Processing instructions

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General information

Except for Series 75, which can only be processed as a 1-coat variant, observe the following information: To achieve the minimum thickness of 80 µm on edges and corners that is required here, a two-coat application is required for buildings in coastal and offshore areas with an extensive exposure to salt. Gelling (= partial, incomplete curing) of the first primer coat is essential for optimum intercoat adhesion when using a two-coat system. The gelling must always result in a melting rather than a complete curing of the primer coat—this is particularly important with parts in different shapes and wall thicknesses. Finally, a second top coat is applied and fully cured in accordance with the curing conditions of the product data sheet for this top coat.

Film thickness

For the minimum film thickness, please refer to current test and quality regulations of GSB International, QUALICOAT or other quality associations.
The standard film thickness should be between 70 to 80 µm; to ensure proper coverage, a higher film thickness may be required for bright colors and fine texture effects. Series 68 flat matte: in order to assure sufficient mechanical properties the film thickness must not exceed 100 µm.
Applicators coating products that are subject to the EU Marine Equipment Directive must observe the maximum film thicknesses of the respective EC type examination certificates (Module B) as listed on TIGERs homepage. (Downloads)

Incompatibility of powder coatings

Incompatibilities with powder coatings can appear in various forms, e.g. by surface matting, pinholes, impaired flow and in some cases formation of craters.
The causes of such problems can be attributed to the use of different raw materials, e.g. binder systems for various powder coating qualities, products from different manufacturers, and residual powder in the coating system.
The raw materials influence the properties of the powder coating, such as its reactivity, viscosity in the melting phase and also the surface tension. These factors, as well as the different manufacturers of materials, are the most important influences that determine the compatibility of the different formulations and are the reason for any incompatibilities. In many cases, only a very small concentration is required to produce these unwanted effects. The incompatibilities resulting from the different quality of products or materials from different manufacturers are not defects but are the result of its various chemical compositions and properties.

This means that thorough cleaning of the system every time a product or manufacturer is changed is essential.

Color deviation

Powder coatings are formulated and manufactured in accordance with defined color standards, e.g. RAL. Even with the most meticulous approach, differences in color and effects in different batches are unavoidable. However, the coating result, which must be tested beforehand by comparison with the powder coating manufacturer's reference sample, also depends on the application equipment and the curing temperature and curing time selected (consistent process parameters in case of subsequent orders). Curing conditions specified by the manufacturer (min./max. Substrate temperature and exposure time) must be observed. Deviations of color and gloss may result from variation of curing conditions, such as changes in circulating air temperature or timing diagram, expanding the substrate temperature and/or exposure time recommended by the manufacturer (“overcuring”) in case of breaks or conveyor standstill, temperature jumps and/or variations in the shape of parts or variations in substrate temperatures with thick-walled and thin-walled parts in the oven. Therefore, a performance test on the coating system is required prior to processing. The variations in color and effect caused by the system - especially in respect of the share of reclaim powder - need to be determined by producing tolerance samples.
To keep system-dependent color and effect differences to a minimum, the entire layer of a particular order (also and especially

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when the coating process includes partial orders) has to be applied with the same system, if possible without any interruption and with consistent system parameters (e.g. high voltage, conveying air, dosing, distance between gun and work piece, etc.) and if possible with one batch and consistent reclaim share. Color and effect variations have to be expected with manual application due to uneven powder application. Uniform film thickness must be ensured: excessive variations cause differences in color and effects and also in gloss. The assessment of color and effect tolerances in accordance with current standards for automobile coatings is not suitable for powder coating.

One-coat vs. two-coat

Products designated as two-coat metallic effect applications must be top-coated with a clear finish.

Durability is fundamentally defined by the method, either a one or two-coat process. The durability of metallic powder coatings depends on the product and must be clarified with the manufacturer with reference to special requirements such as abrasion and scratch resistance, type of cleaning, color stability and chemical resistance. **Please consult the manufacturer before applying any 2-coat systems that feature (i) a primer or e-coat as base coat and (ii) a metallic effect powder coating as a top coat.** Regardless,in these cases we recommend a standard film thickness of 100 µm for the top coat.

Effective advice by the manufacturer requires detailed knowledge of all stresses and substances that can affect the powder coating, such as excessive chlorine, moisture and salt in wellness centers and swimming pools, or areas with high visitor frequency, such as in public spaces and manufacturing areas. This includes joint sealing compounds and other auxiliary materials, such as glazing aids, lubricants, drilling and cutting lubricants, etc. which come in contact with coated surfaces, which must be pH-neutral and free of paint-damaging substances. Prior to coating, a suitability test at the applicator is therefore highly recommended.

If necessary, a transparent top-coat could therefore be necessary to prevent influences to the paint surface (metallic particles) that could lead to a discrepancy in color or effect. When using two-coat systems, the applicable curing conditions must be observed.

Two-coat systems for double coating
Always allow only half of the recommended curing time (gelling) according to the corresponding product data sheet for the first coat unless otherwise specified. The second coat must be allowed to cure in accordance with product data sheet (complete curing). However, the exact curing conditions (curing time and temperature) must be determined individually depending on the application and the coating line. Check continuously for intercoat-adhesion!

