

Accelerated Analysis

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K18R Liquid Crystal Utilization Notes

Introduction

K18R is a low viscosity solution of the popular K18 liquid crystal dissolved in solvent. The clearing point of K18, 29°C, is close enough to room temperature to detect many leakage sites without using external heating. With external heating, defects dissipating as little as 10 microwatts can be precisely located.

The low viscosity solution readily wets IC surfaces and automatically produces a very thin coating optimal for hot spot detection.

To apply K18R...

1. Open vial of K18R.
2. Wet tip of nylon liner brush with a drop of K18R.
3. Close vial.
4. Touch brush to surface of device under test.
5. Wait 30 to 60 seconds for solvent to dissipate.
6. Examine device in a microscope under cross polarized conditions. Areas coated with liquid crystal will be colorful due to the optical properties of liquid crystal. (This presumes temperature is less than 29°C.) Bare areas will be dark. Retouch as necessary to achieve complete coverage.
7. Return brush to storage tube. (No rinsing or cleaning is necessary.)
8. Observe device under cross polarized conditions. Bias sample to leakage condition and scan IC surface for a dark (hot) spot within field of bright, cooler liquid crystal.

Note...

A pleasant variation is to view the device through cross polarized conditions as liquid crystal is applied. The image is nearly black as the liquid touches the device, then blossoms into color as the solvent evaporates leaving a film of nematic phase liquid crystal across the surface.

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