

Technical Information Dynasylan® SIVO 160

Inorganic Silane-Based Binder for Corrosion
Protection & Adhesion Promotion

May 2020



Agenda

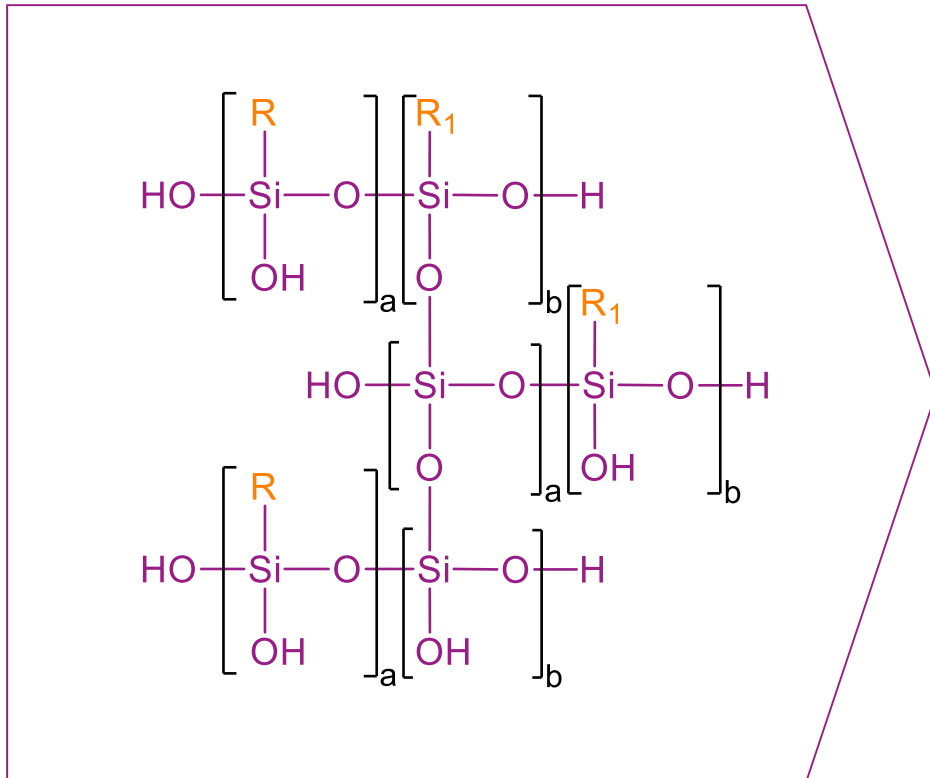
- 1 Technical Profile of Dynasylan® SIVO 160 3**
- 2 Applications of Dynasylan® SIVO 160 8**
- 3 Dynasylan® SIVO 160 in Combination with Dynasylan® HYDROSIL 2909 13**
- 4 Disclaimer 16**

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Dynasylan® SIVO 160 – A Water-Borne Low Temperature Curing Silane Binder

