In simple terms, the atomic structure of the inorganic coating actually helps repel oxygen itself and other compounds, thus keeping the pre-oxidized surface free from the negative effects caused by extreme external influences from the environment.

When the metal to be treated with the ceramic glass INFINIGUARD® has already been protected from factory with a traditional baked coating (OEM), the metalloid nature of the silicon atom once again comes into play, and the coating is adhered by an ionic bond to the existing layer also as metallically to any metal additive in the protector or ionically to any additive based on quartz / sand in the layer. While the link to the actual metal is only as strong as the original bond created by the metal layer (OEM), the layer and the metal are now both endowed with the slightly positive charge and the pre-oxidized nature of the INFINIGUARD® ceramic / glass coating, as well all the incredible benefits mentioned above.

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ANTI-CORROSIVE COATINGS



Therefore, a metal substrate or a surface covered with INFINIGUARD® glass / ceramic coating can be placed in service at the beach, jungle or desert, and in fact would remain in operation within the upper edge of most volcanoes. However, traditional coatings are very compromised when exposed to the environmental conditions that exist in each of the first three locations mentioned above and have virtually no hope of success near any volcano.

In summary, the differences between traditional coatings versus INFINIGUARD® glass / ceramic coatings are:

Traditional coatings:

- have a limited capacity to adhere to the substrate or surface to which they are applied, and
- are uniformly susceptible to the same oxidation process they are trying to prevent.

INFINIGUARD® glass / ceramic coatings:

- contain twice the bonding capacity on a substrate or surface,
- are pre-oxidized, and
- eliminate traditional oxidation problems and the factors associated with it.

Therefore, regardless of the environment, or the metal substrate coated with INFINIGUARD®, our coating will outperform traditional coatings year after year.