Liquid Paint Coating of Aluminium

Architect Information Surface Finishes

Status 11/2014

SCHÜCO

Content

1. Overview System Finish Surfaces

System Finish Surfaces (Status 11.2014) – Liquid Paint are marked in Red

	Basis	Performance	Decor	Premium
	Cost →			
PowColor (Powder)	Facade Quality AnoLine CosmoLine MetallicLine	Powder Base Coat with Topcoat Pre-Anodisation with Powder Top Coat DuraClean Anti-Graffiti High Durability Quality MetallicLine Plus INOX Optic Powder	MetallicEffekte Fine Texture Powder AnoLine FS Wood & Stone Optics: DECORAL NATURALL WetLine	Fluorpolymer-Pulver
AnColor (Anodisation)	Anodisation (E6/EV1, C0)	Anodisation for Structural Glassing (SG Anodisation)	Coloured Anodisation with / without mechanical Pre-treatment (E1 to E6, C0, C31 to C35) Silver & Gold (EV2 to EV 4) S315	INOX Optic Classic INOX Optic Plus Gloss Anodisation SANDALOR
WetColor (Liquid Paint)	**Polyurethan (PUR)**	**Duraflon**	**PUR Trend** **Duraflon Trend** **AnoLine DF** **PVDF Decor**	**Duraflon** **PVDF**

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1.1 Location Use of Liquid Paint Coating

WetColor	PUR	Duraflon	PVDF
	Costs →		
Use in Europe	Yes	Yes	Yes
Use worldwide	No	Yes	Yes
Dirt-repellent	No	Partially	Partially
Self-cleaning	No	Partially	No

Abbreviations: PUR = Polyurethane, PVDF = Polyvinyldifluoride

2. Overview of Schüco Liquid Paint Coating Systems

Attributes	Polyurethane (PUR)	Duraflon	PVDF
Basis	Polyurethane	Polyfluor-Ethylen-Vinylether	Polyvinyldifluoride
Choice of colours	Wide	Wide	Limited
Colour examples	RAL, Metallics, haematite	Metallics, haematite, RAL, NCS	Metallics & choice of colour
Added value	Appearance	Appearance, dirt resistance	Appearance, dirt resistance
Processing object temperature [°C]	80 - 120	180	240
Durability against solar radiation	Good	Excellent	Excellent
Resistance to emissions	Comparable to Facade quality in powder	Very high	Very high
For use in	Europe	Worldwide	Worldwide
Meets requirements	GSB, Qualicoat	AAMA 2605 (10 years Florida), GSB, Qualicoat	AAMA 2605 (10 years Florida)
Schüco guarantee	Up to 10 years (Europe)	Up to 10 years (worldwide)	Up to 10 years (worldwide)

3. Liquid Paint Coating Constituents

Ingredients and their purpose

For architectural applications, the only products currently available are those in an organic matrix.

Typical ingredients are:

- **Solvent** (matrix for the ingredients)
- **Binding agent** (polymer, critical for properties and stability)
- **Pigment** (colour, critical for appearance and weather-resistance)
- **Additive** (aid for flow and function)
- **Filler material** (property stabilisation in polymer composite - additive - filler)

The nature of the binding agent and pigment is critical for the stability of the surface finish against weathering and environmental factors.

Types of binding agent:

- **Polyurethane (PUR)**
  The reaction between the polyols and diisocyanates causes the urethane to bond. High levels of stability combined with gloss, hardness and body. Wide choice of colours.
- **Fluoro polymer (Duraflon & PVDF)**
  Reaction of fluorinated compounds under polymerisation. The Fluorine groups make the material extremely stable against polymer decomposition. Restricted colour range for PVDF.

In the case of the pigments, only those products that allow maximum colour fastness (on exposure to the weather) are used. This may restrict the number of colour choices.

