

IBATHIN in White Goods Manufacturing

Powder coating currently acts as one of the most critical inputs in many industries. Besides its countless advantages like durability and ecofriendliness, consumers have started looking for ways to benefit more from its properties.

In the recent years, intensive studies have been made in order to decrease the coating consumption by means of thin film powder coating application.

Thin film powder coatings have revolutionized the top coats of white goods in many ways such as ;

- Superior flow out at low film thicknesses like 25-30 microns.
- Less powder handling and storage needs upto 55%
- Almost zero waste in paintshops.
- Ease of mechanical assembly due to better edge coverages.

IBA Kimya, as the leading supplier of the white goods industry in Turkey, has developed **IBATHIN** and successfully introduced it to the paint shops of the consumers. In the specific instance of a global dish-washing machine manufacturer, the advantages of **IBATHIN** was successfully utilized in the coating process.

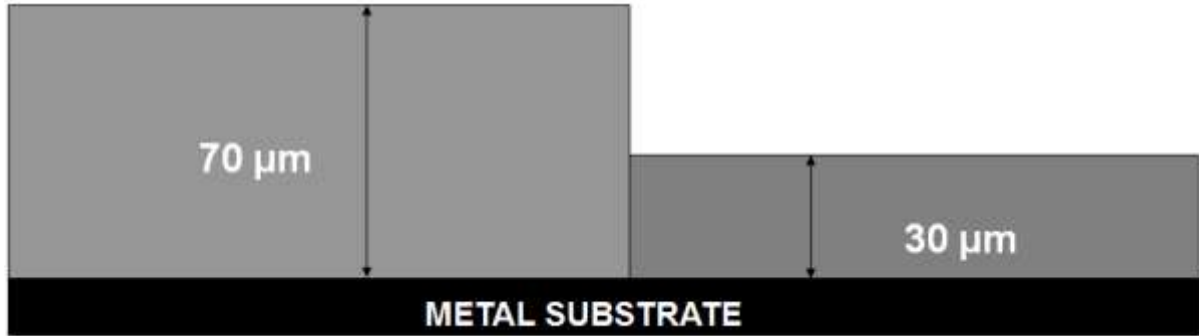
During this collaborated study with the mentioned manufacturer, **IBATHIN** application has become a true success story. The figures showed that the paint shop has saved 45 percent of powder coatings in the total consumption of 2015. The customer had not only spent less on coating, but handled and stored the corresponding less amount of material as well.

POWDER COATING CONSUMPTION TABLE

| Density gr/cm ³ | 10 µm | 15 µm | 20 µm | 30 µm | 40 µm | 50 µm | 60 µm |
|-------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 1.400 | 71.43 | 47.62 | 35.71 | 23.81 | 17.86 | 14.29 | 11.90 |
| 1.425 | 70.18 | 46.78 | 35.09 | 23.39 | 17.54 | 14.04 | 11.70 |
| 1.450 | 68.97 | 45.98 | 34.48 | 22.99 | 17.24 | 13.79 | 11.49 |
| 1.475 | 67.80 | 45.20 | 33.90 | 22.60 | 16.95 | 13.56 | 11.30 |
| 1.500 | 66.67 | 44.44 | 33.33 | 22.22 | 16.67 | 13.33 | 11.11 |
| 1.525 | 65.57 | 43.72 | 32.79 | 21.86 | 16.39 | 13.11 | 10.93 |
| 1.550 | 64.52 | 43.01 | 32.26 | 21.51 | 16.13 | 12.90 | 10.75 |
| 1.575 | 63.49 | 42.33 | 31.75 | 21.16 | 15.87 | 12.70 | 10.58 |
| 1.600 | 62.50 | 41.67 | 31.25 | 20.83 | 15.63 | 12.50 | 10.42 |
| 1.625 | 61.54 | 41.03 | 30.77 | 20.51 | 15.38 | 12.31 | 10.26 |
| 1.650 | 60.61 | 40.40 | 30.30 | 20.20 | 15.15 | 12.12 | 10.10 |
| 1.675 | 59.70 | 39.80 | 29.85 | 19.90 | 14.93 | 11.94 | 9.95 |
| 1.700 | 58.82 | 39.22 | 29.41 | 19.61 | 14.71 | 11.76 | 9.80 |
| 1.725 | 57.97 | 38.65 | 28.99 | 19.32 | 14.49 | 11.59 | 9.66 |
| 1.750 | 57.14 | 38.10 | 28.57 | 19.05 | 14.29 | 11.43 | 9.52 |
| 1.775 | 56.34 | 37.56 | 28.17 | 18.78 | 14.08 | 11.27 | 9.39 |
| 1.800 | 55.56 | 37.04 | 27.78 | 18.52 | 13.89 | 11.11 | 9.26 |