Dynasylan® SIVO 160

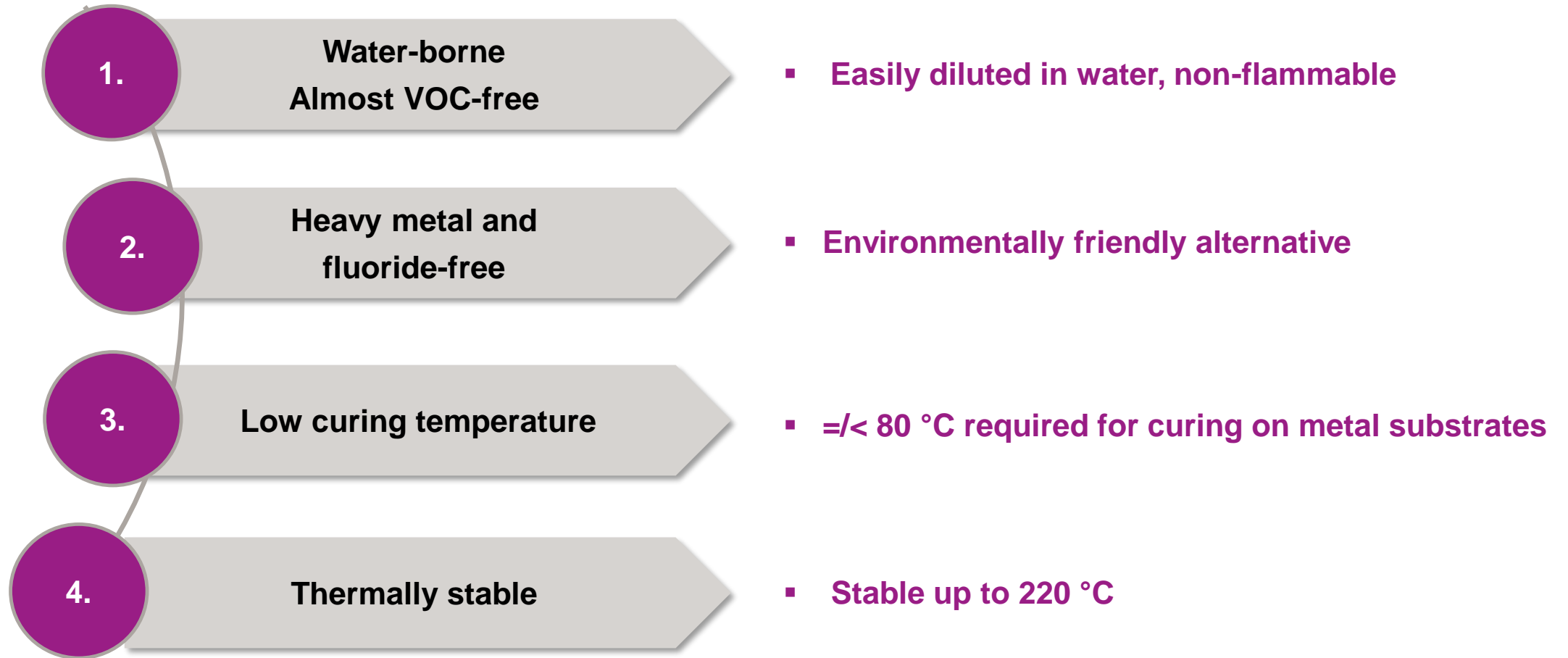


pH of binder: 4 – 5

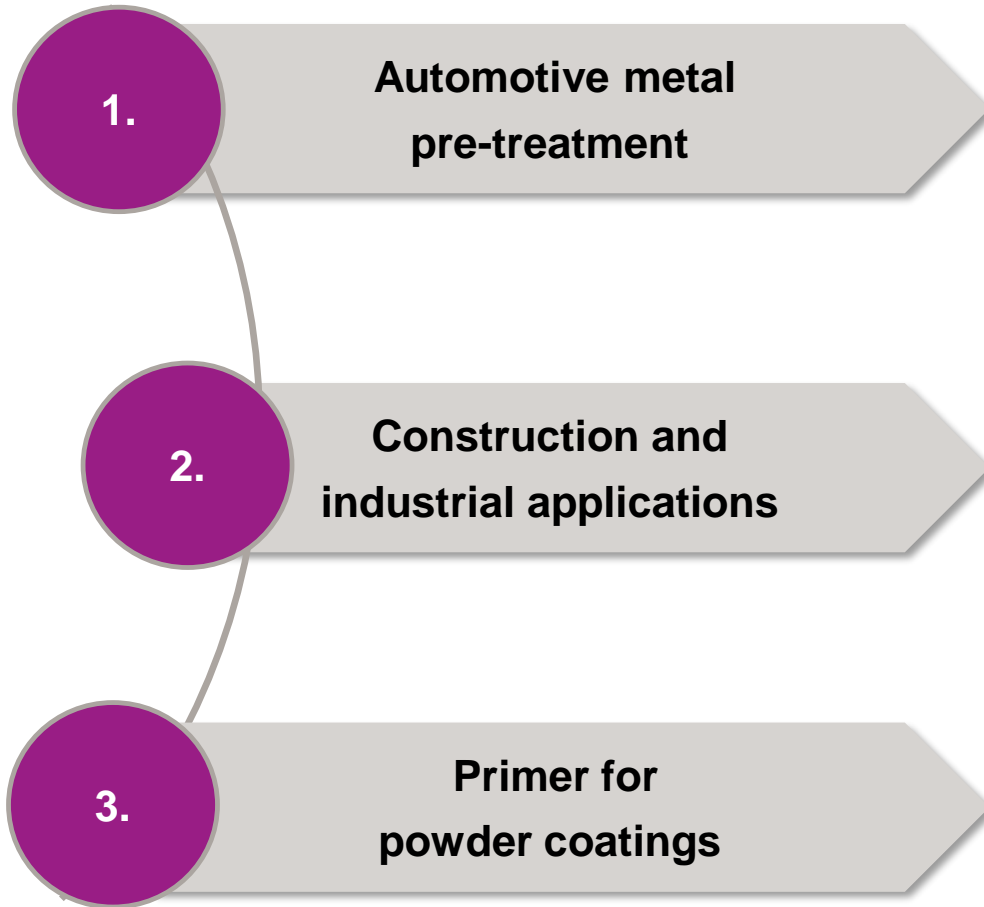
Key advantages

- Defined binder
- Water-borne
- Storage stability 1 year
- Low temperature curing
- Excellent wetting compared to silane solutions
- High crosslinking density
- Low viscosity (9.1 mPa·s, 20 °C)

Technical Profile of Dynasylan® SIVO 160



Applications of Dynasylan® SIVO 160



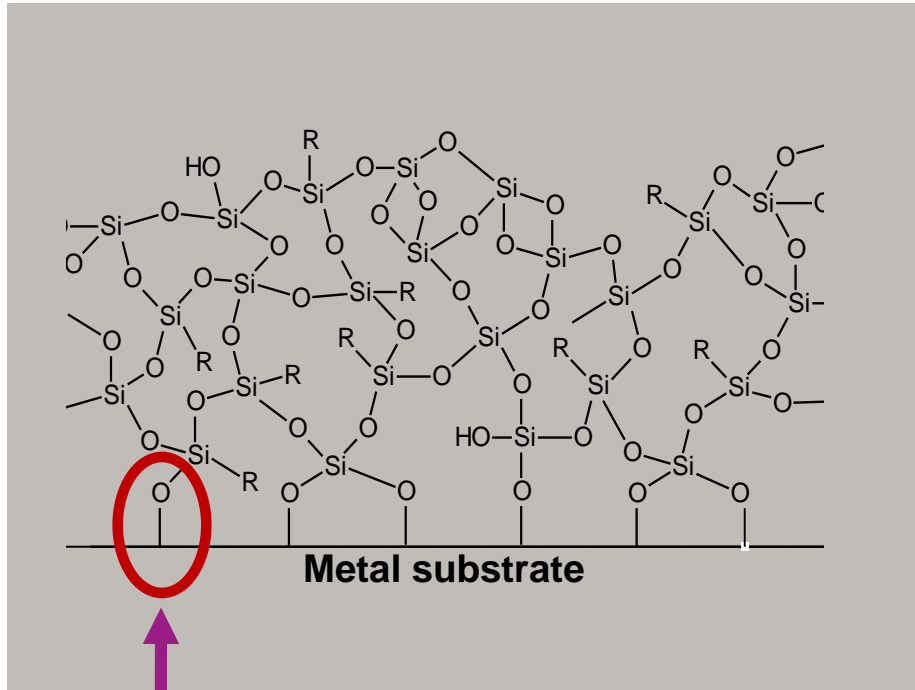
- Proven corrosion and alkaline resistance of aluminum alloys

- Excellent corrosion protection of aluminum and galvanized steel

- Excellent primer for low temperature powder coatings

Water-Borne Silane System for Metal Protection

Dynasylan® SIVO 160 as a Binder or Additive for Metal Protection



Chemical reaction of silanol groups
with the substrate surface

Key benefits of silane systems

- Dense silane network protects against water and chloride
- Hydrophobic surface layer
- Excellent adhesion to top coat
- Reaction of silanol groups with the substrate surface

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Application of Dynasylan® SIVO 160 on Different Aluminum Alloys and on HDG Steel

Performance of silane dilution ...

