



## Requirements to the electrical features of 2-layer impression rollers when using Eltex ESA GNH60 / GNH43 / GNH61

In order to guarantee a perfect function of the electrostatic printing assist (ESA) impression roller coatings with certain electrical features are required. In case of the 2-layer impression roller these features are described by two resistance values, the insulating resistance **R<sub>i</sub>** and the total volume resistance **R<sub>vt</sub>**.

### Insulating resistance **R<sub>i</sub>**

$$R_i = 0,5 \text{ Gigaohm} \dots 1,5 \text{ Gigaohm}$$

When printing substrates, which disconnect the impression roller electrically from the grounded gravure cylinder, such as high ohmic films, compounds or thick cardboards, or the impression roller is set up on the printing cylinder, the insulating resistance **R<sub>i</sub>** must lie between above fixed values due to safety reasons.

$$R_i = > 1 \text{ Gigaohm.}$$

This resistance value is valid for all other applications.

### Total volume resistance **R<sub>vt</sub>**

The total volume resistance **R<sub>vt</sub>** is the most important value for the function of the ESA. A perfect ESA function is given for total volume resistances in the area of

$$R_{vt} = \frac{150 \text{ k}\Omega \dots 600 \text{ k}\Omega}{\text{length of impression roller in meter}}$$

Coatings which are outside Eltex specifications can still lead to satisfactory printing results depending on paper quality. Impression rollers with excessively low impedance can result in ignition in the printing unit and insufficient print quality in the edge zones. Impression rollers with excessively high impedance can lead to a loss in printing quality.

The responsibility for the use of such coatings has to be agreed between the user and the manufacturer of the coatings.

The total volume resistance **R<sub>vt</sub>** can only be determined on a special test unit. It is not possible to carry out measurements direct at the impression roller and in the printing press.

On the other hand a third resistance value of the impression roller coating, the surface resistance **R<sub>o</sub>**, can be determined with the test unit.

Extensive tests have shown that there exists a correlation between the total volume resistance **R<sub>vt</sub>** and the surface resistance **R<sub>o</sub>**.

Therefore a value for the surface resistance **R<sub>o</sub>** can be indicated as an alternative to the required **R<sub>vt</sub>** value.

As this connection depends on the recipe of the impression roller coating, the range of the surface resistance **R<sub>o</sub>**, which corresponds to the required volume resistance range, can only be determined



after having carried out a measurement on the test unit. This measurement has to be made by the manufacturer of the coatings.

**For each coating the manufacturer of the coatings informs the user of the range of the surface resistance value  $R_o$  which corresponds to the required range of the volume resistance  $R_{vt}$ .**

We recommend indicating the range of surface resistance on the impression roller certificate for each impression roller.

By this the user can carry out a comparative judgement of the impression rollers for every measurement of the surface resistance.

The Eltex instructions "Measuring specifications 2-layer impression rollers for Eltex ESA GNH60/GNH43" inform you how to measure the resistances  **$R_i$**  und  **$R_o$** .

---

Descriptions:

$R_i$  = insulating resistance

$R_{vt}$  = total volume resistance

$R_o$  = surface resistance