



MONTCLARE - INTUMESCENT COATINGS STRUCTURAL STEEL PROJECT CASE STUDY



Structural Steel Maintenance

The protection of iron and steel is a serious problem, and many millions of rands are spent annually to prevent or limit corrosion and on the replacement of corroded metal.

The important factors in the protection of iron and steel by painting are:

- The thoroughness of the preparatory work before painting.
- The type of primer used.
- The thickness of the paint system.

As far as preparatory work is concerned, it has been shown that the effective life of a paint coating of perfectly clean steel, free from rust and scales, maybe up to five times longer than that of the same coating applied to imperfectly cleaned steel. The traditional manual methods of preparing new and old steelwork for painting by chipping, scraping and wire brushing are far from ideal, as they cannot remove lightly adherent scale nor deal effectively with rust on pitted or rough surfaces. Alternative methods such as pickling, grit blasting, flame cleaning and chemical de-rusting are either not practical on erected steel or may be considered too expensive. It should be realized that the higher initial cost would be more than offset by a reduction in maintenance costs by the longer life of the paint coatings.

For general use on iron and steel, primers incorporating rust-inhibitive pigments must be used, for example, zinc phosphate, metallic zinc, etc., in various binders such as the conventional linseed oil, or alkyd resins, or epoxy resins, etc. Too often cheap and inferior primers are used containing less than the minimum quantities of anti-corrosive pigments to be effective. Such paints do more harm than good as they must first be removed before a systematic and effective painting operation can be carried out.

Steelwork must be primed as soon as possible after it has been prepared, whether on-site or at the manufacturer's works, as even a few hours of exposure in a damp or contaminated atmosphere will nullify the value of thorough preparation.



INTRODUCTION:

Dekro Paints provides a variety of heavy duty paints and primers for structural steel. These heavy duty paints are provided by Dekro's own Marinecoat range and through the company's relationship with Chugoku Marine Paints - one of the largest paint manufacturers in Asia, and Dekro Paints manufacture coatings under license in strict accordance to the ISO 9001 quality accreditation from the SABS.

Corrosive Categories:

Corrosivity Categories	Corrosivity Categories and Risk	Exterior (Typical Environments)	Interior (Typical Environments)
C1	Very Low		Heated buildings with clean atmospheres, e.g. offices, shops, schools, hotels
C2	Low	Atmospheres with low level of pollution, mostly rural areas	Unheated buildings where condensation can occur, e.g. depots, sports halls
C3	Medium	Urban and industrial atmospheres, moderate sulphur dioxide pollution	Coastal areas with low salinity Production rooms with high humidity and some air pollution e.g. food-processing plants, breweries, dairies
C4	High	High Industrial areas and coastal areas with moderate salinity	Chemical plants, swimming pools, coastal ship and boatyards
C5	Very High	Industrial areas with high humidity and aggressive atmosphere and coastal areas with high salinity	Buildings or areas with almost permanent condensation and with high pollution

Due to the amount of corrosion, thorough cleaning to levels SA 2.5 where required, which is very thorough blast cleaning.

When viewed without magnification, the surface shall be free from visible oil, grease and dirt and from mill scale, rust, paint coatings and foreign matter.

Dekster Holdtight 102 completely removes all salts, resulting in no conductivity. It also removes abrasives and debris from the surface's profile providing a better surface area to bond with coating. Since Dekster Holdtight 102 leaves a clean, rust-free surface for up to 72 hours, large areas of structures can be blasted and cleaned completely before coating application, instead of having to be coated immediately after blasting every day.

Dekster Holdtight 102 can be worked into any blasting process to achieving a totally clean surface, with zero flash-rust and zero residue left behind. Dekster Holdtight 102 is a clear, simple additive with visible results, eliminating both natural and artificial contaminants. At sea or on land, Dekster Holdtight 102 is safe to use and compatible with a wide variety of surfaces, including steel, concrete, fiberglass, aluminum, composites, and more!



Hydromet Rust Conversion:

The new Hydromet Rust converter provide rust-converting properties to the coating layer and enable direct applications on rust or on poorly prepared substrates. Hydromet rust converter provides an efficient rust-blocking effect as soon as the paint is applied and forms a passivation layer between the substrate and the coating layer; this helps to maintain the coating's anticorrosion performance, despite adverse substrate conditions.

Hydromet Rust Converter can be used as a rust-converting pre-treatment which will perform better than tannic acid-based formulations or solvent borne alkyd-based oils.

Hydromet provides the following properties:

- Preventing the "migration" of rust through the paint film, even on freshly rusted surfaces.
- Preserving the coating's colour.
- avoiding strong de-rusting operations before painting, without the loss of performance.
- Not compromising the coatings anticorrosion performance on non-rusted substrates.

Zinc Phosphate Primer:

A cost effective metal primer designed for spray / dipping application of general steelwork where a tough fast drying primer coat is required. Due to the coating parameters, a quick drying and curing primer coat had to be used.

Firepruff:

An aqueous copolymer dispersion based on vinyl acetate, ethylene and methacrylic acid esters. Dekro Firepruff is a water based intumescent paint that has been developed for protection of substrates from fire. A dried film gives resistance against fire and protection to base substrate. The product has been specifically designed based on special resins and chemicals.

USES AND ADVANTAGES

As a water based intumescent top coat paint on wood, steel, concrete, etc.

After application of Dekro Firepruff at recommended thickness, specific fire retardant and intumescent properties are achieved:

- Excellent adhesion to most substrates.
- Flexible and durable coating.
- Excellent outdoor weathering performance, including good colour retention and low dirt pick-up.
- Excellent fire retardancy.