Dilution of Dynasylan® SIVO 160:

Dynasylan® SIVO 160:	12.5wt.%
Water:	87.5wt.%

... or synergies with Cr³⁺

Formulation with Dynasylan® SIVO 160:

Dynasylan® SIVO 160:	12.5wt.%
Water:	87.5wt.%
Wetting agent:	0.02wt.%
Cr ³⁺ :	600 ppm

Application data

Degreasing / Cleaning (aluminum):

Alkaline solution

Acid pickling for alloy 5005

Degreasing / Cleaning (HDG steel):

Mild alkaline solution

Application:

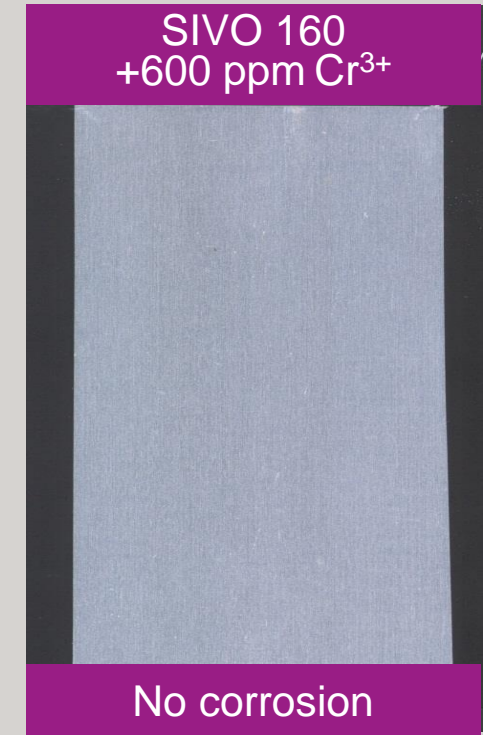
Dipping in **Dynasylan® SIVO 160 dilution** or

Dynasylan® SIVO 160 formulation

Curing at 80 °C (10 min)

