TLC-100™

THERMOCHROMIC LIQUID CRYSTAL KIT

The TLC-100™ is a Thermochromic Liquid Crystal Kit designed for heat transfer studies and mapping temperature fields on electronic components or boards. The TLC-100™ features thermochromic liquid crystals (TLCs) which change color at a specified temperature starting at red, changing to green then blue. For electronics cooling applications, this provides the user accurate information about the location of hot spots on a device, their temperature and temperature gradient.

To map the temperature profile of a component or board, black ink is airbrushed on to the specimen. Then, TLCs with a particular temperature range (depending on the application), are sprayed onto the measurement surface. Once the device is turned on and the components are brought to activation temperature, the liquid crystals will begin turning red, then into different colors, representing the temperature distribution of the component or board. Black ink and TLCs are non-destructive and wash off with the aid of soap and water. Thermochromic liquid crystals are available in a variety of temperature ranges from 20 to 120°C, each one with a particular bandwidth from 1 to 20°C.

KIT COMPONENTS:

- Air compressor with 12VDC power adapter
- Airbrush and hose for coating the component or board's surface with backing ink and liquid crystals. Airbrush nozzle sizes: 0.2mm, 0.3mm, 0.5mm
- Three fluid cups for attaching to the airbrush (Capacities: 9cc / 20cc / 40cc)
- Three airbrush needles for use with nozzles
- Two 30 mL bottles of Thermochromic Liquid Crystals (temperature ranges specified when ordering)
- One 30 mL bottle of sprayable black backing ink for pre-treating the surface to be studied.
- One oil-water separator to assist in pulling water out of the compressor air
- Airbrush cleaning set, fluid dropper, and maintenance wrench

FEATURES:

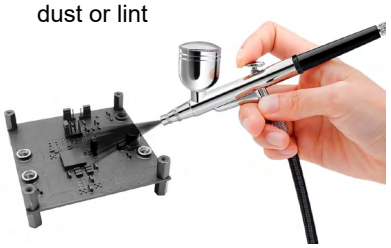
- **Comprehensive Kit**
  Everything required for thermal mapping, right out of the box
- **Wide Temperature Range**
  TLCs available starting at 20°C to 120°C
- **Versatile**
  Can be used for measurements at both the component and board-level
- **Airbrush**
  Air Pressure Range: 25-40 psi
  Maximum Flow: 10 LPM

APPLICATIONS:

- **Heat Mapping Studies**
- **Component Temperature Testing**
- **PCB Testing**
- **Hot Spot & Defect Identification**

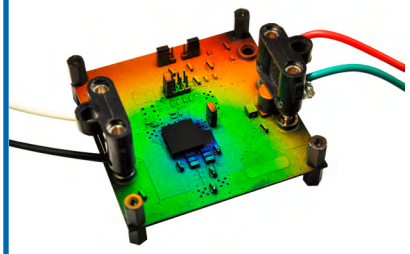
THERMOCHROMIC LIQUID CRYSTALS PROCESS

- **STEP 1**
  Ensure the test specimen is clean, dry, and void of any dust or lint



- **STEP 2**
  Apply a "thin and uniform" coat of black ink to the test

- **STEP 3**
  Apply a coat of thermochromic liquid crystals after the black ink is dry



- **STEP 4**
  Apply power to the test specimen and start the measurement. As the temperature increases, the reflected color will change. The color spectrum will begin with red and end with blue. When the temperature exceeds the activation temperature of the TLC, the material will cease reflecting visible light and becomes transparent.

RoHS COMPLIANT

ADVANCED THERMAL SOLUTIONS, INC.
Innovation in Thermal Management®

THERMOCHROMIC LIQUID CRYSTAL KIT

	Part Number	TLC-100 Kit Temperature Range (°C)
1	TLC-100-1-1	2x 20-40
2	TLC-100-1-5	20-40 & 40-60
3	TLC-100-1-6a	20-40 & 50-60
4	TLC-100-1-8	20-40 & 60-70
5	TLC-100-1-10	20-40 & 70-80
6	TLC-100-1-12	20-40 & 80-90
7	TLC-100-1-13a	20-40 & 90-100
8	TLC-100-1-15a	20-40 & 100-120
9	TLC-100-5-5	2x 40-60
10	TLC-100-5-6a	40-60 & 50-60
11	TLC-100-5-8	40-60 & 60-70
12	TLC-100-5-10	40-60 & 70-80
13	TLC-100-5-12	40-60 & 80-90
14	TLC-100-5-13a	40-60 & 90-100
15	TLC-100-5-15a	40-60 & 100-120
16	TLC-100-6a-6a	2x 50-60
17	TLC-100-6a-8	50-60 & 60-70
18	TLC-100-6a-10	50-60 & 70-80
19	TLC-100-6a-12	50-60 & 80-90
20	TLC-100-6a-13a	50-60 & 90-100
21	TLC-100-6a-15a	50-60 & 100-120
22	TLC-100-8-8	2x 60-70
23	TLC-100-8-10	60-70 & 70-80
24	TLC-100-8-12	60-70 & 80-90
25	TLC-100-8-13a	60-70 & 90-100
26	TLC-100-8-15a	60-70 & 100-120
27	TLC-100-10-10	2x 70-80
28	TLC-100-10-12	70-80 & 80-90
29	TLC-100-10-13a	70-80 & 90-100
30	TLC-100-10-15a	70-80 & 100-120
31	TLC-100-12-12	2x 80-90
32	TLC-100-12-13a	80-90 & 90-100
33	TLC-100-12-15a	80-90 & 100-120
34	TLC-100-13a-13a	2x 90-100
35	TLC-100-13a-15a	90-100 & 100-120
36	TLC-100-15a-15a	2x 100-120

ATS SURFACE THERMOGRAPHY SYSTEMS

tvLYT™

Liquid Crystal Thermographic Analysis Tool

- **Temperature Range:** 0 to 120°C (32 to 248°F)
- **Temperature Accuracy:** +/- 0.1°C
- **High performance, solid-state, color camera with macroscopic optic**

ethermVIEW™

High-Resolution thermography system with precise temperature accuracy

- **Temperature Range:** 0 to 120°C (32 to 248°F)
- **Temperature Accuracy:** +/- 0.1°C
- **High performance, solid-state, color camera with choice of macroscopic optic lens**

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High-Resolution Thermography System with Precise Temperature Accuracy

- **Temperature Range:** 0 to 120°C (32 to 248°F)
- **Temperature Accuracy:** +/- 0.1°C
- **High performance, solid-state, color camera with macro, magna, or ultra lens**

For further technical information, contact Advanced Thermal Solutions, Inc. at 781-769-2800 or ats-hq@qats.com.