

**SURA CHEMICALS**

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# SurAChem<sup>®</sup> TT K **TEST-INKS KIT**

2021

Product and Application  
Information

**SurA Chemicals GmbH**  
Passion for chemistry

# SurAChem<sup>®</sup> TT K Test-inks Kit

For measuring the  
**surface energy** on metals,  
glass, plastics and ceramics

## Our company

Welcome to SurA Chemicals GmbH. The company has a long experience and an extensive know-how in the fields of protective and decorative coatings, adhesives, special chemicals such as hydrophobic agents and adhesion promoters, systems and equipment for surface pretreatment, as well as contract manufacturing for the development and production of customer specific products.

The company is TÜV certified according to DIN EN ISO 9001: 2015. Our products comply with the RoHS directive and are registered according to the REACH regulation. The devices manufactured in our house are CE-marked.



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## Compliant according to RoHS & REACH directive



SurAChem® TT K test-inks kit is registered according to REACH regulations (EC) No. 1907/2006 and is compliant in accordance with the EU directive 2011/65/EC (RoHS). SurAChemicals is TÜV certified with DIN EN ISO 9001:2015.



# SurAChem® test-inks

based on ethanol

This instruction for use is intended to ensure the correct use of the SurAChem® TT K test-inks kit and prevent possible errors that can lead to quality restrictions or undesirable

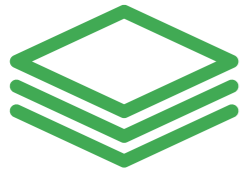
effects. When using SurAChem® TT K test-inks kit it is required proper handling during application and storage .

## 1. Introduction

The requirement for the adhesion of an adhesive, a coating or a printing ink onto a surface is wettability. High surface energies enable high wettability and thus, in most cases, good adhesion to the material surface. The SurAChem® TT K test-inks kit with a

content of six test-inks is used for evaluation of surface pretreatment or surface cleaning by means of a visual and qualitative measurement of the surface energy.





# Colored test-inks

for qualitative evaluation  
of surface energies

## 2. SurAChem® TT K test-inks kit

The SurAChem® TT K test-inks kit contains six ethanol-based test-inks, each of 10 ml. These cover a wide range of surface energies from 25 mN / m to 72 mN / m, see table 1.

The SurAChem® test-inks are individually colored in order for the user to identify the different surface energies quickly and distinctively.



For the measurement of the  
surface energy on metallic,  
glass, plastic and  
ceramic surfaces

- ✓ KIT with 6 non-toxic test inks, each 10 ml
- ✓ Energy spectrum 25-72 mN/m
- ✓ Colorful test-inks for the unmistakable recognition of the surface energies
- ✓ Bottles with tamper-evident closure and child resistant tamper-evident ISO 8317
- ✓ Slim dropper Ø 2 mm
- ✓ Compact transport case



Article	Surface energy	Distinctive color	Application
TT 5725	25 mN / m	white	For very hydrophobic surfaces, e.g. plastics, in particular polyolefins PE, PP, PTFE
TT 5738 TT 5744 TT 5754	38 mN / m 44 mN / m 54 mN / m	yellow red blue	These test-inks are primarily used to fine-tune the surface energy of glass, ceramics, metals and, in particular, pretreated plastics. The TT 5738, which acts as a "universal ink", should always be used for initial orienting tests
TT 5766	66 mN / m	green	Primarily suitable for surfaces with very high surface energies; the main areas of application are the hydrophilic surfaces of pretreated, e.g. chromated or phosphated metals
TT 5772	72 mN / m	black	Primarily suitable for surfaces with very high surface energies; the main areas of application are the hydrophilic surfaces of pretreated, e.g. chromated or phosphated metals

**Table 1:** Characterization of the SurAChem® test-inks

## 2.1 Test-ink bottles and transport case

The custom-made case is used for stable and safe transport and storage of the test-ink bottles.

In contrast to brush or pen test-inks, the test-ink droppers guarantee the prevention of contamination of the liquid ink, e.g. by impurities or foreign particles, because the surface to be checked does not have to be touched.

Thanks to the slim dropper (approx.  $\varnothing$  2 mm or approx.  $\varnothing$  3 mm) of the special test-ink bottles, it is possible to check even smallest surfaces. Additional advantages are high accuracy and low ink consumption.

