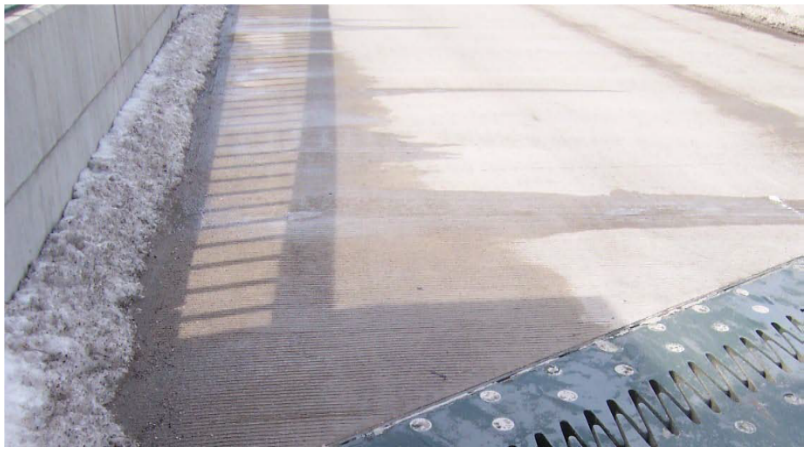
GRP-20C

CONCRETE PROTECTIVE COATING

Hydrophobic & Oleophobic, Carbon Dioxide & Chloride Barrier Coating



Completely insensitive to UV radiation.

Highly resistant to hydrocarbon and chemical products.

Incredible molecular bond to concrete & porous surfaces.

Protects all organic & most inorganic surfaces.

Grippo

GRP-10 protects reinforced concrete structures and infrastructure from the ravages of chlorides, carbonation and thermal damage which accelerate the deterioration of reinforcing rebar and steel.

Billions of dollars are spent annually to repair bridge decks, piers, post tension structures and anywhere reinforced concrete is used. Evidence of these problems are seen when corroded metal is exposed to the elements on delaminated bridge decks, their supporting piers and damaged parking garages.

With more than 650,000 bridges spanning highways across North America, and with 65% of these bridges having been built 26 or more years ago, many, if not most, need major repair or replacement in large part to issues surrounding the deterioration of reinforcing rebar and steel. Millions more of these infrastructure projects exist around the world.

Because of their higher exposure, bridge decks deteriorate faster than other bridge components. As a result, between 50 and 85 percent of bridge maintenance funds are spent to repair or replace them. Conservative estimates are that more than $5 billion is spent annually in North America to maintain, repair, and replace these bridge decks. Financial challenges include the fact that 85 percent of all vehicles travel on government-owned bridges, so any repair or replacement work generates detours, delays, and time costs for the entire economy.

De-icing salts as well as salt in seawater are the primary causes of rebar and reinforcing steel corrosion. Chlorides in salt find their way into concrete through the pores and cracks and penetrate through to the rebar and reinforcing steel. When they corrode, the resulting volume expansion induces stresses that leads to cracking, delamination and spalling of the concrete with the result being an eventual loss of bonding between the rebar or steel and the concrete itself.

GRP-10 is a highly fluorinated and silicon zed coating that exhibits high-end release properties, is hydrophobic and oleophobic and whose durability creates long-term non-sacrificial performance protection for reinforcing steel and rebar.

GRP-10 Concrete Protective Coating is a best-in-class solution with an expected life span exceeding 10 years.

Its unique polyol makes this coating impervious to UV degradation and highly resistant to hydrocarbons including a wide variety of chemicals.

Carbonation

Carbon dioxide from air can react with the calcium hydroxide in concrete to form calcium carbonate.

