

Accelerated Analysis

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K18 Liquid Crystal Utilization Notes

Introduction

K18 is a popular liquid crystal for hot spot detection. 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.

It is creamy or milky in both color and texture at room temperature. K18 can be applied directly according to the instructions below. For best results, the film thickness should be as thin as possible.

To apply K18...

1. Open vial of K18.
2. Wet tip of nylon liner brush with K18.
3. Close vial.
4. Touch tip of brush to surface of device under test. Spread out liquid crystal until it is uniform and thin in the areas of interest.
5. Examine device in a microscope under cross polarized conditions. Assuming temperature is below 29°C, liquid crystal will be bright and colorful. Bare areas will be dark.
6. Use brush to push liquid crystal over the entire area of interest. Dry brush on a clean towel, then use brush to remove excess liquid crystal. Repeat until liquid crystal appears uniformly thin. Pay special attention to bonding wires or probes, because liquid crystal tends to wick up wires.
7. 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...

An optimum thin film may be easier to attain if K18 is diluted with methylene chloride or pentane. (Methanol and isopropyl alcohol do not mix and are not satisfactory substitutes.)

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