



Insufficient hardness

Insufficient hardness refers to the condition that a dried paint film fails to reach the required hardness. It entails problems such that the paint film surface is prone to scratches. (This problem should be distinguished from insufficient drying in the case of air-dried paint films.) Incidentally, simple hardness measurement methods include pencil scratch hardness testing and the use of fingernails.

Q1:

Is the drying temperature low?

A1:

Use the specified drying conditions.

In the case of baked paint in particular, measure the oven temperature.

Q2:

Is the drying time shorter than appropriate?

A2:

Use the specified drying conditions.

In the case of baked paint/coating in particular, measure the oven temperature.

Q3:

Has any change been made in the shape of the substrate?

A3:

Check the shape and material of the substrate.

If its thermal conductivity is poor, extend the baking time or raise the baking temperature.

Q4:

Is the substrate material thick?

A4:

Check the shape and material of the substrate.

If its thermal conductivity is poor, extend the baking time or raise the baking temperature.

Q5:

Is there any tendency to develop insufficient hardness in some areas?

A5:

Measure the oven temperature at different locations and eliminate temperature differences between different locations.

Infrared lamps in particular tend to result in a nonuniform temperature distribution.

Q6:

Is the paint film too thick?

A6:

Adjust the film thickness appropriately.



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Q7:

Did you change the batch of paint?

A7:

Check whether there was a recent batch change or an old batch was used.

Q8:

Did you measure the hardness when the substrate was still hot?

A8:

Conduct measurements when the substrate has sufficiently cooled down (typically 24 h after coating).

Q9:

Is the temperature of the measurement room higher than appropriate?

A9:

Ensure an appropriate temperature for judgment (20–25°C).

Q10:

Is there any deposit of a plastic substance (e.g. plastics containing a solvent and/or plasticizer) on the paint film?

A10:

Avoid contact between the paint film and any plastic substance.

Q11:

Did you use the correct mixing ratio? (Two-component paints/coatings)

A11:

Use the correct mixing ratio and stir the paint/coating sufficiently.