Remmers Information Sheet

Application and drying conditions

For coatings to function correctly they must be applied and dried in suitable conditions. Failure to do this can have negative effects on absorption and adhesion of the coating, successful film formation and subsequent curing of the finish. If the finish does not cure or dry correctly then the paint film will be more susceptible to the effects of moisture when exposed to external site conditions or wet trades inside the building.

Problems with factory temperatures being too low

It is vital that the temperature in the factory is not allowed to fall too low for a number of reasons.

1) The coating will be too cold to apply making it more viscous and less likely to adhere to and absorb into the substrate.
2) Low temperatures on the substrate can lead to the moisture on the surface due to the formation of dew. The moisture will interfere with adhesion and reduce absorption of the coating.
3) Low temperatures on the substrate will also make the applied coating cool down and become more viscous leading to the problems described on point 1.

The temperature and humidity in a joinery factory can have a profound influence on the results achieved when coating the items. The information below details Remmers' recommendations on suitable factory conditions to achieve good results when factory finishing joinery.

The drying temperature must be sufficiently warm to assist the drying/curing process of the coating. If the polymer used to bind the coating together is not dried at a sufficiently high enough temperature it will not form the correct dry film layer. If the drying is insufficient or incomplete there may the following problems.

1) Incorrect film formation leading to cracks in the film.
2) Poor flow of the coating leading to poor contact with the substrate and poor levelling of the dry film.
3) Poor curing of the film leading to a surface which is not sufficiently moisture resistant.

Problems with factory temperatures being too high

High drying temperatures can also lead to issues. These will often cause the following film formation issues.

1) Skin formation in the outer layer of the coating which can result in the formation of mud cracks or other surface cracks and defects as the wet material under the skin dries and puts stresses on the skin above.
2) Drying of the paint film before it has had time to flow out resulting in an unsightly orange peel effect.

Through drying or curing

If coatings are not sufficiently through dried or cured this can lead to problems in service for the joinery item.

1) If the entire coating system is not sufficiently cured, water can pass though the coating more easily leading to problems with water uptake. Water uptake reduces as the dry film cures.

2) If the primer is sufficiently dry but the top coat is not, then moisture can be absorbed by the top coat leading to small bubbles being formed in the coating film.

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Solutions

- **Ensure coatings are kept at a reasonable temperature (greater than 5°C in storage and 15°- 20°C when using the coating). This will make them suitable for use when required. Simple measures such as keeping product on pallets and off concrete floors will help to reduce the chances of the paint going below 5°C. Ensuring coatings are above 15°C for application may require storage cupboards that are heated, depending on the temperature control in the factory.**

- **Ensure the substrates such as timber windows and doors are coated at a reasonable temperature 15°- 20°C. If they are too cold that will affect the flow, film formation, absorption and adhesion of the coating.**

- **Ensure coating equipment such as spray pumps are at a reasonable temperature 15°- 20°C. Cold pumps and other application equipment will affect the flow, film formation, absorption and adhesion of the coating. One simple way to ensure the pump is at a higher temperature is to run hot water through it before use.**

- **Ensure drying conditions are at the optimum level for successful film formation and curing of the coating. These are as follows:**

- **Coatings should be applied between 15 and 20°C.**

- **Immediately after application optimum conditions are 15°- 20°C and 60-70% relative humidity for a period of 10-15 mins.**

- **Drying after settling period should be conducted at 20-30°C at a humidity of relative humidity 30-50%.**

- **Ideally temperature should be increased to 30°C and the humidity should be reduced to 30% gradually during the drying process.**

- **It is highly advisable to keep items above 15°C for period of at least 72 hours prior to exterior exposure of the joinery item. This will assist with through drying or curing and reduce issues with early water uptake.**

For further advice contact the Remmers Woodcoating Technical Team.

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