Dynasylan® SIVO 160 for Blank Corrosion Protection on Aluminum 5005

Neutral Salt Spray Test acc. DIN ISO 9227 - 1000 hours



Dynasylan® SIVO 160 for Blank Corrosion Protection on HDG Steel

Neutral Salt Spray Test acc. DIN ISO 9227 - 200 hours

Blank HDG
steel



Corrosion

600 ppm Cr³⁺
solution



Some Corrosion

SIVO 160
dilution



Some corrosion

SIVO 160
+600 ppm Cr³⁺

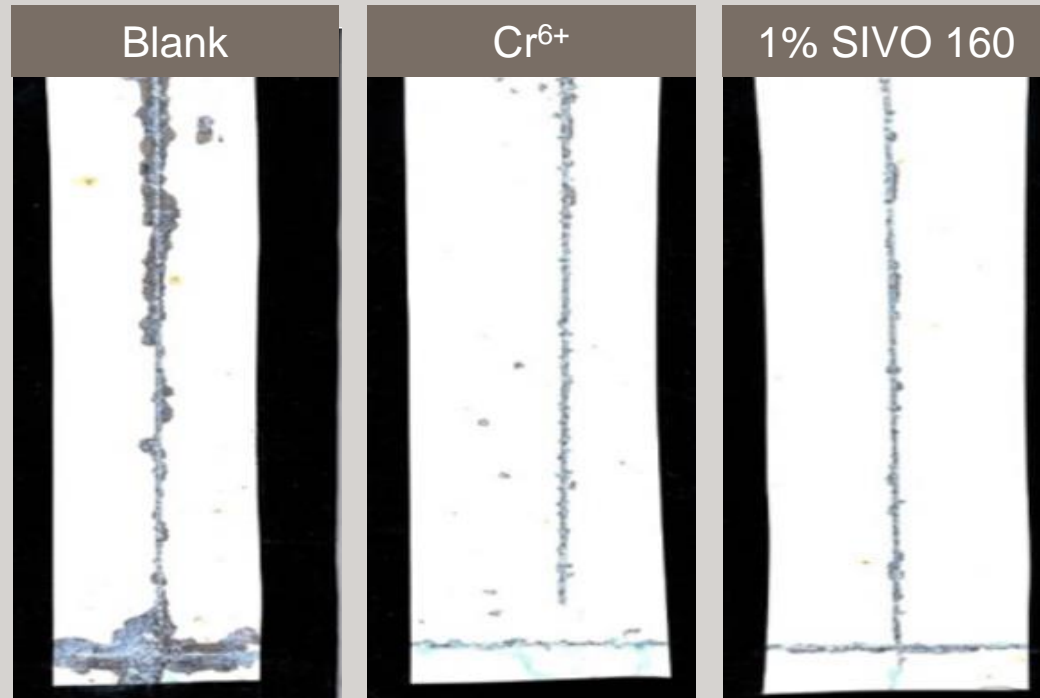


No corrosion

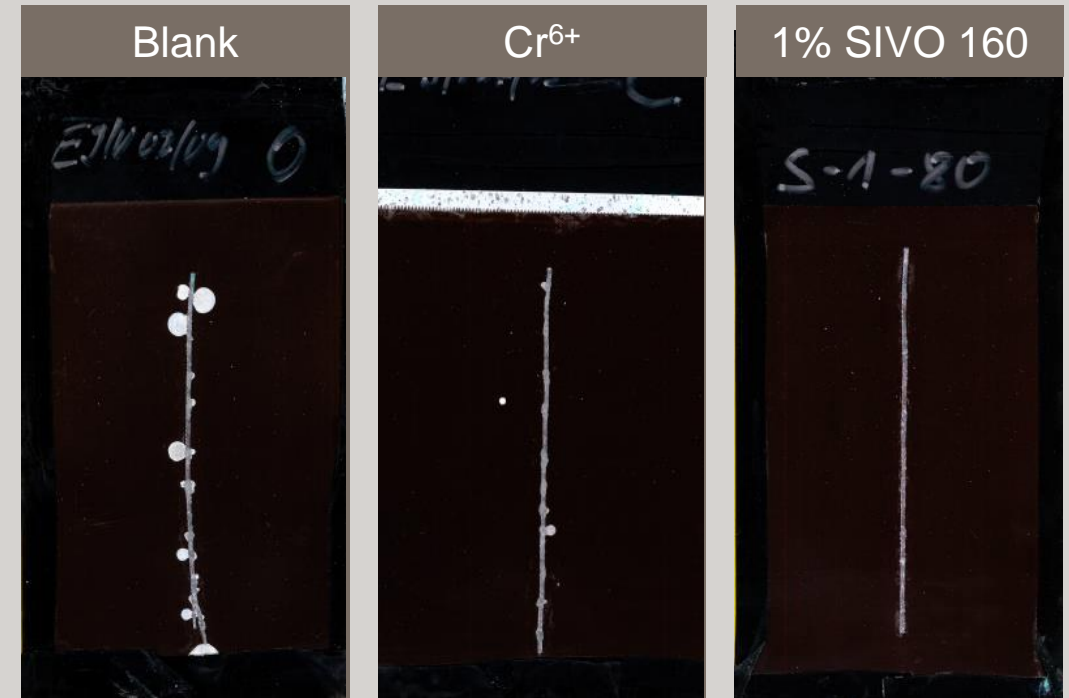
Dry layer thickness: ~ 100 - 200 nm

Dynasylan® SIVO 160 for Corrosion Protection on Mg and Al Metal Alloys

CASS-Test acc. DIN ISO 9227 - 1000 hours



Substrate: Magnesium (AZ31B)
Coating: polyester powder (~ 60 µm)



Substrate: Al 5005
Coating: coil coating

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Improvement of Corrosion Protection with Dynasylan® SIVO 160 and Dynasylan® HYDROSIL 2909

Silane dilution ...

