Technical data sheet ReflectionsOne®

Thinking the future of steel

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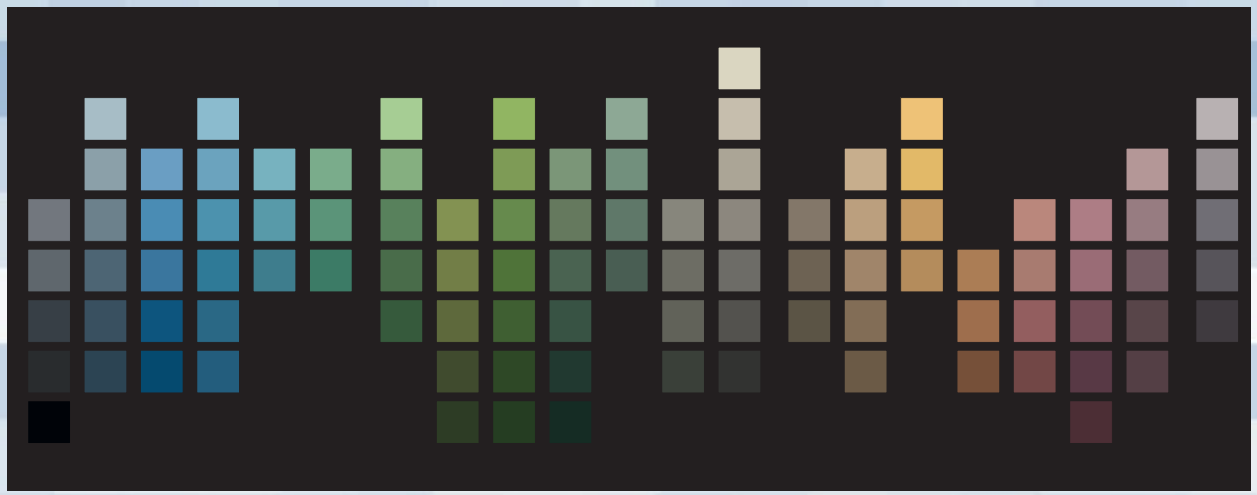
Color-coated steel sheet for exterior wall cladding.

General	**Reflections**One®	The **Reflections**One® range of color-coated steel sheet offers significant advantages over traditional coated materials. Designed to meet extreme demands in terms of durability and color performance, the coatings applied by coil coating and spray coating are perfectly matched to ensure consistent high quality.
Material structure	Substrate material	Hot-dip galvanized sheet, Z 275 or ZA 255; to standards DIN EN 10147, DIN EN 10143, DIN 55928-8, DIN 18807-1. ZA (Galfan) sheet used for sandwich structures. ZA (Galfan) also used for trapezoidal sheet with the exception of some dimensions.
	Color-side coating	Two-coat system with high-quality **Reflections**One® topcoat. More details on color-side coatings later in data sheet.
	Nominal thickness of color-side coating	25 µm (DIN 55928-8)
	Reverse-side coating	Generally a one-coat (min. 10 µm) polyester or epoxide coating. On request increased coating thickness or a coating structure similar to the color-side coating can be supplied.
	Color-side surface protection	On request, a removable polyethylene-based foil can be applied to protect the color side. This is strongly recommended when manufacturing sandwich elements.
Colors	Color collection	The color collection was developed on the basis of experience with color combinations and their effect on people in a natural environment. Color tones and groupings are specially matched to create a harmonious colormetric balance. The high-quality coatings are supplied in a collection of 100 colors created by the color designer Friedrich Ernst von Garnier. The list at the end of this brochure shows how the different colors are classified according to lightness/reflectivity. Please ask for the separate **Reflections**One® color brochure.



