WACKER

CREATING TOMORROW'S SOLUTIONS

INDUSTRIAL COATINGS I LIQUID INTERMEDIATES I SILRES®

STRENGTH FROM WITHIN:

SILRES® SY 231, SILRES® IC 232, SILRES® IC 235, SILRES® IC 368 and SILRES® IC 678

The properties of industrial coatings are critically determined by how well their binders perform. SILRES® intermediates improve the performance of organic binders by modifying them with highly crosslinked polysiloxanes. Coatings formulated with SILRES® intermediates are particularly notable for their enhanced weathering and heat resistance.

Control a Diverse Range of Properties

SILRES® SY 231, SILRES® IC 232, SILRES® IC 235, SILRES® IC 368 and SILRES® IC 678 are liquid oligomers whose basic structure is both organic and inorganic. This combination allows the targeted optimization of many properties of industrial coatings.

A Broad Portfolio

These are just some of the properties that can be modified via the grade(s) indicated:

- Retention of flexibility: SILRES® SY 231, SILRES® IC 232 and toluene-free SILRES® IC 235
- Long-lasting optimized weathering resistance: SILRES® IC 368
- Enhanced heat resistance, especially for industrial coatings: SILRES® IC 678 in a proportion of at least 50%, expressed in terms of the organic polymer (preferably polyester)

More Efficient Coatings Production

SILRES® SY 231, SILRES® IC 232, SILRES® IC 235, SILRES® IC 368 and SILRES® IC 678 are characterized by a relatively low molecular weight (Mw) and low viscosity. As a result, the end formulation will still have a viscosity in the readily processable range, even if the overall molecular weight has been increased by cooking. Paint makers can thus be assured of more efficient production.

Product Properties of SILRES® Intermediates

	SILRES® SY 231	SILRES® IC 232	SILRES® IC 235 Toluene-Free	SILRES® IC 368	SILRES® IC 678
Appearance	Clear, yellowish liquid	Clear, yellowish liquid	Clear, yellowish liquid	Clear, yellowish liquid	Clear, yellowish liquid
Composition	Phenyl/ methyl	Phenyl/ methyl	Phenyl/ methyl	Phenyl/ methyl	Phenyl
Methoxy content in %	~ 13*[1]	~ 13	~ 13	~ 15	~ 15
Density at 25 °C	~ 1.16	~ 1.14	~ 1.14	~ 1.18	~ 1.21
Viscosity at 25 °C	~ 130 mm^2/s	~ 70 mm^2/s	~ 70 mm^2/s	~ 320 mm^2/s	~ 450 mm^2/s
Volatiles content 5g / 1h / 150 °C	< 2	< 2	< 2	< 2	< 2
Molecular weight (Mw)	~ 1,800	~ 1,200	~ 1,200	~ 1,900	~ 900

[1] Alkoxy content

Processing Recommendations

For cooking with silicone intermediates, the organic polymer should contain roughly the following amounts of potassium hydroxide (KOH):

- 15% silicone intermediate ~ 70–100
- 30% silicone intermediate ~ 120–160
- 50% silicone intermediate > 200

Weathering resistance is improved by cooking with SILRES® intermediates in a proportion of 15–30%. Cooking causes the methoxy groups on the silicone intermediate to enter into a polycondensation reaction, primarily with theß hydroxyl groups on the organic polymer.

