



# Test Inks

for testing the surface energy



## Test Inks

The test inks are fluids of defined surface tension, which are available in bottles of 10, 100, 250 or 1000 ml. The surface energy of a substrate is checked by simply applying the test ink to the surface. The accuracy of the measurement is  $\pm 1$  mN/m.

The test inks are available in a range from 18.4 to 105 mN/m at almost any value. In the standard range between 28 and 56 mN/m there are different sets offered, consisting of 7 bottles of 10 ml each, with a small brush for the application integrated into the cap. For more details please refer to our price list.



### Advantages:

- Possibility of quick measurements with high accuracy
- Good readability, also on rough or dark surfaces
- No pollution of the ink if a pipette or cotton buds are used for the application
- Wide range of special surface tensions available on special demand

## Test Pens

The test pens contain, similar to the test inks, fluids of defined surface tension. The surface energy of the material to be checked is determined simply by applying a stroke of ink with the tip of the felt pen. The accuracy of the measurement is, like the one of the test inks,  $\pm 1$  mN/m.

The test pens are available in a set of 8 pens from 30 to 44 mN/m. On special demand also bigger or smaller values are available, for more details please refer to our price list.



### Advantages:

- Possibility of quick measurements with high accuracy
- No spilling
- Extremely easy to handle
- Minimum consumption of test fluid
- Long shelf life if cap is kept closed properly

## Quicktest38

Quicktest38 serves to check if the treatment of polyolefins (polypropylene, polyethylene, polybutylene) has shown an effect onto the material. A stroke of the pen leaves a full line on the material if the material's surface energy has a value of ca. 38 mN/m or more. If the material's surface energy is below ca. 38mN/m, the fluid contained in the pen will form small drops on the surface. The fluid applied to the surface will dry within seconds, it does not need to / cannot be wiped off anymore.

Advantages:

- *Extremely easy to handle*
- *Perfect for quick spot checks on polyolefins*
- *No wiping off necessary, lasting display of result*
- *Good readability by striking red colouring*



**Attention: The test fluid of Quicktest38 contains solvent. This might cause wrong results being displayed on materials or surface coatings not being solvent resistant!**

## General

The surface energy is one decisive criterion for the adhesion of printing ink, glue varnish, etc. on many plastic and metal surfaces.

It is given in mN/m (millinewton per meter, currently valic unit) or in dyn/cm (dyne per centimeter, old unit, same numerical value).

Apart from some exceptions the general rule is: The higher the surface energy of a material is, the better is the adhesion of anything meant to be fixed to its surface. Reasons for a low surface energy on the one hand might be material specific. For example a lot of plastics show a very low surface energy and therefore need a chemical or physical treatment to achieve a good adhesion on them. On the other hand contaminations of the surface (grease or oil, finger prints) might be a reason for a low

## Application

As a starting point for each check a test ink or test pen with a medium value should be applied, e.g. 38mN/m. If the line of ink stays unchanged for at least 2 seconds on the material's surface without turning into drops, the surface energy of the material is the same or higher than the surface tension of the fluid.

In this case now the test ink/test pen with the next higher value is applied to the surface, e.g. 40mN/m. This check has to be repeated with the next higher value of surface tension up to the point, at which within 2 seconds the line of fluid turns into separate drops.

If already at the starting point (38 mN/) drops are formed from the line of fluid, the check is continued accordingly with test inks/test pens of lower values.

surface energy, which is often the case with metals.

As a general limit often 38 mN/m are mentioned: If the surface energy level is below this value, the adhesion will be bad, above this value the adhesion will be good or sufficient. Anyway it is always highly advisable to check the surface energy being necessary for good adhesion for each special application.

The ARCOTEST test inks and test pens are a means for determining the surface energy value easily and exactly. This serves well to either find out about the necessity of a treatment or cleaning process in a planned production line, or about its quality in an existing line.



In this way the surface energy of a material can be determined to be between two values, e.g. between 36 and 38 mN/m.

This testing method is well suitable for the operating personnel on any production line as a routine check, which the result of can be immediately evaluated and gives a very clear picture of the degree of treatment or cleaning to accordingly trained staff.

Due to the fact that the test fluids are composed of two liquids evaporating at different rates, and because they are of hygroscopic nature, the bottles or pens must always be kept closed when not in use.



**Test Inks**

Klang Office:  
25, Jalan Batu Nilam 17,  
Bandar Bukit Tinggi 2,  
41200 Klang, Selangor,  
Malaysia.

Tel:03-33233462

Fax:03-33263129

H/P:012-3276682

Email:sales@cosmic-engrg.com

JB Office:  
#01-1AB, Block A, Business Suite Level,  
Datin Halimah Condominium,  
Jalan Datin Halimah,  
80350 Larkin, Johor Bahru,  
Malaysia.

Tel:012-7236336

Fax:07-2344801

Email:cosmic.engg09@gmail.com