KELATE®MR6

Reactive conversion coat for passivation of residual rust on steel

INTRODUCTION

The durability of a paint system depends as much upon the surface preparation as upon the quality of the coating.
Even the best paint will not give a full protection when applied on a steel surface which is not entirely rust free, and this fact has caused many problems, despite existing techniques available for surface preparation.

Most mechanical surface treatments, such as scraping, hand brushing or power cleaning, do not remove all the rust from the cavities of the surface, and the presence of this residual rust encourages continuation of the corrosion process under paint films subsequently applied.

Blasting the surface to white metal provides an excellent substrate for paint, but a freshly blasted surface is highly reactive, and once exposed to atmospheric humidity, dew or rain, will rust quickly. This means that to preserve investment in blasting for instance, the freshly blasted surface must be coated immediately.

And for all its acknowledged advantages as a base for paint, sandblasting is often ruled out due to cost, environment protection, inconvenience of rigging, dust and spark potential, limited size of areas to be cleaned, difficulty of arranging blasting/painting cycles, etc.

Similarly acid surface pre-treatment for corroded steel surfaces have shown limited advantage in relieving the problem.
Removal of the rust is extremely difficult under temperature, concentration and application conditions of the field.
Also in many situations, residual acids or salts left in the pores of the rust have caused failure by osmotic blistering of the paint system.
Even under the best field conditions, the use of conventional phosphoric acid based pre-treatment is also unsatisfactory.
Such products do not accomplish a true passivation of the metal surface, and their reaction with the different rust layers is not homogeneous and inefficient.

Since residual rust can encourage further under film corrosion and since acid cleaning in the field is unsatisfactory, an ideal solution would be to completely passivate the tightly bound residual rust, chemically preventing it from participating in further corrosion.

The **KELATE®MR6** has been developed with this principle in mind:

- Thorough passivation of residual rust
- High reactivity
- Excellent adhesion promoter
- Will also react with blasted (non rusted) steel

DESCRIPTION AND PROPERTIES

KELATE®MR6 is a water reducible chelating polymer that has been designed for field application to rusted steel which has been hand or power cleaned, or blasted.

KELATE®MR6 neutralizes the corrosion process. It reacts quickly with the rust and transforms iron oxides into a stable and insoluble blue-black metallo-organic complex which is ready for painting after reaction. Reaction time is ± 3 hours and it is not necessary to wash the surface with water after reaction.

KELATE®MR6 effects a thorough chemical passivation of the substrate and makes it a sound base for the application of coating systems.
KELATE®MR6 offers in addition an insulating and barrier effect.

Conventional chemical agents such as phosphoric acid based pre-treatment do not accomplish a true passivation of the metal surface. This has been demonstrated in the studies on the active substance of **KELATE®** made by the Centre Belge d'Etude de la Corrosion and by the University of Paris, Ecole Nationale Supérieure de Chimie.

Sulphuric acid and hydrochloric acid are pickling agents and since iron chlorides and iron sulphates are water-soluble salts, these acids may not be considered as rust converters.

KELATE® MR6 penetrates directly into the residual rust.

KELATE®MR6 reacts quickly with the rust. Average reaction time is 3 hours. The film which is formed is water insoluble and even hydrophobic.

KELATE®MR6 is an excellent adhesion promoter for subsequent coating systems.
Contrary to most chemical treatments of the rust, it is not necessary to wash the treated surface with water before the application of the first coat of paint.

KELATE®MR6 reacts also with steel that has been blasted to white metal or thoroughly cleaned with abrasive disk or paper.
Consequently **KELATE®MR6** may also be applied on surfaces which are only partially rusted or on a superficial rust such as the one which forms very quickly after sandblasting.
Applied on blasted steel, **KELATE®MR6** allows to avoid the disadvantage of the flash rust caused by certain water based primers.

FORMULATION

KELATE®MR6 is supplied as a concentrate and must be diluted to a ready to use condition before application.

The ready to use material may be prepared from the concentrate using the following ratios for dilution:

KELATE®MR6:	67.0 parts by weight
WATER:	33.0

This dilution is made under good stirring (400-500rpm) during minimum 5 minutes in stainless steel, glass lined or plastic tank.

Plastic packing is also recommended for the ready to use product.

Alternatively, we can also supply the ready to use formulation as **KELATE®MR6D**.