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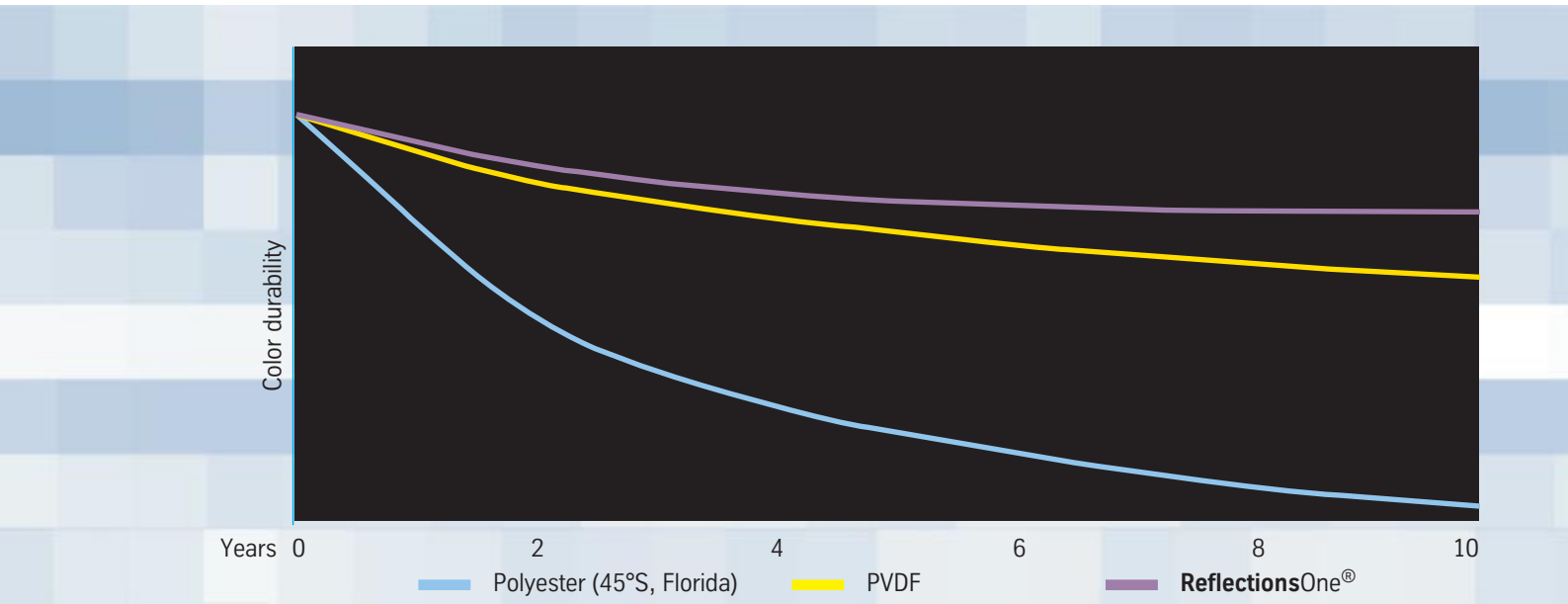
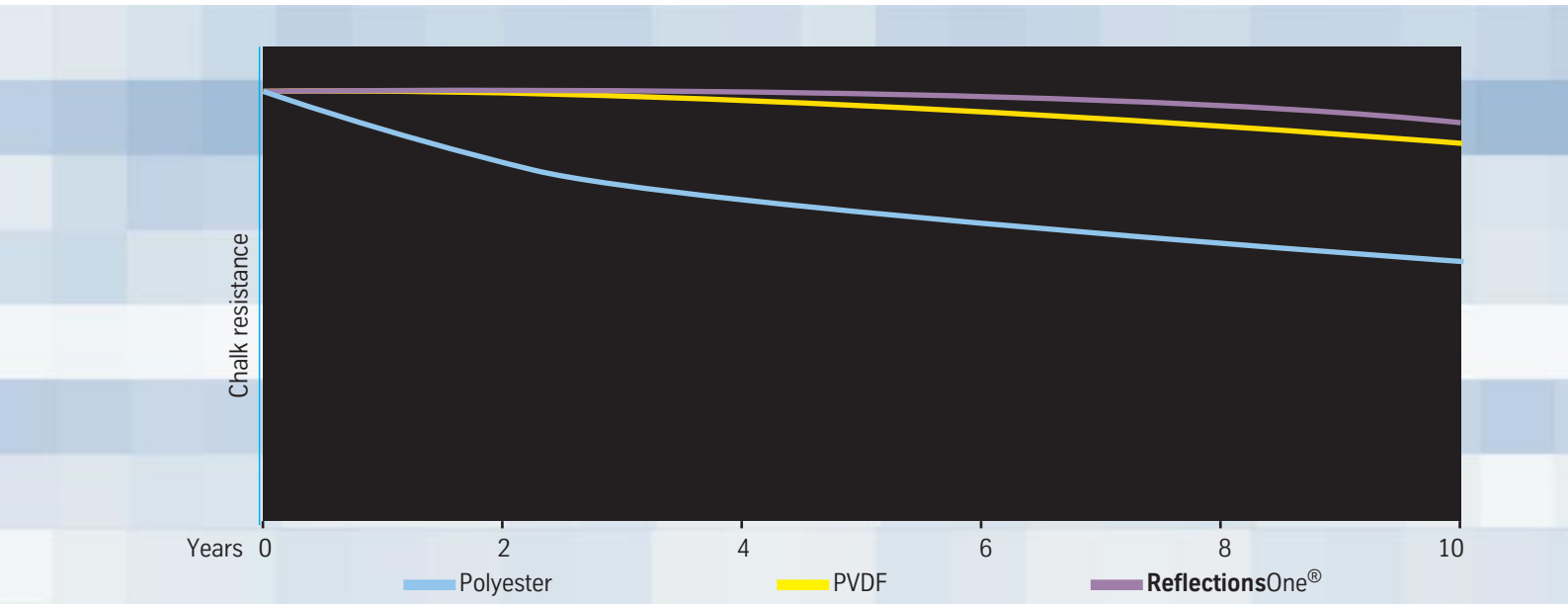
Color matching of follow-up orders	Excellent
Finish	Satin: 30 units (DIN 10169-1).
Corrosion resistance	Corrosion resistance class III (DIN 55928-8)
Temperature resistance	-20°C to + 80°C, short periods
Weatherability	Taking into account the characteristics of available coating systems, the **Reflections**One® color collection was realized on the basis of a special high-quality paint for coil coating and spray coating. The coatings use premium quality pigments with exceptional covering capacity in visible and ultraviolet light which exhibit outstanding gloss retention and chalk resistance. They are the key to the wide spectrum of colors available in the **Reflections**One® collection. High-energy UV radiation can destroy organic coatings. This causes fading due to pigment damage, gloss reduction and chalking due to degradation of the binder. With virtually zero ultraviolet absorption, the paint system used in **Reflections**One® offers optimum gloss and chalk stability. The charts on the following pages provide a comparison of the color durability, chalk resistance and gloss reduction of polyester coatings, PVDF coatings and **Reflections**One® coatings.