4. Application of Liquid Paint Coatings

Production Systems for Liquid Paint Coating

View of Liquid Paint Coating Application

View of Curing Oven for Liquid Paint Coating

(Pictures: Kemper / Wahl)

5. Use of Liquid Paint Coatings

Criteria for Choice of Liquid Paint Coating

The following factors are very important in the choice of liquid paint coating:

- **Brilliance** (pigment system)
- **Variations in surface gloss** (filler coat, polymer)
- **Polymer stability** (against UV, emissions, weather, often defined by location)
- **Additional benefits** (e.g. anti-graffiti, dirt repellence, active self-cleaning)

Other factors include:

- Industrial coating
- Repair with original paint possible
- Minimal cleaning and maintenance work

Due to the large number of options (pigments, level of gloss, texture/structure) liquid paints for architecture are **not stock items, but are produced for specific orders**. The delivery time for these special coatings is currently 10 working days following receipt of written order by Schüco. Preparation for the coating entails an additional maximum of 10 working days until the finished material is delivered to the customer, i.e. at the most 20 working days until first delivery.

Liquid paint coating finishes are determined by the factors

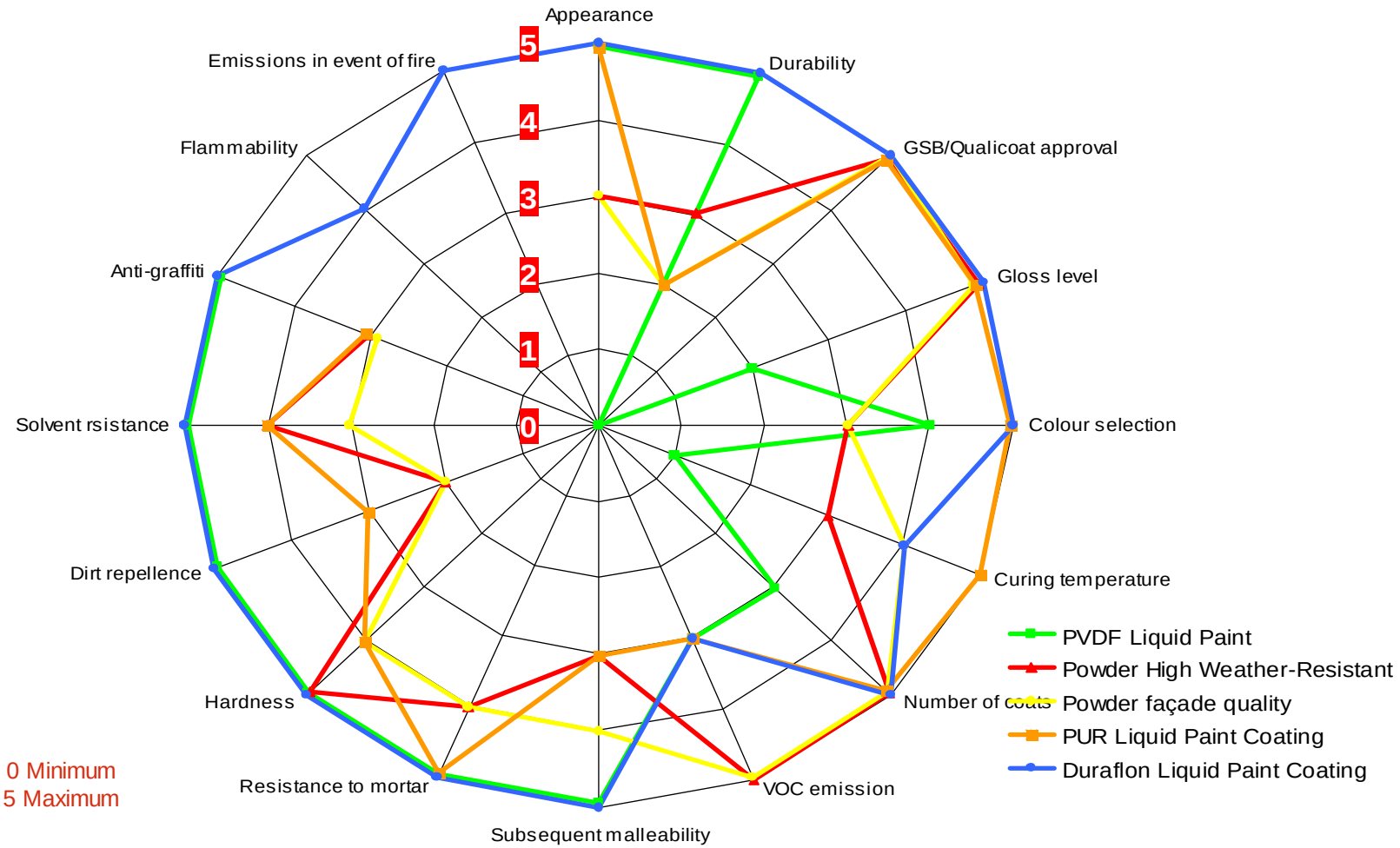
- **Raw materials**

and

- **Productivity in the coating process**

considerably more expensive per square metre coating price than other surface finish methods, although over the lifecycle the costs are put into perspective (advantage durability, cleaning intervals).

6. Comparison of Attributes for Liquid Paint & Powder Coating



Source: Monopol

7. Liquid Paint Coating Types I: Polyurethane (PUR)

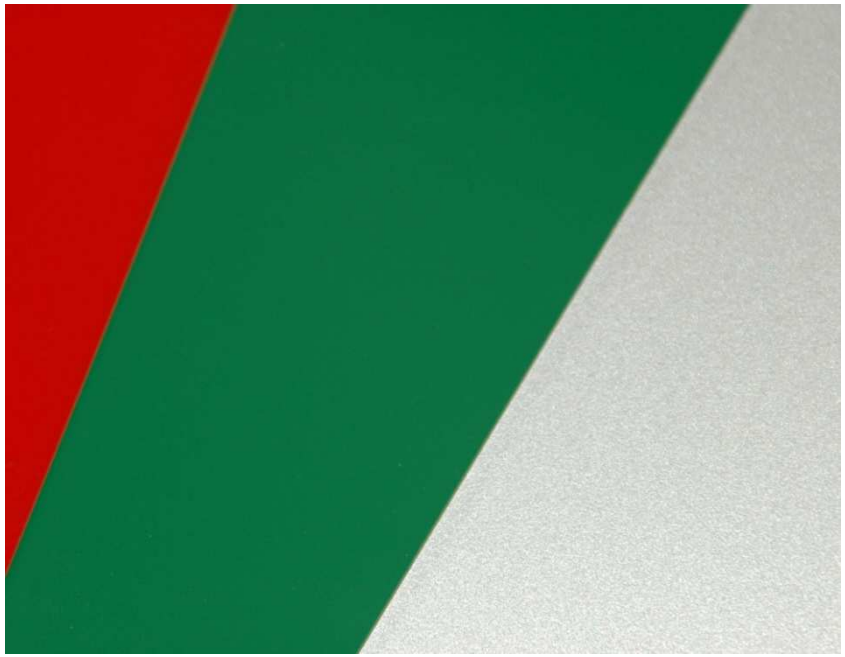
WetColor Basic

2K Polyurethane liquid paint coatings are a popular alternative to powder coating due to the wide choice of colour and surface finishes, since the wet coating finish produces major improvements in terms of colour depth and brilliance.

These liquid paint coatings can include standard colours (RAL, Metallics) and also a number of special colours (NCS, RDS, CI colours), which can be manufactured to order. There is a limited choice of level of gloss and texture - contact Schüco for more details.

The nature of the PUR system makes it mainly suitable for Europe, with moderate UV loads and weathering effects.

PUR Liquid Paint Coating Colours: Brilliance combined with Colour Depth and Effect
(Image: Schüco)