$$\text{Consumption (m}^2\text{/kg)} = (\text{Transfer Efficiency (\%)} * 1000) / (\text{Specific Gravity (gr/cm}^3\text{)} * \text{Film Thickness (µm)})$$

IBATHIN Consumption versus Standart Powder Coatings



Standart Coating

Specific Gravity : 1.65 gr/cm³

Coating efficiency : 8.66 m²/kg

866 m² to coated with 100 kg PC

Thin Coating, IBATHIN

Specific Gravity : 1.70 gr/cm³

Coating efficiency : 19.61 m²/kg

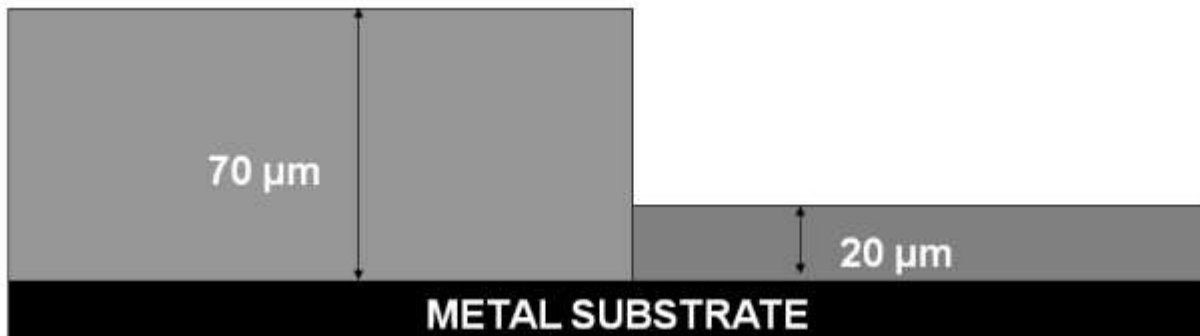
866 m² to be coated with 44.16 kg PC

55% less powder needed with IBATHIN.

After a couple of months of IBATHIN application experience at 25-30 microns, the demand driven studies of IBA Kimya have reached a bigger accomplishment regarding powder coating consumption. This was the transition of **IBATHIN** into **IBATHIN UTC** which created another milestone in the thin film journey.

IBATHIN UTC was offering an overall powder film thickness of 15-20 microns on top of the preceding stages. The promising results at first production trials and the strong encouragement of the customer accelerated the development process of **IBATHIN UTC**.

IBATHIN UTC Consumption versus Standart Powder Coatings



Standart Coating

Specific Gravity : 1.65 gr/cm³

Coating efficiency : 8.66 m²/kg

866 m² to coated with 100 kg PC

Ultra Thin Coating, IBATHIN UTC

Specific Gravity : 1.75 gr/cm³

Coating efficiency : 28.57 m²/kg

866 m² to be coated with 30.33 kg PC

70% less powder needed with IBATHIN.

IBATHIN UTC has been commercialized since 2016 in "Dish Washing Machine Industry". It shows a great advantage as a topcoat, followed by a cataphoresis primer of 8-10 microns. When corrosion concerns are not the case due to superior surface treatment stages, **IBATHIN UTC** helps to reduce the theoretical consumption of powder coating down to 35 g/m². Adding the losses arising from transfer efficiencies and reworks, the paintshop responsables report a consumption at 45 g/m².

This challenging figure represents a saving of 65 % of powder Coatings.

IBATHIN and IBATHIN UTC are definitely not limited to the white goods sector. Applications which involve flat shaped substrates can be good examples. However, one must know that the specific gravity of **IBATHIN UTC** is relatively high compared to conventional formulations. This is simply because of its highly pigmented recipe to achieve hiding at such a low film thickness. The coating thickness of **IBATHIN UTC** should be kept under strong inspection in order to avoid excessive consumption results.

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