

CHEMICAL INDICATORS FOR OVERHEATING CONTROL IN OIL-FILLED ELECTRIC DEVICES (ChI)

Polymate Ltd. –INDC have elaborated the new method of determination of the places with increased temperature in oil-filled electric devices by using of the special chemical indicators that are applied by customer on “weak” places of possible overheating.

At critical temperature the indicators begin to release chemical product, which are determined with chromatography analysis in probe of oil; from electric devices. With map of placing the indicators it is possible to define the places of an overheat

The Chemical indicators are placed in potential dangerous places with respect to their overheat according to a map suitable for each specific device by the manufacturer or during maintenance of the device (Figure 1).

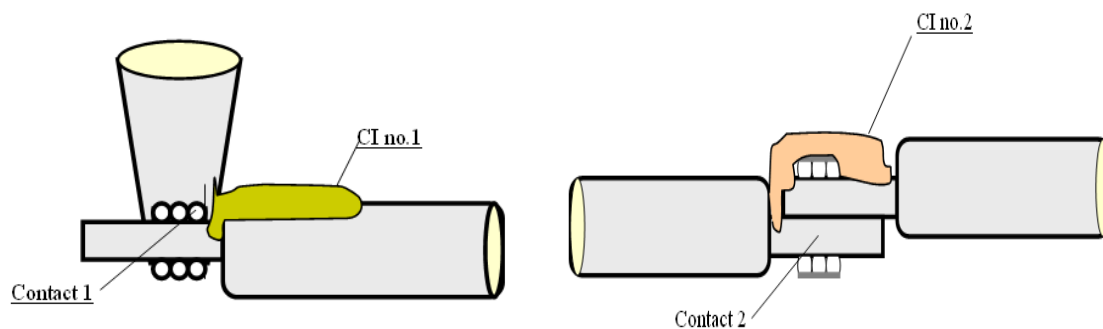


Figure 1 The examples of the application of the chemical indicators in potential dangerous places with respect to their overheat

The principal schema of work of the CI is given in Figure 2

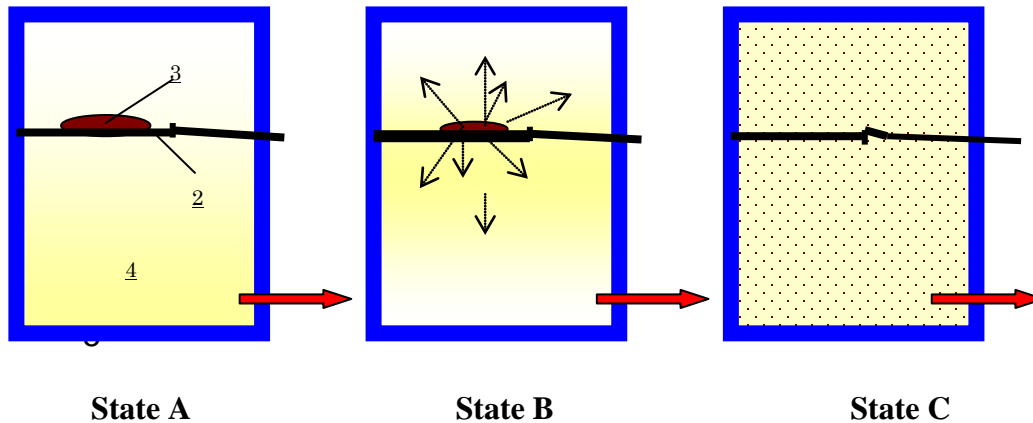


Figure 2. The principal scheme of work of the ChI **1**- electrical device; **2** - potentially overheated spot inside the electric device; **3** - CI; **4** - transformer oil.

- **State A** - is the normal mode of work of electrical device ($T \leq 80^{\circ}\text{C}$).
- **State B** - is a state where the temperature on the potential overheated spot is raised.
- **State C** - is the state in which a complete decomposition of the CI and spreading of substance in the whole oil volume takes place ($T \geq 200\text{-}300^{\circ}\text{C}$), followed by sample analysis.

Preliminary investigations in laboratory proved high effectiveness of the proposed methods.

Advantages of the proposed method:

- Possibility of marking potential “weak” places by different indicators and determining of overheating places
- The indicators do not change dielectric and physical-chemical properties of oils.