

IGP-DURA[®]xa/

Deep matt powder coating system for architectural and industrial applications

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A DOLD GROUP Company

Introduction

IGP-DURA[®]xa/ is a deep matt decorative powder coating system which is offered in both highly weather-resistant facade quality as series "4201" (Qualicoat certification class 2), and in weather-resistant industrial quality as series "4601", all of which are available in plain or pearl mica effect. IGP-DURA[®]xa/ effect powder coatings are usually subjected to an additional manufacturing process for optimal application stability using the IGP bonding method, during which the exceptionally fine effect pigments are bonded to the "powder particles".

Colour shade

If the demands pertaining to the exactness of shade and evenness of the effect are very high, and if the components are installed adjacently, we recommend determining the powder quantity needed for the entire order plus an adequate reserve and to coat the entire order with one production batch. This ensures a consistency of coating shade and effect for the entire project.

Pre-treatment

It is imperative that all specified process parameters be continuously monitored and observed based on the pre-treatment method. The processing time during the pre-treatment cycle, especially for the rinsing process, may not be shortened. This is the only way to guarantee that the deep matt surface characteristic of the powder coating will not be impaired by impurities in pre-treatment or by an insufficient rinsing process.

Application

IGP-DURA[®]xa/ can be applied with any readily available corona coating pistol with electro-static charging in negative polarity at a high-voltage setting between 65 to 75 kV. IGP-DURA[®]xa/ is especially suited to electro-static application, but may tend to cause back spray effects at coating thickness of > 90 µm depending on shade and shape of object. This can be avoided by limiting the pistol flow to < 10 µA, or by using diffuser rings (low ionic charge). We recommend flat spray nozzles for an efficient application of von IGP-DURA[®]xa/. Depending on product (plain variation A or pearl mica variation E), the distances of the pistols vary between 250 and 300 mm. For coating in long stroke operation, the speed of the lifting devices should be adjusted to the transport speed (coordinated sine wave pattern of pistols). For coating in short stroke operation, the stroke height must be adjusted to the distance between the pistols (coordinated pistol turning points).

For partially automated operation, any necessary hand application should generally be done as a pre-coating. The most visible side of objects coated on both sides (i. e. profiles) should be coated last.

We do not recommend the application of IGP-DURA[®]xa/ using tribo coating pistols. Experience has shown that the tribo-electric charge is insufficient for an efficient application.

Recycling

Depending on the amount of overspray that is being recycled by the precipitation system, it is possible that when recycling by means of a filter, an increase in effect pigments ratio may occur, and respectively, when recycling by means of a cyclone, a reduction in the effect pigments ratio may occur during the application of IGP-DURA[®]xa/ effect coatings.

For powder systems with cyclone recycling, the finest powder and effect particles are not separated in the cyclone, but instead continuously removed from the powder coating. This continuous removal changes the ratio between the basic shade and the effect pigments. This usually causes the shade to appear darker.

In order to prevent shade changes due to loss of effect pigments during the coating process, the application of IGP-DURA[®]xa/ effect coatings can be done in normal operation mode without recycling. For automatic coating with the corresponding batch size, assuming that optimal mixing with fresh powder is assured, up to 25% recycled powder can be added. In this case we recommend creating a reference sample prior to the start of production, and to use it to monitor the shade and effect for the entire production. If a deviation of shade and effect occurs, the ratio of fresh powder should be increased accordingly.

We recommend a continuous addition of fresh powder for the application of IGP-DURA[®]xa/ without effect pigments.

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Earthing

An adequate earthing is of special importance to the application of IGP-DURA[®]xa/. This measure is a major factor in the uniform consistency in the appearance of the surface.

Curing

Due to the deep matt surface and unique surface characteristics of IGP-DURA[®]xa/, even minute differences in the gloss level are very obviously visible. Particular attention should be paid to the curing process because of its significant impact on the gloss level. Fundamentally, an even temperature distribution in the oven is a prerequisite for achieving a uniform deep matt surface throughout all the objects in the suspension gear. The oven temperature is decisive for the intensity of the gloss level. A reduction in the prescribed object temperature leads to an increase in the gloss level. Excessive temperatures cause a reduction in the gloss level.

For optimal cross linking and gloss level consistency with IGP-DURA[®]xa/, we recommend creating a temperature profile of the curing oven with an oven measurement device using production conditions prior to the start of production. This is to determine the optimal time combination of object temperature and retention time, depending on the thickness of the substrate to be coated.

Should there be inconsistencies with regard to the temperature distribution in the curing oven, they must be corrected in cooperation with the oven manufacturer by means of ventilation or other additional measures. In any case, taking the recommended curing conditions into consideration, the curing of the coated object should be based on the combination of retention time and object temperature as determined by the oven temperature measurement device.

To achieve the desired deep gloss level, the following temperature and time combinations are recommended:

Object temperature	Retention time at object temperature	
	Minimum	Maximum
180°C	20 min.	25 min.
190°C	10 min.	15 min.
200°C	6 min.	10 min.

If the various objects of one order are cured in different ovens, we recommend creating a temperature profile for every curing oven with an oven temperature measurement device and to adjust the curing temperatures of the respective ovens correspondingly.

Stability and technical information

Please see the technical leaflets.

Cleaning

The coated parts must be cleaned in accordance with the regulations RAL-GZ 632 or SZFF 61.01. For effect powder coatings, the IGP TI 106 (Technical Information) must be observed.

Applicable documents

Safety sheet SD 110
Technical leaflets IGP-DURA[®]xa/4201 and IGP-DURA[®]xa/4601.