

BASF Aerospace Materials

Paliogen® Black, Sicopal® Black, Meteor® Plus and Xfast® Black

‘Cool’ Pigments for Paints and Coatings



The Chemical Company

Product Information

BASF’s “cool pigment” technologies with optimized spectral behaviors make it possible to formulate dark colors that reduce the heating effect in sunlight by reflecting the near infrared (NIR) portion of the spectrum. Paliogen NIR transparent pigments as well as Sicopal, Meteor Plus and Xfast NIR reflective pigments offer increased surface reflectivity and reduced surface heat build-up in coatings.

All dark surfaces that are exposed to sunlight heat up strongly, while light surfaces remain distinctly cooler. This is because dark surfaces absorb incident sunlight and convert it into heat, while light surfaces reflect more of the incoming energy.

Features

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

NIR reflective aircraft coatings

Paliogen, Sicopal, Meteor Plus and Xfast pigments are dark pigments that offer dramatic heat-reducing benefits. In contrast to carbon black, the standard black pigment, which reflects less than 5% of the total incident solar energy, Paliogen Black and Sicopal Black pigments achieve total solar reflectance (TSR) values of 45% and 30%, respectively. As paints and coatings of many other color shades contain variable amounts of black pigments, heat build-up is greatly reduced by substituting the cool pigments for the

carbon black. Consequently, the surface and interior of an aircraft coated with “cool paint” will remain much cooler during ground standby when exposed to high air temperatures and radiation loads.

BASF’s cool pigments can also be used in coatings of terminals, hangars and support buildings to also reduce interior temperatures and demand for air conditioning.



For more information on BASF Aerospace Materials:
aerospace.materials@basf.com
www.aerospace.basf.com

Usage guideline

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

For optimum performance, NIR transparent and reflective pigments must be applied in the proper fashion to achieve maximum solar reflectance.

Pigment	Features	Application Techniques
Paliogen Black L 0086	<ul style="list-style-type: none">▪ NIR transparent▪ High tinctorial strength	Over NIR reflective substrate or in combination w/ NIR reflective pigment
Sicopal Black K 0095	<ul style="list-style-type: none">▪ NIR reflective	Functionality independent of substrate (but effect can be enhanced over reflective substrate)
Xfast Black 0095 ¹	<ul style="list-style-type: none">▪ Highly weather, temperature and chemical resistant	(but effect can be enhanced over reflective substrate)
Meteor Plus 9880 & 9889	<ul style="list-style-type: none">▪ NIR reflective▪ Highly weather, temperature and chemical resistant	Functionality independent of substrate (but effect can be enhanced over reflective substrate)

¹ Stir-in pigment for water-based paints

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.

BASF Corporation
Aerospace Team
100 Campus Drive
Florham Park, NJ 07932
E-mail: aerospace.materials@basf.com

Meteor, Paliogen, Sicopal, and Xfast are trademarks of BASF.

Although all statements and information in this publication are believed to be accurate and reliable, they are presented gratis and for guidance only, and risks and liability for results obtained by use of the products or application of the suggestions described are assumed by the user. NO WARRANTIES OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE MADE REGARDING PRODUCTS DESCRIBED OR DESIGNS, DATA OR INFORMATION SET FORTH. Statements or suggestions concerning possible use of the products are made without representation or warranty that any such use is free of patent infringement and are not recommendations to infringe any patent. The user should not assume that toxicity data and safety measures are indicated or that other measures may not be required. © 2011 BASF