Subsequent machining, such as bending, milling, drilling, cutting, stamping and trimming, as well as recoating and/or touch-ups

In case of subsequent forming, such as by bending, milling, drilling, cutting, stamping or folding the coated work pieces, the suitability of the process must be tested on original parts before mass production, because the specific functioning and condition of the machine tools, alloy, pretreatment, bending radius, (ambient) bending conditions, temperature, wall thickness, film thickness, curing conditions, color, gloss, storage time and other factors can all influence the adhesion of the coating to the substrate. Especially with Series 68 flat matte an excessive film thickness may lead to a drastic reduction in mechanical properties. Micro cracks in the surface of the powder coating may result in corrosion damage.

Subsequent recoating and/or touch-up of architectural applications are non-conforming in accordance with quality guidelines published by GSB and QUALICOAT.
However, if touching-up or recoating are performed, attention must be paid to appropriate adhesion to the substrate, faulty coating as well as structural component and material characteristics.
Grinding and cleaning to remove the grinding dust are essential before recoating. The new layer must then by applied in accordance with the applicable product data sheet.

All touch-up work must be performed by a specialist company to ensure that the functionality of the coating and the general visual impression are restored as close as possible to the original condition. In all cases, the touch-up system must be tested beforehand in an area that is not visible—this is the only way to ensure the best possible color matching and functionality and to test the adhesion to the original coating under natural conditions. Please note that the optical, mechanical and chemical properties and also the UV and weather resistance qualities of the touch-up system may not conform to the properties of TIGER Drylac® powder coating. Therefore, a suitability test for the intended application must be established.

Warranty claims for recoated and/or touched-up components will not be accepted.

Adhesion of sealants, adhesives and foam

Before the application of a sealant or adhesive, and before foaming, the surface is to be appropriately cleaned, for example with IPA alcohol. Pretesting is essential. Processing guidelines and product recommendations must be obtained from the suppliers. Even a brief application of organic solvent, such as paint thinners or acetone, and alkaline, abrasive or other cleaning agents that damage the paint may cause irreversible damage to the coating surface that is not visible to the naked eye.

Packaging, storage and assembly of coated components

Packaging
Make sure that the coated components are not packed until they have cooled completely to avoid thermal marks.

Suitable packaging materials that are free from plasticizing agents, foils, labels, auxiliary and transport equipment must all be tested for suitability, e.g. any undesirable effects such as detachment, change in gloss or color, glue sticking to the surface, etc., before use and must be used correctly so they can be removed without difficulty when required (e.g. labels, adhesive tapes, etc.).

The protective foil must be processed within the processing period specified by the foil supplier, as foils age and their characteristics change. The storage and processing conditions of the foil manufacturer must be observed in order to ensure the following at a minimum:

- the surface to be protected must be clean and dry, i.e. free of greases, oils, solvents and other auxiliary materials;
- the processing of the protective foil (application and removal) is to be carried out in the recommended temperature range;
- for subsequent processing or protection, the protective foil must be applied uniformly (preferably mechanically) without folding or bubbles and without over-stretching, according to the manufacturer's instructions;
- the protective foil must be removed from the surface being protected, at the latest, after 3 months or according to the foil provider's terms of use; for longer periods of use, new foil must be applied.

The influence of moisture accumulation (e.g. under packaging foils) and heat under unsuitable storage conditions, particularly outdoors, may cause the formation of milky-white spots.
This possible and occasional physical process, can often be reversed by application of heat (e.g. tempering in a furnace, industrial hot-air dryer) and can be reduced or prevented by the use of perforated foils.

Storage
When packages are stored on the ground at a construction site, they must be placed on lumber supports with a slight tilt. Protect packages from sunlight, moisture and dirt. Ensure adequate ventilation to prevent condensation. Open foil at the head end to allow ventilation of foil-packed items. Secure items in open packages to prevent storm damage.

Assembly aids
Lifting gear, cranes and their means of support must be used and cleaned during assembly without any damaging influences on the coated surface, such as overloading, impact loading, chemical influences or heat. The cleaning process during and after assembly must not cause any chemical damage (e.g. no acids – embrittlement), no impermissible temperature loads, surface damage or cracks. Abrasive cleaners or polishing agents can damage the paint (especially metallic effects and matte powder coatings) and must not be used; observe "Cleaning recommendation for coated surfaces," No. 1090. In suction cup lifting applications, a suction cup material and vacuum flow must be selected that prevents warping, damaging or pressure marks on the coated surface by the suction cups used due to excessive vacuum and load on the surface.