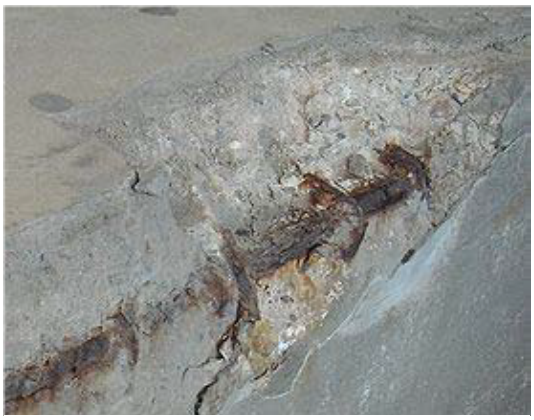
This process is called carbonation, and is essentially the reversal of the chemical process of calcinations of lime taking place in a cement kiln.

Concrete carbonation is a slow and continuous process progressing from the outer surface inward, but slows.

Carbonation increases mechanical strength of concrete, *but it also decreases alkalinity, which is essential for corrosion prevention of the reinforcement steel*.

Below a pH of 10, the steel's thin layer of surface passivation dissolves and corrosion is promoted.

For the latter reason, carbonation is an unwanted process in concrete chemistry. **GRP-10 Protective Coating®** encapsulate the concrete and restricts moisture from beginning Carbonation.



Typical Carbonation

Chlorides

Chlorides, particularly calcium chloride, have historically been used to shorten the setting time of concrete.

However, calcium chloride and (*to a lesser extent*) sodium chloride (*In Water*) has been shown to leach calcium hydroxide and cause chemical changes in Portland cement.

This leads to loss of strength as well as an attack on the steel reinforcement present in most concrete.

Chlorides can not penetrate the **GRP-10 Protective Coating®** thus assisting the concrete strength.

Thermal

Concrete is often damaged by Heat.

When temperatures rise above 300 °C, concrete begins to degrade and shrinkage will occur due to water loss, however; the aggregate continues expanding. This causes enormous internal stress.

With temperatures up to approximately 500 °C, the major structural changes are carbonation and coarsening of pores.

At 450-550 °C, cement hydrate decomposes. This in turn yields calcium oxide.

Calcium carbonate decomposes at approximately 600 °C.

Rehydration of the calcium oxide causes expansion as the structure cools. This can cause damage to materials which were able to withstand the heat without falling apart.

Those components of a concrete structure that are exposed to temperatures above approximately 300 °C (*dependent of water/cement ratio*) will most likely transform to a pink color.

With temperatures over approximately 600 °C, the concrete will turn light grey, while temperatures over approximately 1000 °C will turn concrete yellow-brown.

One rule of thumb is to consider all pink colored concrete as “damaged” and should be removed.

GRP-10 Protective Coating® is 100% UV protection. This feature reduces heat transfer into the concrete and aids in preventing continuous thermal warming build-up.

Highly Flexible: Will flex to concrete movement and has outstanding impact and abrasion resistance.

Hydrophobic & Oleophobic: GRP-10 rejects water and hydrocarbons. This coating rejects moisture to prevent rust and corrosion on reinforcing steel on rebar.

Cl – Ca - CL

Chlorides: Chlorides cannot penetrate through GRP-10 to encourage or accelerate rebar or structural steel deterioration.

Chemical Resistant: This coating rejects most chemicals and prevents deterioration of the surface area or penetration into the concrete.

Minimizes Rust: GRP-10 rejects moisture from surface and prevents moisture from penetrating through to rebar and structural reinforcing steel.

Ultra Violet Resistant: GRP-10 rejects UV which can increase heat absorption in concrete and accelerate rust and corrosion.

Easy Application: GRP-10 can be applied by brush, roller or sprayer. It does not require a primer.

Long life: GRP-10 has been designed to withstand the rigours of vehicle traffic and its world-class technology with an expected lifespan exceeding 10 years.

ABOUT US

Our advanced coatings meet the demanding needs of military contractors, heavy industry and homeowners alike with formulations that push the envelope in creating sustainable, affordable and easy to use products.

Grippo

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