

KORRODUR

A coating additive against residual rust

Application

KORRODUR is used in solvent borne systems as corrosion protection primer, e. g. alkyd -, chlorinated rubber -, vinylchloride -, epoxy - and acrylic systems

KORRODUR can be used in unpigmented systems. A combination with zincphosphate - or other pigments is possible.

Typical applications:

- DIY-systems
- Maintenance coatings
- Corrosion protection primers
- One-coat corrosion protection primers

KORRODUR is e. g. used as a rust converting primer for structural steel work, if complete mechanical derusting is not possible, because of explosion danger or because of dust sensitivity.

Practice

The effectiveness of anticorrosive coatings mainly depends on the thoroughness of the substrate pretreatment. A thoroughly derusted, dry and degreased substrate is a precondition for long term protection against corrosion.

These optimum conditions are seldom available in practice:

- Residual rust frequently remains on the surface and in the pores
- The coating appears to confer satisfactory protection against rust. Result after several months: rust destroys the new coating from below

Concept

It should be possible to remove residual rust by addition of suitable additives to primers or one-coat systems and thus increase the long term effectiveness of the anticorrosive coating.

Negative influences caused by bad pretreatment of the surfaces are compensated by these additives namely **KORRODUR** and a good corrosion protection is obtained. This is a big advantage for coating manufacturers and also consumers.

Solution - KORRODUR

Even in pressure of rest rust a durable anticorrosive coating is obtained. Remaining residual rust is deactivated by the addition of **KORRODUR**. During application **KORRODUR** emulsifies any moisture present e.g. from morning dew or high atmospheric humidity and releases it through the film surface while drying. The adhesion to badly degreased metallic surfaces will be improved.

The above information is based on our current knowledge and experience. No binding assurance in respect of certain properties or suitability for certain applications must be read into our information. Patent rights and other proprietary rights must be observed if necessary. Further safety instructions please learn from our material safety data sheet. 02/2023

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The Task

Function of **KORRODUR**:

- Deactivation of any present rust
- Promotion of substrate wetting
- Improvement of adhesion of the coating to the substrate
- Conveying existing moisture to the surface of the film

Composition

- **KORRODUR** is an additive for rust protection primers and one-coat paints
- **KORRODUR** consists of a chelate forming agent
- **KORRODUR** is modified with a phosphoric acid ester compound in order to improve
- **KORRODUR** is diluted in a mixture of butanol, butyl acetate and glycol ether

Mode of action

- The chelate forming agent reacts with rust and converts it to an inactive iron organic complex
- Phosphoric acid compounds support its passivating properties and contribute to the formation of a protective coating
- The wetting additive component ensures good wetting of the substrate and emulsification of existing moisture which produces good wetting of existing porous rust constituents and penetrates any existing residual rust
- The polymeric ingredient ensures the optimum interaction of all ingredients and improves adhesion to the substrate
- The solvent mixture is compatible with coating systems and favours the good and stable dispersion in the system

Amounts to be added

Empirical dosage values are 3 – 5 % on total system. In unpigmented systems 7 – 8 % is recommended.

Testing

When testing coating systems containing **KORRODUR** it is important that test surfaces have residual rust. In laboratory tests rusty panels should be used which are coarsely derusted manually (e.g. steel brush). The effectiveness should be tested by outdoor weathering. Accelerated weathering test (e.g. salt spray test) clearly provide misleading practical values because of the high initial deterioration.

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Guide formulation

Rust converter based on styrene/acrylic-copolymers

Raw material	supplier	quantity
1 Pliolite AC 80	Goodyear	14.6
2 Pliolite AC 4	Goodyear	14.6
3 Hordaflex LC60	Clariant	2.6
4 KORRODUR	Schwegmann	7.3
5 SCHWEGO® mar 8304	Schwegmann	0.1
6 Solvesso 100	Exxon	60.8
Total of formulation:		100%

Guide formulation provided by Goodyear Chemicals Europe, France.

Testing method

The rust converter was applied by brush on rusted steel plates, after steel plates had roughly been derusted by wire brushes. After derusting a 20 – 40 µm hard and homogeneous rust layer remains.

Explanations

KORRODUR is the rust converter.

SCHWEGO® mar 8304 improves levelling and surface scratch resistance.

Pliolite AC 80 is a film forming agent.

Pliolite AC 4 adjusts the viscosity, its amount of addition can be varied.

Hordaflex LC 60 is a plasticiser improving film elasticity.

We recommend not using top coats containing alkyd resins over Pliolite systems because of possible poor adhesion.

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Guide formulation

Airdrying anticorrosive primer based on shortoil alkyd

Raw material	Supplier	Quantity	Manufacturing instructions
1 Halweftal GH 40	Hüttenes-Albertus	34.8	Premix
2 Bentone Paste 10 %	Rheox	3.5	
3 Exskin II	Nuodex	0.5	
4 Xylene		6.7	
5 Propylen glykol ether		2.3	
6 KORRODUR	Schwegmann	5.0	
7 Heucophos ZPA	Heubach	9.0	
8 Bayferrox 120	Bayer	15.1	
9 Microtalc AT1	Norwegian Talc	12.7	
10 Blancfixe	Sachtleben	10.4	

Total of formulation: 100%

Grinding in a sandmill to particle size of 15-20 µm

Testing method

The rust inhibitive primer was applied on rusted steel plates by a brush, after loose rust particles were eliminated by a wire brush. Then it was exposed to weathering for around one year.

Explanations

Based on our experiences it is not necessary to add driers to assist the drying of Halweftal GH 40. However, if faster drying is desired, we recommend the addition of 0.2 % Co-6-drier (calculated on total system).

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