The bottles have a special lid for quality assurance and child safety lock (ISO 8317).

I. Quality assurance: When turning off the lid for the first time, the tamper-evident locking ring is detached from the lid.

II. Child safety lock: To twist off the lid, press down and turn it at the same time.

For blind persons there is a warning triangle on the lid. The plastic bottles are made of PE or similar.



# Energy spectrum

between 25 - 72 mN/m

For the qualitative evaluation of different

surface energies!

## 2.2 Technical data

### SurAChem® TT K test-inks kit

Size of transport case	170 x 130 x 37 mm
Weight of transport case	approx. 350 g
Size of test-ink bottle	height 69 mm, $\varnothing$ 20 mm, volume 10 ml

## 2.3 Application

Apply one drop of the selected test-ink (e.g. 38 mN / m) on the non-pretreated surface and watch its spreading behavior. After spreading (e.g. figure 1 - right), the surface energy of the material surface is in the range of the surface energy of the test-ink. In case

of drop formation on the material surface (e.g. figure 1 - left), repeat the test with a test-ink of lower surface energy. This is how to determine the surface energy of a non-pretreated material surface.

In order to increase the surface energy of a material surface, the material can be pretreated, among others, with the SurASil® process. A drop of the selected test-ink is to be applied on the pretreated surface and its spreading behavior is to be observed. When spreading, the surface energy of the material surface is in the range of the surface energy of the test-ink. This range can be determined even more precisely using test-inks of surface energy values closer to each other. In case of drop formation on the material surface, the test must be repeated with a test-ink of a lower surface energy. Repeat the surface pretreatment or choose another

pretreatment method, if no measurement range is determinable. A material surface is generally termed as "active" or "wetable" when a surface energy of more than approx. 44 mN / m is reached.

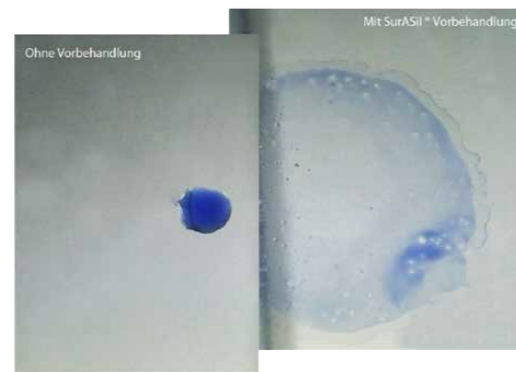


Figure 1: Formation (left) and spreading (right) of an ink drop on an untreated (left) and a treated (right) aluminum surface

## 2.4 Storage and form of delivery

The SurAChem® TT K test-inks kit contains six colored test-inks, each with a volume of 10 ml. After delivery the SurAChem® test-inks

are stable at room temperature for at least 12 months.



## Surface silication

with the SurASil® process

By the SurASil® process, a gaseous, silicon-containing precursor is fed into the fuel gas mixture of a burner. The combustion energy of the flame creates highly reactive compounds that are deposited on the surface of the material. As a result, very dense and firmly bonded silicate layers (layer thickness approx. 20 – 100 nm) with high surface energy are formed on various material surfaces, such as metals, glass, ceramics, plastics and composite materials.



## 2.5 Safety and transport information

The SurAChem® test-inks contain various amounts of ethanol. The occupational health and safety regulations applicable to this solvent must be observed. After the solvent has evaporated, any contact is harmless.

Our verbal and written application-technical consultation is the best to our knowledge and belief and is a non-binding notice, also with regard to any third-party property rights. However, this advice does not release the user of our products from carrying out

Further information regarding hazards, labeling, safeguards, transport and disposal are given in the product-specific safety data sheets.

their own testing for the intended purpose. Any liability only relates to the value of the products supplied by us and used by the user. Of course, we guarantee the perfect quality of our products in accordance with our sales and delivery conditions.

## SURA CHEMICALS GMBH



Am Poesener Weg 2  
07751 Bucha  
Germany



[info@surachemicals.de](mailto:info@surachemicals.de)



[www.surachemicals.com](http://www.surachemicals.com)



Tel.: +49 (0) 3641 352920  
Fax: +49 (0) 3641 352929

