

## TOPFLIGHT INNOVATIONS

### *Specialty Inks*

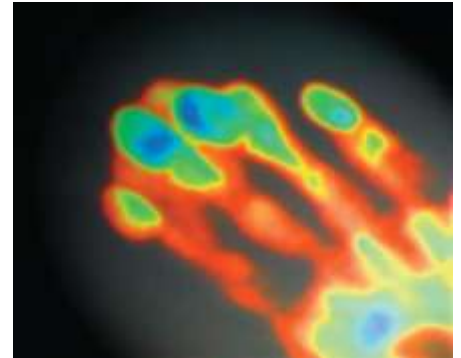
Topflight has experience with a wide range of water-based, UV, and solvent inks for flexo, screen and letterpress equipment. When used in combination with hundreds of available adhesives and substrates, engineers have unparalleled design options.

Chromatic inks are designed to change color in various conditions. Thermochromic inks react to heat or cold within a given range. Hydrochromic inks appear only when exposed to water while phosphorescent inks radiate retained light which glows in the dark. Photochromic inks appear with exposure to specific wavelengths of light, usually within 20 seconds. And, iridescent inks contain microscopic glass shavings to reflect the entire spectrum of light in a prism effect.

Security inks containing plant DNA, markers, or taggants can be read by customs or brand-owner personnel to verify product authenticity and to counteract counterfeiting and gray market sales. Taggants can be engineered with unique microscopic codes or graphics for a custom solution.

Chemically reactive inks detect the presence or absence of specific chemicals. While primarily used in security applications, these inks can also be used for air quality sensors, water testing, and other monitoring devices.

Topflight has experience printing a variety of conductive inks, including silver, silver/silver chloride and carbon polymer thick films (PTF), as well as silver and graphene nano-particle flakes. These inks are used in printed electronics applications such as sensors, test strips, diagnostic assays, displays, RFID tags, and circuits.



*Thermochromic inks indicate when a product has reached an appropriate temperature or that a change has occurred. They may be used for interactive packaging, food safety, or product integrity features.*



*Radiopaque tags, grids, dots, and markers provide visible markings on items exposed to x-rays, MRI's or other imaging technologies.*