



The Chemical Company

## Product Information

# Lumogen<sup>®</sup>, Sicopal<sup>®</sup>, Sicotan<sup>®</sup> and Meteor<sup>®</sup> Plus

## ‘Cool’ Pigments for Plastics

BASF’s “cool pigment” technologies with specialized spectral behavior make it possible to formulate dark colors that reduce the heat build-up effect of sunlight by reflecting the near infrared (NIR) portion of the spectrum. Lumogen NIR transparent pigments as well as Sicopal, Sicotan and Meteor Plus NIR reflective pigments reduce surface heat build-up in plastics.

All dark surfaces exposed to sunlight will absorb incident light converting the energy, normally IR light, into heat energy. The process is commonly referred to as heat build-up.

### Features

- Increased surface reflectance
- Reduced heat build-up of parts
- Lower energy usage through lower cooling requirements
- Longer lifetimes for substrates through reduced temperature strain

### A tool to energy savings and sustainability

In contrast to carbon black which reflects less than 5% of the total incident solar energy, Lumogen Black and Sicopal Black pigments achieve total solar reflectance (TSR) values of 30 to 35%. By substituting these pigments for carbon black, heat build-up can be

reduced. This is particularly relevant to small and military aircraft as their cockpits will remain much cooler during ground standby when exposed to high air temperatures and radiation loads, protecting instrumentation and helping pilots avoid fatigue. Lower heat builds also enhance substrate lifetimes by reducing temperature-triggered degradation.



## Usage guidelines

In many cases, both NIR transparent and reflecting pigments are used in the same formulation. Most Black NIR reflecting pigments tend to be brownish in shade and may need to be color corrected. Since carbon black can not be used due to its propensity to absorb NIR energy, it is replaced by Lumogen Black. The resulting color achieved by combining technologies resembles a true jet black with synergistic improvements in heat management.

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Pigments	Features	Application Techniques
Lumogen Black FK 4280/4281 pigments	<ul style="list-style-type: none"><li>▪ NIR transparent</li><li>▪ High tinctorial strength</li></ul>	Over NIR reflective substrate or in combination w/ NIR reflective pigment
Sicopal Black K 0095 pigments	<ul style="list-style-type: none"><li>▪ NIR reflective</li><li>▪ Highly weather, temperature and chemical resistant</li></ul>	Functionality independent of substrate (but effect can be enhanced over reflective substrate)
Meteor Plus 9880/9889 pigments	<ul style="list-style-type: none"><li>▪ NIR reflective</li><li>▪ Highly weather, temperature and chemical resistant</li></ul>	Functionality independent of substrate (but effect can be enhanced over reflective substrate)

## Software tool to calculate total solar reflectance of pigment compositions

BASF offers its customers a special service in the form of its “CoolSim” computer tool. This simulation program allows BASF experts to engineer the optimal pigment composition with the highest possible TSR for each desired color shade – an enormous advantage for users who then don’t have to conduct their own experiments.

\*Contact your Aerospace Sales Representative for a full line of ‘Cool’ Pigments for Plastic Applications.

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