

Surface Test Ink and Surface Treatment Information Pack.

Section 1
Introduction to Surface Treatment

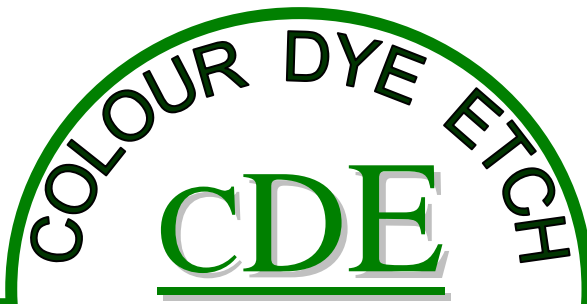
Section 2
**History of CDE Products Test Inks
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Introduction to surface treatment and dyne testing.

The “surface energy” or wetting describes, the force formed by molecules of a substrate surface, “surface tension” being the liquid term. Both these terms are used to describe the molecule structure of the substrate surface.

To obtain a high adhesion “wetting” it is necessary to increase a substrates surface energy, this is achieved by surface treatment. Corona or Flame treatment give good results in achieving this and greatly improve adhesion for printing inks, glues, and coatings of many materials. In general it can be said that when printing, the surface energy of the substrate should be at least 10 dynes higher than the ink for good adhesion.

General guidelines for treatment ranges on various substrates can be found in the tables below and are industry recommended treatment levels for the process indicated.

The general guidelines for treatment ranges are currently being updated

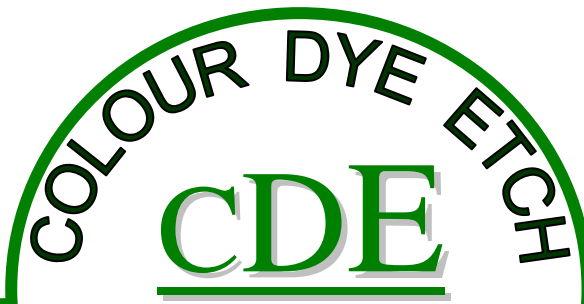


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Explanation and History to CDE Products Ink Series.

For over 30 years the Blue toxic test ink has been used by the plastics industry to determine the substrate surface energy (wetting) prior to: printing, coating and laminating. This particular toxic blue test ink will be known and recognised by the industries standard ASTM D-2578 and needs little advice to application and use by all test ink suppliers.

Over the years however an increasing number of end users have looked to move away from the chemistry formamide that forms the ASTM D-2578 and to have a safer working material within their workplace environment.

Following these concerns, CDE Products, in 2001 developed and produced a non-toxic alternative to formamide, and have been distributing since 2001 (formerly through Sherman Treaters, ITW/pillar) our Green non-toxic test ink known by many users in Europe as Eco Test Ink.

These non-toxic test inks are in their chemical structure obviously different in their reaction to any given substrate surface, here is brief guide to the reaction times to a plastic/film substrate surface when using CDE products test ink.

Blue Test Ink: 38 to 58 Dynes/cm (*mN/m*)

- Toxic.
- Formulated to +/- 0.5 dynes/cm.
- ASTM D-2578 standard test ink.
- Test observation time 3 seconds.

Green – Eco Test Ink: 28 to 58 Dynes/cm (*mN/m*)

- Non-Toxic.
- Formulated to +/- 0.5 dynes/cm.
- ASTM D-2578 compatible test ink.
- Test observation time 3 seconds.

Red Test Ink: 59 to 71 Dynes/cm (*mN/m*)

- Non-Toxic.
- Formulated to +/- 1 dyne/cm.
- ASTM D-2578 compatible test ink.
- Test observation time 3 seconds.

Non-Permanent Quick Check Pens: 40 , 42 & 44 Dynes/cm (*mN/m*)

- Non-Toxic.
- Formulated to +/- 1 dynes/cm.
- ASTM D-2578 compatible test ink.
- Test observation time 3 seconds.

Permanent Quick Check Pen: 38 Dynes/cm (*mN/m*)

- Formulated to approximately 38 dynes/cm.
- Does not use standard dyne testing instructions, either indicates the substrate is above or below approximately 38 dynes/cm by leaving a permanent broken/unbroken line.
- Not suitable for PVC, PS or materials with low solvent resistance.



Using CDE products test ink

Blue Test Ink (*Toxic*) conforms to ASTM D-2578* *(ISO 8296 / DIN 53364)

Green (Eco) Test Ink (*Non-Toxic*) is fully compatible with ASTM D-2578*

Red Test Ink (*Non-Toxic*) is fully compatible with ASTM D-2578*

The use of CDE products test inks is to determine the surface energy of a substrate to accept its individual process.