Cleaning

Facade
The prerequisite for proper care of the coated facade is to clean the structure at regular intervals, at least once a year and more often under unfavorable environmental conditions, in accordance with the guidelines of the quality association for cleaning metal facades (Gütegemeinschaft für die Reinigung von Metallfassaden e.V. (GRM)), performed by a member of the GRM using cleaning agents and cleaning substances approved by the GRM for quality-assured facade cleaning of coated surfaces in accordance with RAL-GZ 632-1996. Before the initial cleaning and subsequently every time a different cleaning agent is used, the cleaning agent and cleaning substances must be tested on an area at least 2 m^2 in area on the south side that is not exposed to ensure that it is suitable.
Do not use aggressive or abrasive agents. Use only a soft, lint-free cloth for cleaning. Avoid excessive rubbing. Do not use steam cleaners. Rinse surfaces with clean cold water immediately after cleaning. Even a brief application of organic solvent, such as paint thinners or acetone, and of alkaline, acid, abrasive or other cleaning agents that damage the paint may cause irreversible damage to the coating surface that is not visible to the naked eye.

Metallic effects
Metallic coatings must be cleaned regularly, and immediately if they become dirty. Old, dried dirt can only be removed by abrasion, which will damage (scratch) the coating. Please see the most recent edition of our data sheet no. 1090.

Fine texture effects
Facade elements coated with fine texture effect powder coatings require special treatment in addition to the above cleaning recommendations. Clean rough surfaces that are difficult to clean because of their characteristics with clean water only; if necessary, add a small volume of a neutral or weak alkaline washing agent.

Chemical resistance

The required chemical resistance of a powder coating depends on the product and therefore is best decided in consultation with the parties to the contract during the planning phase depending on the application and the known contaminants. Agreement is particularly important with reference to the requirements profile and the test method, which can be in conformity with EN ISO 2812-1 "Paints and varnishes. Determination of resistance to liquids". The test and exposure time and also the concentration of contaminants must also be defined.

General information – metallic effects

Parts that are difficult to coat should be pre-coated. Subsequent top-coating may result in clouding. On parts that require coating on both sides, the most visible side should be coated last. The positioning of facade panels and profiles - vertical or horizontal - must be defined before coating and must not be changed during coating and subsequent installation. Different heat-up curves must be avoided: thin and thick-walled parts must not be mixed during coating. To prevent differences in color, gloss and effect, do not combine colors from different batches or different manufacturers on the same object. We recommend maintaining the application parameters constant throughout the complete coating process of a production batch and testing at least col-

or, gloss, effect and curing conditions at the start of and during production. Major projects in which several coaters are involved may end up with different colors and effects even with the same manufacturer and the same batches because of the different processing and application parameters. This requires mutual agreement on tolerance samples before the coating process. Different material tensions between substrate and coating may cause tension cracks in the powder coating layer with non-pigmented coatings (e.g. clear).

Coating systems – Metallic effects

Different types of gun, system and spray parameters are often the cause of an inconsistent result. It is important to use only nozzles that are recommended for metallic powder coatings. Depending on the type of item that is being coated, flat-spray or ventilated impact disc nozzles with a constant powder cloud should be used. The grounding and charge of the powder cloud should be checked regularly. Regular process monitoring will also include interim cleaning of the powder hoses and removal of deposits on spray guns and in booths. The metallic coating should be drawn from fluidized containers only. Because metallic coatings are sensitive to different recycling proportions, the coating should be performed from the start with no more than approx. 30% recycled powder (initial coating without parts).

The powder guns must never be positioned too close to the work piece at any time during application to avoid formation of streaks. The streaks, which in some cases are formed in automatic systems through the reciprocator movement in a sinus curve, are generally not visible immediately and are often only detected under specific lighting conditions or different angles of view.

Reclaim – Metallic effects

To achieve an even color/effect, the addition of fresh powder must be specified by the applicator and adhered to consistently throughout the complete process, but should not fall below 70%. The reclaim powder should only be returned to the powder circulation continuously and after sieving. Multiple or exclusive use of reclaim powder is not permitted. Because not all metallic powder coatings are equally stable under recycling, the fresh powder proportion must also be defined by color/effect tolerance samples. However, the initial monitoring for true color is essential. We recommend the application of fine texture metallic effects without recycling.

Electrostatic charging – Metallic effects

Manual or automatic: electrostatic; tribostatic, if specified. Only a few metallic powder coatings can be sprayed tribostatically. Their suitability must be tested with the coating system before processing. Because of the different charging capacity of powder coating and metallic particles, not all metallic particles are transported to the coated item, which may also result in a discrepancy of the color or effect. Switching from electrostatic to tribostatic charging and vice versa or mixing both types of application for coating an item is not permitted. The coating system must be kept particularly clean for metallic powder coating to prevent sintering and resulting short-circuits in the gun.

Grounding – Metallic effects

When using metallic powder coatings, it is important to ensure that the powder spray system and coated item are properly grounded. This contributes greatly to the consistency of color and effect.

Disclaimer

Our verbal and written recommendations for the use of our products are based upon experience to the best of our knowledge in accordance with present technological standards. These are given in order to support the buyer or user. They are non-binding and do not constitute any contractual legal relationship or additional obligation from the purchase agreement. They do not release the purchaser from verifying the suitability of our products for the intended application at his own responsibility. We warrant that our products are free of flaws and defects to the extent as stipulated in our Terms of Delivery and Payment.
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