Dilution of Dynasylan® SIVO 160 / Dynasylan® HYDROSIL 2909:

Silane (delivery form):	12.5wt.%
DI-Water:	87.5wt.%

... or synergies with Cr³⁺

Formulation with Dynasylan® SIVO 160:

Silane (delivery form):	12.5wt.%
DI-Water:	87.5wt.%
Cr ³⁺ :	600 ppm

Application data

Substrate:
HDG steel

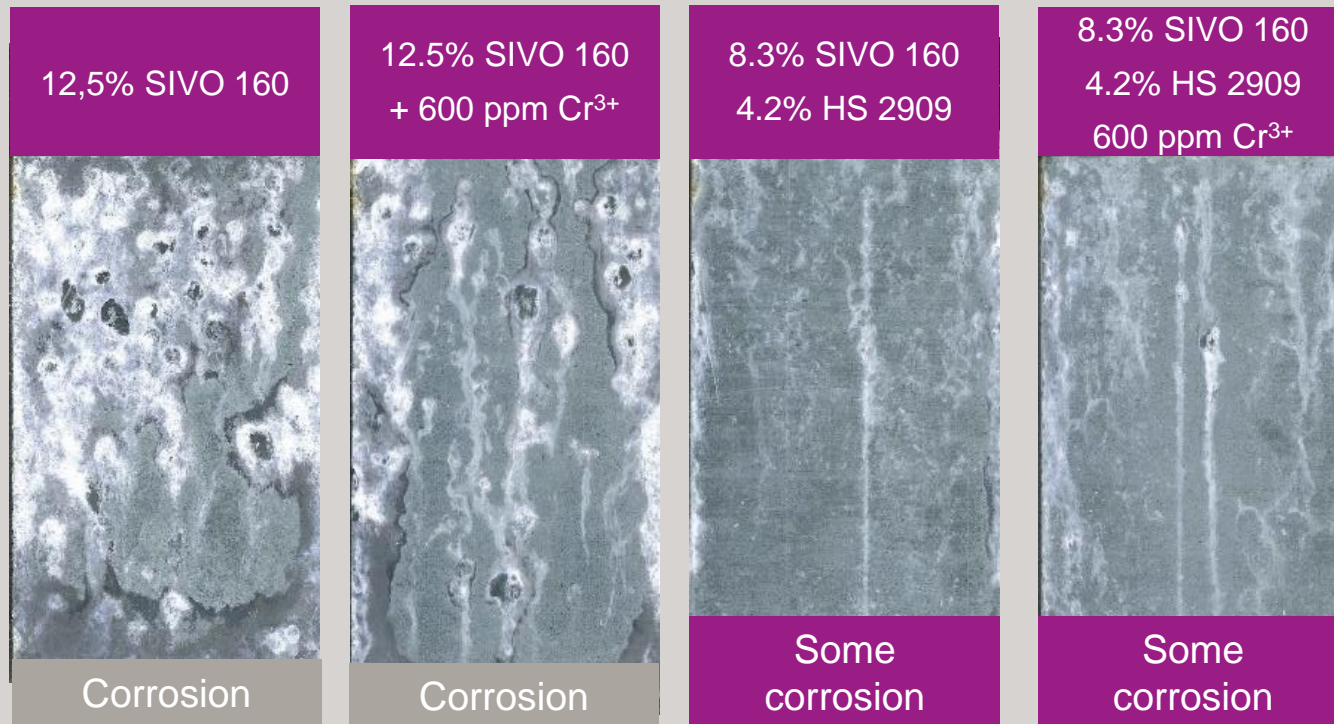
Degreasing / Cleaning (HDG steel):
Silicone remover

Application:
Dipping in
**Dynasylan® SIVO 160 /
Dynasylan® HYDROSIL 2909 formulation**

Curing conditions:
RT for 7 days

Improvement of Corrosion Protection with Dynasylan® SIVO 160 and Dynasylan® HYDROSIL 2909

Neutral Salt Spray Test acc. DIN ISO 9227 - 200 hours



Conclusion:

Dynasylan® HYDROSIL 2909 can often replace Cr³⁺ in corrosion protection system based on Dynasylan® SIVO 160.

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- For further information on functional silanes (Product Information/ Safety Data Sheet) please see our webpage:
- www.dynasylan.com



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