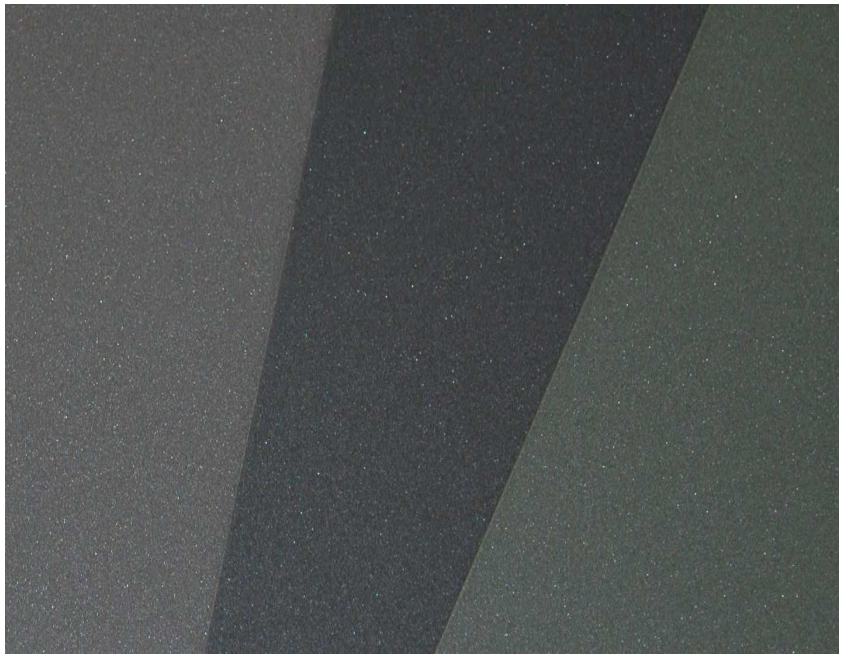
8. Liquid Paint Coating Types II: Duraflon

WetColor Performance, Decor & Premium

Duraflon as single-layer system with a curing range of around 180°C object temperature is the solution when dirt resistance & repellence combined with high stability against UV exposure, emissions and weather (due to the nature of the polymer) is required.
The moderate curing temperature ensures that composite profiles made of different materials (e.g. Schüco HI systems, AWS and ADS) are coated as a single unit, to save time and expense.

Highlights are: Highly stable polymer, wide choice of colour and level of gloss combined with usage worldwide and the use of composite profiles - speak to Schüco to learn more about the options.

Duraflon: RAL, Haematite and Metallic Colours with high Brilliance (Image: Schüco)



8. Liquid Paint Coating Types II: Duraflon

Explanation of additional benefit of Duraflon

In contrast to surfaces with normal roughness (powder, anodised, wet coatings), where dirt and other contaminants accumulate in the inevitable surface irregularities, this is much less the case with Duraflon:

Due to the improved formulation of Duraflon, the dirt adhesion is reduced, which results with weathering also into dirt removal by rain. This leads to longer lasting value in terms of the function and appearance of the building envelope.

Duraflon can be used worldwide due to the high stability of this product. The surface needs to be cleaned under normal conditions every 4 years.

Comparison following Contamination and after simulated Rain (Image: Schüco)

Powder Duraflon

9. Liquid Paint Coating Types III: Polyvinylidenfluoride (PVDF)

WetColor Decor & Premium

Polyvinylidenfluoride (PVDF) is a 2 - 4 coat system, depending on the selected colour and surface, capable of withstanding high UV exposure and weather conditions across the world. The polymer system is extremely stable and just as Duraflon provides dirt-repellent qualities which simplify cleaning.

Since this polymer requires object temperatures of up to 240°C, finishing is possible only for profile components. Composite profiles are not possible.

The range of colours and finishes is limited due to the high stability required - please speak to Schüco for more details.

Multi-layer PVDF Surface Finishes: high-quality Metallic Colours combined with excellent protective Qualities (Image: Schüco)

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10. Schüco System Finish Information

Overview of available information from Schüco – Status 09.2012

Downloads via www.schueco.com:

- Architect info Pre-treatment
- Architect info Powder Coating
- Architect info Metallics
- Architect info Dirt repellent Coatings
- Architect info Liquid Paints
- Architect info Anodisation

- Videos Finish Methods

Digitale Info via SCV:

- A wide series of information for current finish products is also available as PDF.

- Function and Service Information Schüco

- All Information are available as PDF in German or English.

Printed Information:

Colour finishes for Aluminium (Colour Booklets)

- **Edition Basic** 07/2012 (Art. No. 63116) for often requested finishes used in end customer business such as RAL, Standard Metallics and Anodisation according to EURAS.

- **Edition Advance** 12/2014 (Art. No. 63118) contains also object surface options and special finish methods used mainly for objects.

11. Contact Details

For additional information and support for the presented products, please contact the Service Centre Finish (SCV)

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