

How To Tell If A UV Coating Is Cured

UV Coatings come in a vast array of properties. Some are soft, hard, flexible, tacky, slippery, nonskid, etc. As a result, experience is the best way to determine if a coating is thoroughly cured.

Fortunately, there are some rudimentary procedures that can be used to determine if a product is cured. Because these tests are subjective, it is necessary to provide training among employees in order to minimize variations. This can be accomplished by having several employees to perform the tests on the same sample and determine a method in which they achieve approximately the same results. For example, if one employee applies more pressure to the cotton swab for the MEK test, he/she will probably get less double rubs than someone who applies less pressure.

Simple Thumb Rub/Twist

This determines surface cure of the coating. Rub thumb across coating. If the coating smudges and the smudge cannot be removed by wiping with a paper towel or soft cloth (i.e. paper towel or cloth causes more smudging), then the coating is not cured.

Scratch Test

This determines through-cure of the coating and is only useful if adhesion is good between the ink and coating. Use fingernail to scratch-coating. If coating scratches off of ink, this could mean two things: The coating has poor adhesion to the ink or the coating is not thoroughly cured. To determine if it is cure, go to the MEK test. If MEK double rubs are normal, then it is an adhesion problem.

Warning: Low coating weights also reduce MEK double rubs.

MEK (methylethyl ketone) Test

Dip a cotton swab into MEK and perform double rubs (back and forth equals one double rub) until the coating starts to break. The break

point can be subjective. It is easiest to tell the break point when there are inks under the coating. When the coating breaks, you will start to see evidence of the ink on the cotton swab.

Different coatings achieve different values for this test. Harder coatings will get more MEK double rubs and softer coatings will be less. We can supply double rub values for each product. These should only be used as a guideline because lamps used for curing also affect MEK double rubs. This test is not very useful for the cationic curing release coatings. Use the thumb rub test for these coatings.

The best procedure would be to establish a quality control checklist and record the values obtained, coating used, coating weights, press, press speed, number and type of lamps, and press operator who obtained them. From this an average and/or range can be established for each product. As a result, when a coating does not meet these requirements, actions can be taken in order to determine the cause.

When Coating Is Not Cured

If by following the aforementioned methods a coating is determined to be “not cured”, then check the following:

Check coating weights. If high, then reduce the amount of coating. Most coatings are applied at 0.3 mils or less in order to achieve desired properties.

Check that all lamps are on at full power and operating properly.

Check the hours that have been logged on the lamps. Most mercury vapor lamps average a life of about one thousand hours. After this, they begin to degrade significantly.

Check reflectors in lamp housing. Reflectors should look like a highly cleaned and shiny mirror. Reflectors should be cleaned (at a minimum) with each lamp change.

Check that coating is within its shelf life. Most UV products are guaranteed for six months. One-part silicone release coatings are only guaranteed for three months.

Call Craig with product and batch number and we will check our retain for any possible product degradation.

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