Weatherability (continued)		The optimized **Reflections**One® paint system produces coatings with the following characteristics: ● Color and gloss changes are uniform on different colored surfaces facing in the same direction so that the color design retains its harmonious appearance. ● Specially selected pigments are used to ensure very good color stability in natural weather conditions. ● As with other coatings, the positive characteristics of these coatings can be impaired by aggressive materials (acids, lyes and/or solvents) and permanent moisture. If used properly and protected from aggressive media, the material's outstanding properties will last for at least 10 years. ● As with other building projects, annual inspections are recommended.
Applications	Examples	Trapezoidal profiles and sandwich elements for facades.
Cleaning	Information CM 093 Steel Information Center, Düsseldorf	Where necessary, the coated surfaces should be cleaned carefully using cold or lukewarm water or mild alkaline cleaning agents without oxidation agents (e.g. chlorine) which must be thoroughly rinsed off after use with cold water. Scouring powders, brushes or dirty sponges must not be used due to the risk of scratching. It is recommended that cleaning be carried out by specialists.



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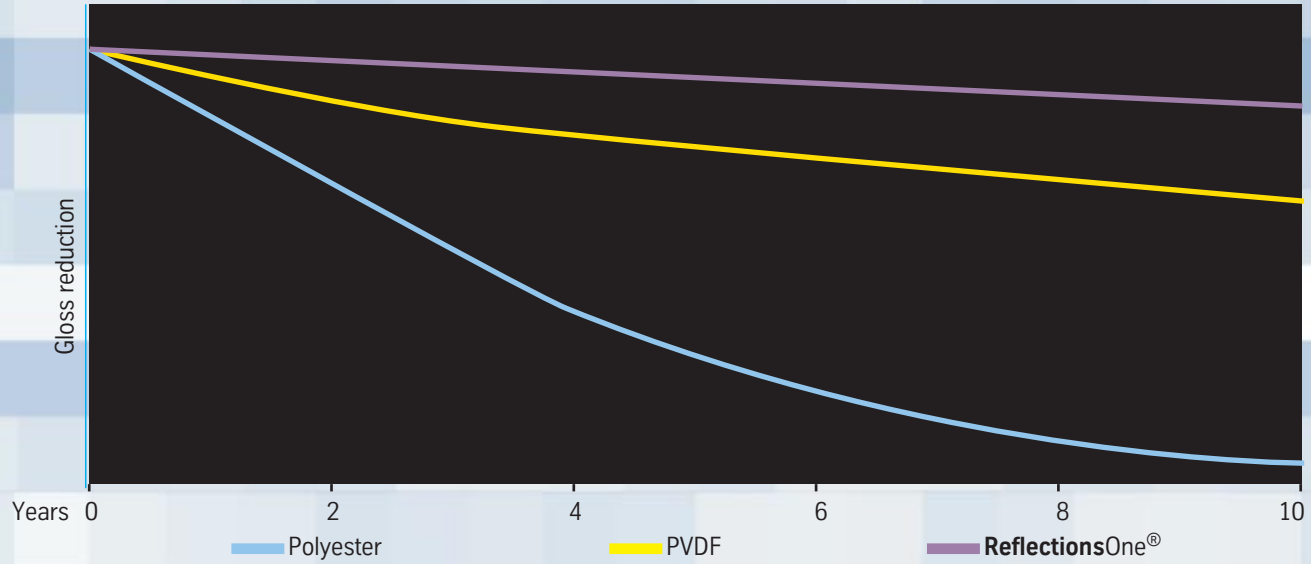
Property determination	10 years	● Color and gloss changes are uniform on surfaces facing in the same direction so that the color design retains its harmonious appearance. ● Specially selected pigments ensure very good color stability in natural weather conditions. This applies both to coil coating and spray painting, which however is not covered here. ● The positive characteristics of the coating are impaired by: ➤ aggressive substances such as acids, lyes and/or solvents ➤ high thermal stresses ➤ permanent moisture ➤ location up to 3 km from the sea coast or within a 400 m radius of a source of aggressive emissions ➤ improper handling, design and/or installation. In addition, sharp edges, drill holes and bracings may be the source of corrosion damage; the effects of natural phenomena may also harm the coating. ● Provided the above-mentioned conditions are met, the coating is subject to virtually no detachment (< 5 percent of the surface) for ten years. Any given color of the material will change in line with the other colors of the material exposed to identical weather conditions. As a result, the esthetic appearance of the material is not negatively affected. ● In addition, specifications of other contractual suppliers must be observed.



