Powder Coating on MDF.

The use of MDF in the furniture industry has seen tremendous growth in recent years. Where appropriate the MDF profile has had a protective or aesthetic coating applied. The coating typically used has been a multi-coat liquid paint – solvent or water based, paper foil, laminate, vinyl etc.

DuPont Powder Coatings are unique in that currently they are the only powder coating manufacturer in the world to be able to talk with experience of installations which commercially use either RAY-TEC® UV or Ultra Low Bake (ULB) or both technologies.

It is now recognised that the powder coating of MDF is an excellent finish when compared to the more traditional coatings and certainly has many advantages, for example:

- Environmental pressures relating to VOC emissions are removed when using powder coatings
- One coat application
- High efficiency - in excess of 95%
- Very quick cure cycle
- Very competitive on metallics
- Low maintenance costs

Powders unlike solvent based paints are 100% solid and as a consequence it is very easy to apply in one coat even on cut edges or routed patterns. Couple this with the ability to cure the powder coating in minutes they come into their fore as a principle alternative to more traditional coatings on MDF.

Conditioning

It is recognised at present that to achieve consistent and reproducible application properties it is necessary to condition the MDF board profile prior to powder coating.

One method commonly used is to expose the MDF profile to Infra Red radiation for a short period of time which is sufficient to heat the surface whilst not penetrating the core of the MDF. By adopting this method the heat will draw the moisture from within to the surface of the MDF profile, thus making the board conductive.

Other conditioning processes are available, contact your local OPC for information.

Curing

Each technology needs a heat source but for different reasons. The ULB range is dependent on a thermal reaction which can be achieved using InfraRed, conventional cure or a combination of both.

"Ultra Low Bake" (Melting and Curing)
The RAY-TEC® UV range however requires only a modest heat source of between 90°C –120°C to melt the powder prior to cure initiation with Ultra Violet for a few seconds dependent on profile, powder quality etc.

An additional benefit of the RAY-TEC® UV range is because of the low temperature and very quick cure cycle required the MDF profile will not have absorbed excessive amounts of heat thus allowing the product to be removed and packed shortly after leaving the curing facility.

DuPont Powder Coatings are now able to provide an extensive range of products both in RAY-TEC® UV or ULB and seen below are some of the products available.

<table>
<thead>
<tr>
<th>RAY-TEC® UV</th>
<th>Ultra Low Bake</th>
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<tbody>
<tr>
<td>Texture</td>
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<tr>
<td>- fine, medium, coarse - leatherette</td>
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<tr>
<td>Smooth - pigmented - clear</td>
<td>Smooth - pigmented - clear</td>
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<td>Anti-graffiti</td>
<td>Hammer</td>
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<td>Specialities</td>
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Properties
Both RAY-TEC® UV and ULB have been tested extensively and compared to the requirements of all major furniture industry specifications including, for example, FIRA6250, DIN68861, DIN EN 438, DIN 4554 etc.

Confirmation of results to a particular standard are readily available from the Country of origin.

DuPont Powder Coatings are now commercially supplying powder coatings to the MDF industry. They are one-coat applications chosen to replace more traditional finishes and have proven to be of excellent quality in terms of both aesthetics and durability.