CG2 NanoCoatings
Innovative Coating Solutions

ANTI-CORROSION TECHNOLOGY

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Our technology consists of homogeneous thin films using alkoxides with chemically attached ceramic nanoparticles. High temperature oxidation and corrosion can be reduced by coating materials with thin layers of oxides that are chemically resistant and have a high melting point. Such films are particularly useful for metal surfaces and they offer many advantages such as high purity, low-temperature processing and control of the composition. In addition, the coating can be chemically bonded to the substrate for durability. See Attachment 1 for selected experimental results. This technology can be modified to meet different requirements.

Our technology has the following benefits:

- Despite the ceramic components, the coating has some ductility without being elastomeric. As such, the coating will not be brittle, unlike standard sol-gel coatings.
- We can meet the various requirements of temperature, hardness, etc.
- There are few byproducts produced during the manufacturing or application of the coating. These are limited to small quantities of alcohol vapors which pose little environmental risk, but even these could be collected easily using standard industrial extractors.
- The coating can be sprayed or brushed. Minimum curing times are expected to be approximately 4 hours but 24 hours will be optimum to allow a complete reaction of the components and total alcohol evaporation. Depending on the application, the coating could also be applied by immersion.
- The required raw materials are readily available in bulk from a variety of suppliers in North America, Europe and Asia.

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Attachment 1 – Experimental Results

This technology has been demonstrated on 1008 steel plates by being subjected to accelerated corrosion in the laboratory using chloridric and sulfuric acids at different concentrations. The graph on the following page shows polarographic curves measured in aqueous sulfuric acid (H_2SO_4 0.5M) at 25℃ for 1008 steel for two versions of o ur coating (A and B), compared to an uncoated sample:

- The coatings A and B have the same composition, but were prepared using different methods and exhibit different capabilities.
- Coating A was produced using techniques that have been published for some time but as curve (2) demonstrates, there is very little difference between this coating and the uncoated sample.
- Coating B was produced using our proprietary techniques and as curve (1) shows, demonstrates a substantial improvement over both Coating A and the uncoated sample.