



Mirage™ thermal ID film

24-hour all weather emergency service vehicle identification

Executive summary

Mirage™ is a thin-film, self-adhesive material used to mark the tops of emergency services vehicles, allowing them to be identified by Air Support Units equipped with thermal imagers.

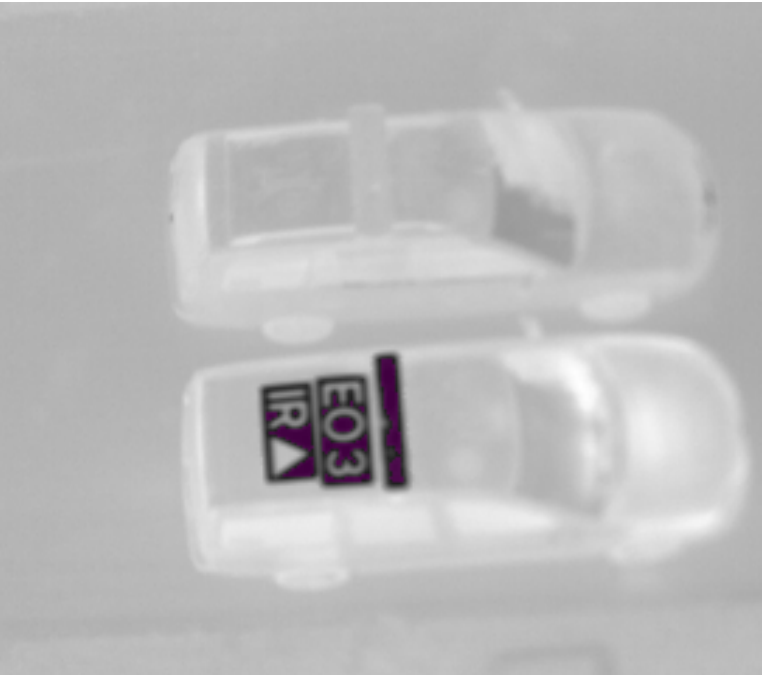
The brief

Standard roof marking materials are invisible to thermal infrared cameras. Thermal cameras measure heat and, since standard roof markings are usually the same temperature as the roof on which they sit, they don't show up on the thermal image. This makes it difficult for Air Support Units to identify emergency vehicles from the air at night.

“ Mirage™ is specifically recommended for use on all UK Police vehicles, but is available for all emergency service vehicles. ”

UK Government's Centre for Applied Science and Technology





Our solution

Our Electro-optic Stealth Materials team used its specialist knowledge of controlling vehicle thermal signatures to design a material that was highly conspicuous in the thermal infrared.

This involved making a standard mirror with an extremely shiny metal surface, then placing a filter over it that is opaque in the wavelengths that humans see in, and transparent in thermal infrared wavelengths.

When this material is placed on top of a vehicle and viewed from above, the thermal imager sees the mirror, giving it a reflection of the sky above the helicopter. A thermal imager pointed at a blue sky essentially measures the apparent temperature of outer space – about -60 degrees Celsius – so the material appears extremely cold and therefore black through a thermal imager (white is hot, black is cold). This makes the material highly conspicuous.

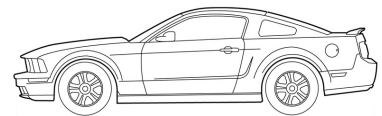
Outcomes and benefits

The material is specified by the Centre for Applied Science and Technology as a requirement for all UK Police vehicles.

Use of Mirage™ allows Air Support Units to unambiguously distinguish police vehicles from the vehicles they are chasing, even at night. It also allows them to identify specific vehicles by numbers so they can refer to call signs from the air and direct operations on the ground.

- 24/7 all-weather operation
- Highly visible with both medium and long wave thermal infrared imagers
- Improved operational tempo and effectiveness
- Improved situational awareness
- Fewer resources required to successfully prosecute the operation
- Compatible with conventional roof marking materials and application techniques

- No power or vehicle modifications required



These images demonstrate how Mirage™ has been exploited by UK Police Forces. The upper vehicle has conventional black sign vinyl roof markings. The lower vehicle has selected black Mirage™ markings with conventional white sign vinyl letters and symbols on the rear part of the roof. Grey Mirage™ has been applied to the roof bar.

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