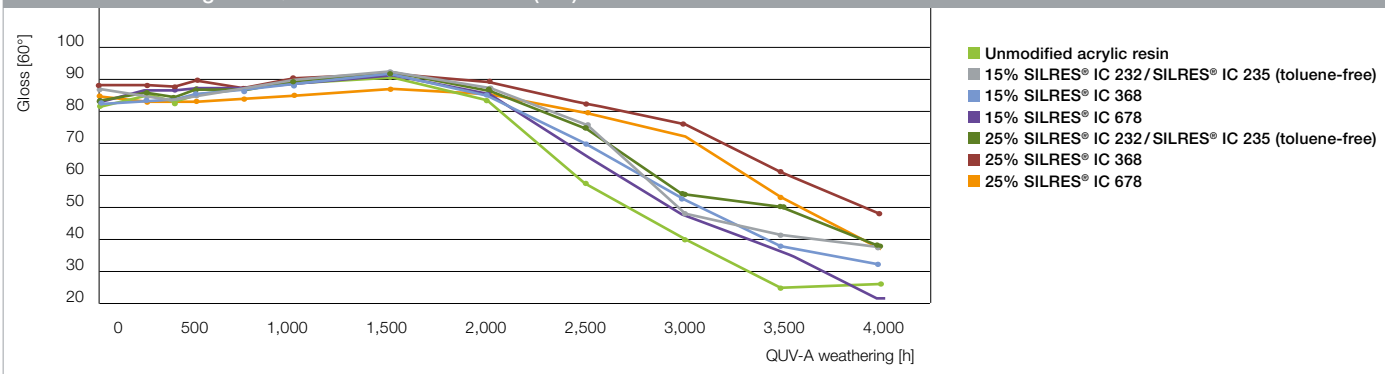
Advantages of SILRES® Liquid Intermediates

- Greater weathering resistance
- UV-stable binder
- Greater heat resistance when silicone resin content > 50%
- Better color consistency
- Reduced water uptake in outdoor applications
- Less dirt pick-up
- Longer gloss retention

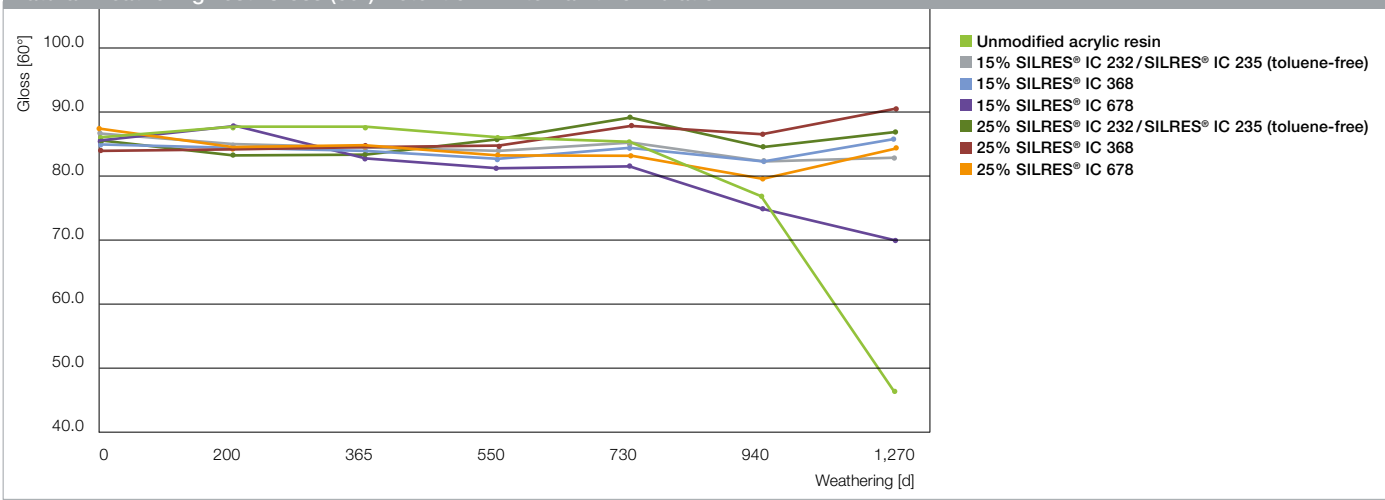
Application Areas for SILRES® Liquid Intermediates

- Weather-resistant coil coatings (e.g. for building siding and roofing)
- Heat-resistant non-stick coatings (e.g. for decorative coatings on pots and pans)
- Corrosion-resistant protective coatings (e.g. for industrial applications)

Artificial Weathering Test QUV-A Resistance: Gloss (60°) Retention White Paint Formulation



Natural Weathering Test: Gloss (60°) Retention White Paint Formulation



Silicone modified paints have a significantly longer life-cycle than unmodified coatings.

SILRES®

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