Paint repairs and over-painting		Small, localized surface defects caused, for example, by mechanical damage during installation, can be repaired using a suitable air-drying paint applied by brushing or spraying depending on the extent of damage. The differences in color between the original coating and the repaired area frequently found with other coating systems are virtually non-existent thanks to the specially matched repair paints. Measurable color differences are minimal. Information on which repair paints to use is available on request. For over-painting larger areas, the condition of the material and compatibility of the new paint with the old coating must be taken into consideration/ examined. We therefore recommend that this work be carried out by authorized specialists. The names of specialist companies are supplied on request.
Spray coating		Spray paints are available which permit coatings of equivalent quality. They are applied to a pre-primed coil-coated sheet and dried at 60 to 80°C to achieve virtually the same quality as coil-coated products. The special resin used in spray paints results in slightly reduced UV resistance compared with coil-coated sheet. Differences will only be noticeable on the finished building if surfaces facing the same direction and with the same profiling are observed together. For this reason spray-coated and coil-coated sections featuring the same color in the collection should not be placed side by side. Please also note the comments under “Property determination”. Spray painting should be carried out by authorized specialists.
Additional information	Notes	The very high quality of the **Reflections**One® composite material is secured by the outstanding characteristics of the coating material in conjunction with the tried and tested technology of our modern coil-coating facilities. Experienced employees and in-line measuring processes, including coating thickness and color measurement facilities, help maintain the high quality standard.
	Quality management	ThyssenKrupp Stahl AG is certified to DIN EN ISO 9001:2000 and ISO TS 16949 among other things for coil-coated sheet and has successfully completed the corresponding physical and chemical inspections.
Brochure last updated		January 1, 2004
Questions/Contact		ThyssenKrupp Stahl AG, 57223 Kreuztal, Germany Industry Division Color Profit Center/Product Development or Sales/Customer Services

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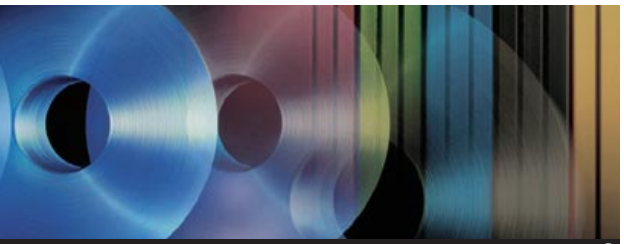
Color groups	Classification by lightness/reflectivity
	I 90 ... 75E
	II 74 ... 40E
	III 39 ... 8E

Color name	Color group
solid 4	II
solid 5	II
solid 6	III
solid 7	III
solid 8	III
pure 2	I
pure 3	II
pure 4	II
pure 5	II
pure 6	III
pure 7	III
fresh 3	II
fresh 4	II
fresh 5	II
fresh 6	III
fresh 7	III
endless 2	I
endless 3	II
endless 4	II
endless 5	II
endless 6	II
endless 7	III
cool 3	II
cool 4	II
cool 5	II
dynamic 3	II
dynamic 4	II
dynamic 5	II
hope 2	I
hope 3	II
hope 4	II
hope 5	II
hope 6	III

Color name	Color group
glad 2	II
glad 3	II
glad 4	II
glad 5	II
glad 6	III
glad 7	III
glad 8	III
calm 3	II
calm 4	II
calm 5	II
calm 6	III
calm 7	III
calm 8	III
modest 2	II
modest 3	II
modest 4	II
modest 5	II
proud 4	II
proud 5	II
proud 6	II
proud 7	III
eternal 1	I
eternal 2	II
eternal 3	II
eternal 4	II
eternal 5	II
eternal 6	III
eternal 7	III
fair 4	II
fair 5	II
fair 6	III
soft 2	II
soft 3	II
soft 4	II
soft 5	II

Color name	Color group
warm 5	II
warm 6	II
warm 7	III
near 4	II
near 5	II
near 6	II
near 7	III
tempt 4	II
tempt 5	II
tempt 6	III
tempt 7	III
tempt 8	III
gentle 3	II
gentle 4	II
gentle 5	II
gentle 6	III
gentle 7	III
secret 2	II
secret 3	II
secret 4	II
secret 5	III
secret 6	III
relax 4	II
relax 5	II
relax 6	II
relax 7	III
relax 8	III
cosy 3	II
cosy 4	II
cosy 5	II
cosy 6	II
cosy 7	III



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For further information on **Reflections**One® visit our website at
www.thyssenkrupp-stahl.com
or
www.reflectionsone.com

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