Three common test procedures relating to our inks may be used:

Disposable felt pen method: (*Blue / Green / Red Test Pens*)

Choose the test dyne level pen of your required choice.
Care must be taken to ensure no contamination and the material is not touched in the areas to be tested.

Test pens will need to be primed with test ink before use. To prime depress the nib once and release to allow ink to flow into the nib, excessive test ink will result in misreading.

Gently draw the test ink pen across approximately 7cm/3inches of the test material. Wetting is achieved when a continuous film of test fluid remains intact for 3 seconds. If the test ink breaks into droplets in less than 3 seconds this shows a lack of wetting, a lower numbered test ink should then be applied. If the test ink remains intact for longer than 3 seconds, a higher test ink should be applied.

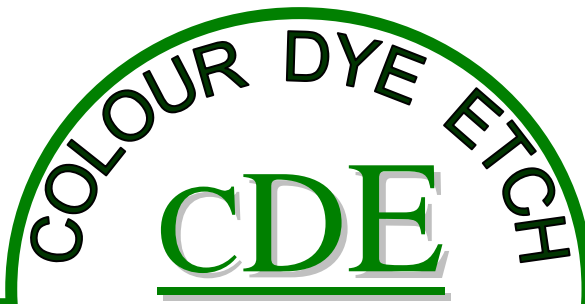
Note: To prevent staining and skin contact, protective gloves should be used when handling these products. It is recommended that used pens are disposed of safely by local chemical waste disposal.

Cotton swab method: (*Blue / Green / Red bottled ink*)

Using a clean cotton wool swab apply a test ink solution of your required choice. Care must be taken not to over saturate. Excessive test ink will result in misreading. Care must be taken to ensure no contamination and the material is not touched in the areas to be tested.

Lightly spread the test ink over approximately 7cm/3inches of the test material. Wetting is achieved when a continuous film of test fluid remains intact for 3 seconds. If the test ink breaks into droplets in less than 3 seconds this shows a lack of wetting, a lower numbered test ink should then be applied. If the test ink remains intact for longer than 3 seconds, a higher test ink should be applied.

Note: To prevent staining and skin contact, protective gloves should be used when handling these products. Disposing of cotton wool swab should be placed in a closed sealed waste container.



Using CDE products test ink continued;

Drawdown test method: *(Blue / Green / Red bottled ink)*

This method of test is used more in the laboratory using samples of the substrate material for process, it also needs the relevant Drawdown equipment to perform testing, given these conditions it is also said to be the most accurate of the swab/pen readings.

It is required to clamp a substrate sample measuring approximately 23cm by 28cm To a clip board. Drops of three different dyne test inks of your desired test range are then placed inline at the top of your substrate sample to be tested. Place the recommended metering rod above all three samples of test ink and gently draw down. When the line of test ink breaks in 3 seconds the tester can read the level treatment. The metering rod being at a constant level through the test ink distributing at a more constant thickness it is said to be a more accurate test reading.

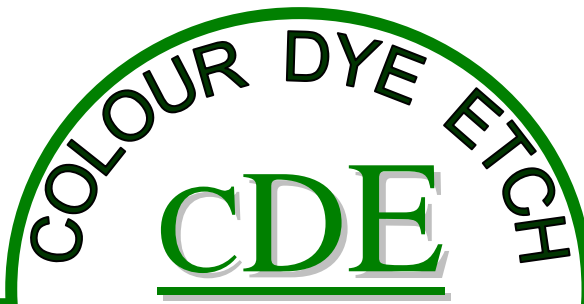
Metering rods must be thoroughly cleaned after each test, also a new sample is required should you require more readings of the substrate.

Note: To prevent staining and skin contact, protective gloves should be used when handling these products. Disposing of cleaning material such as cotton wool swab should be placed in a closed sealed waste container.

Note:

At CDE Products we do not recommend the use of test ink bottles with integral brushes built into the cap. After the test procedure returning the brush to the bottle will undoubtedly result in contamination of the remaining test ink in the bottle. This will lead to inaccurate test results over time.





SHELF LIFE CERTIFICATE
For Blue, Green and Red Test Inks and Pens.

Our test inks are precisely formulated and calibrated to provide a maximum shelf life of 12 months.

To maximize the shelf life of our surface test inks ranged between 28-71 dynes/cm please adhere to the following guidelines.

- Avoid exposure to direct sunlight
- Keep containers tightly closed at all possible times
- Store at a room temperature between 10°C (50°F) to 25°C (77°F)
- Avoid contamination during the test procedure from dust/dirt etc.

If the guidelines above are followed then please find below a table of shelf life based on the test inks usage and exposure to air.

Exposure / Usage	Disposal after
Daily	3 Months
Weekly	6 Months
Monthly	9 Months
Unopened	12 Months

