



UVTEC-CONTROL STRIP

10 - 200 AND 200 - 600 (mJ/ cm²)

1. APPLICATION FIELDS:

UV control strip for the measurement of the UV radiation dose (mJ/cm²) on substrates to be printed.

In comparison to solvent based printing inks the curing of UV inks has an enormous influence on the resistance properties and the adhesion of the ink film on the substrate. The control strips are suitable for the use in the UV screen printing application process and other UV printing applications as offset, letterpress and flexo printing with automatic and semi-automatic printing machines. The UV radiation dose required for the optimal curing of the UV ink can be measured directly on the substrate under the respective printing conditions.

The control strip can be used for the

- measurement of the dispersion of UV radiation on the total size width of the substrate to be printed
- quality control of the production lots of UV inks prior to the production process
- supervision of the efficiency of UV lamps
- verification of insufficiently cured UV inks

The UV sources to be verified are mercury, iron and gallium iodide UV lamps.

2. CHARACTERISTICS:

The UVtec control strip is a self-adhesive control strip with an UV sensitive layer.

The UV radiation mJ/cm² can be measured in two different spectrum:

10 - 200 mJ/cm²
UV-C, UV-B, UV-A, UV-VIS (250 - 420 nm)

200 - 600 mJ/cm²
UV-A, UV-VIS (320 - 420 nm)

The comparative measurement is effected inline at a defined printing speed directly on the substrate.

After the irradiation with UV light the control strip's colour changes from yellow (original colour) to yellow orange, brown to violet (according to the relevant radiation dose). The measured radiation dose (mJ/cm²) is classified through the colour scale printed on the control strip. Deviations of the colour shades may be possible due to different endowments of the lamps (see picture).



3. PROCESSING INSTRUCTIONS:

3.1 Measurement of the dispersion of UV radiation on the total size width of the substrate to be printed

The UVtec control strip helps to determine the regularity of the dispersion of UV radiation on the total size width of the substrate to be printed.

Therefore the control strip (or parts of the yellow part in the middle of the UV sensitive control strip) – considering the respective format of the substrate – is fixed on different places of the substrate. In case all control strips show the same discolouration, the UV radiation is regularly dispersion over the substrate which guarantees a unique curing of the ink film.

Are there however different discolouration on the control strips, the radiation dose is irregular and a regular curing of the UV ink is not achieved. Then the adjustment of the UV lamps has to be optimised.

3.2 Quality control of the production lots of UV inks prior to the production process

In order to achieve a quality control of the production lots of UV inks prior to the production process the printing machine has to be adjusted according the required production parameters like speed, lamp efficiency and so on. The UVtec control strip is then fixed onto the substrate (left side, in the middle and right side) and irradiated. The discolouration of the control strip is compared with the colour scale and the value of the radiation dose (mJ/cm²) as well as the respective printing parameters are noted.

UVTEC-CONTROL STRIP

Prior to the next production process the printing machine is adjusted according the noted parameters and after a trial printing the discolouration of the control strip is compared with the values of the radiation dose noted during the first test.

Should the values be identical it is then confirmed that the production parameters are the same.

3.3 Supervision of the efficiency of UV lamps

After the installation of a new UV lamp the control strip is fixed on the substrate (left side, in the middle and right side). The printing i. e. curing speed is adjusted according the defined parameters and the control strip is then cured. The values of the UV radiation dose are measured in mJ/cm² and according the discolouration the value of the radiation dose is noted. After approx. 500 working hours this procedure should be repeated in order to verify whether the efficiency of the UV lamp is still similar to the newly installed UV lamp.

This procedure should be repeated after approx. 750 respectively after 1,000 working hours at a minimum. Should the optimal radiation dose is not achieved it should be verified if the reflector is dirty and if the UV lamp has to be changed.

Attention:

The average operating life of UV lamps is approx. 1,000 working hours (depending on the different manufacturers).

3.4. Verification of insufficiently cured UV inks

In case the UV ink film on substrate is not sufficiently cured, the control strip is fixed on the substrate (left side, in the middle and right side) and the substrate is irradiated several times. After every curing step the discolouration is to be compared with the scale. This procedure should always be effected under defined printing conditions (speed, lamp efficiency and so on). Should the discolouration extremely deviate from the optimal value, the lamp has to be changed and the curing should be verified again.

Attention:

The exact correspondence of the UV radiation dose values (mJ/ cm²) measured with the help of the control strips in comparison to an electronically measured value can not

be guaranteed due to different influences (type of UV lamp, different part of the UV spectrum - UV-C, UV-B, UV-A, focussing of the lamp and so on) and is therefore only to be taken as an estimation data for comparative measurements. However, this measuring technique has already been proved under practical conditions.

4. SHELF LIFE:

A shelf life of 12 months is guaranteed when storing protected from UV light at 21°C and in the original packing container. At higher storage temperatures as well as disposure to UV light the shelf life will be reduced.

Additional technical information may be obtained from our staff of the Technical Application Department.

A.M. RAMP & Co. GmbH
Lorsbacher Straße 28
D-65817 Eppstein

Tel: ++49 (0) 6198-304-0
Fax: ++49 (0) 6198-304-287

E-Mail: info@ruco-inks.com