

RheoLight™

Crystal Glass Pigments

Signature Color

P a n t h e r B l a c k



Panther Black

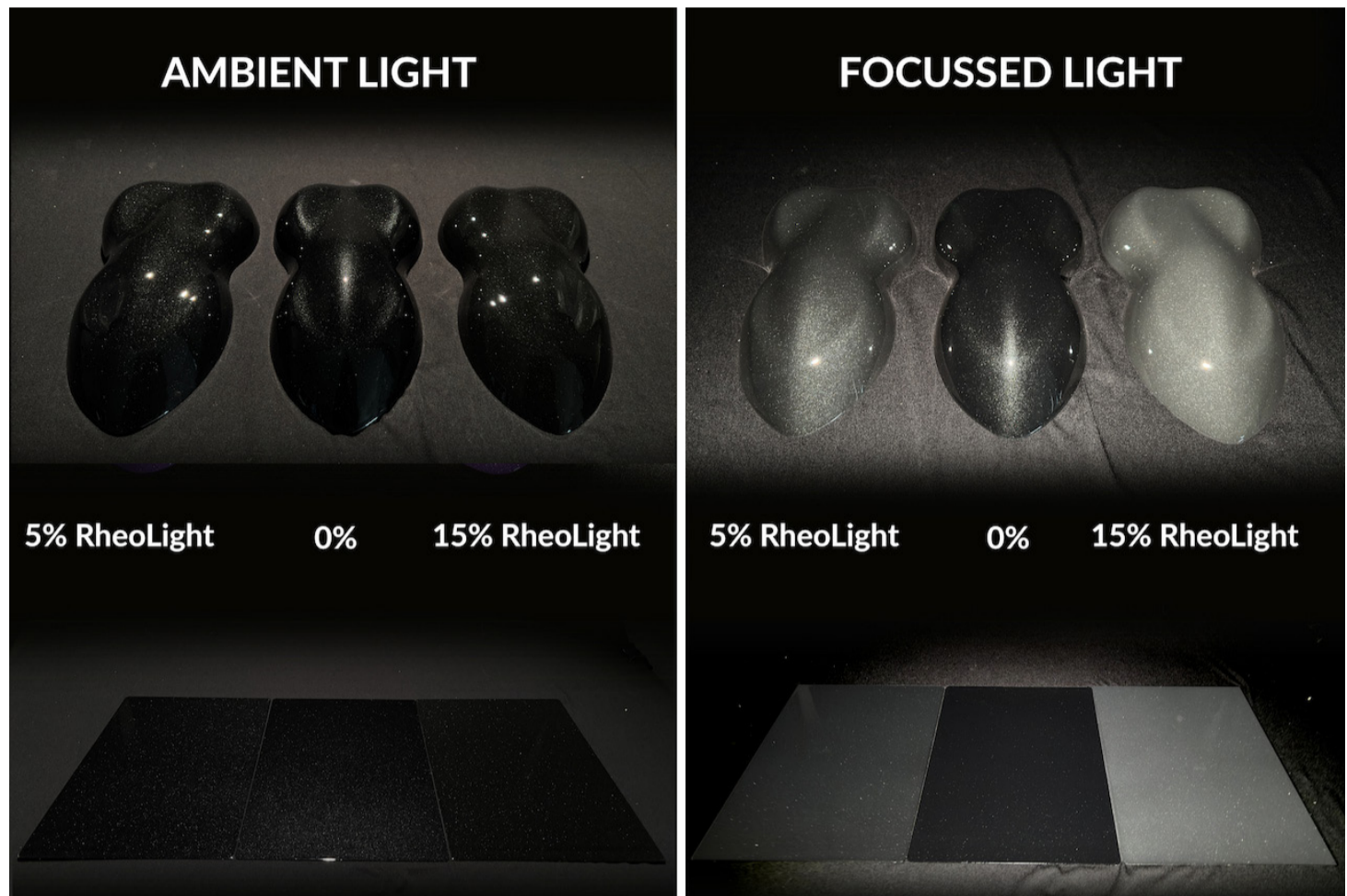
VOL

02

COLORLAB ACADEMY

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From Darkness to Light



***Introducing Panther Black,
an innovative mobility
black color that enhances
visibility for LiDAR. Utilizing
RheoLight Crystal Glass
Pigments for improved
light reflection, Panther
Black merges safety with
captivating aesthetics.***

Panther Black is a color formulation designed to enhance the visibility of black in automotive applications. Dark colors such as Black typically have poor visibility for both the human eye and machine detection systems like LiDAR systems. The RheoLight Signature Color—Panther Black—formulation incorporates RheoLight Crystal Glass Pigments, which provide a light return across all angles, improving visibility.

RheoLight enables a faster and more reliable transition to autonomous driving, as self-driving cars need to see each other, need to see us, and we need to see them. By making colors more visible and, thereby, vehicles as well, it is easier to make better decisions based on more and more reliable data.

Merck Xirallic Amur Black and **Toyal EMR-D762E** are used as effect pigments to help the RheoLight stand out against the deep black pigments, adding depth and enhancing reflectivity. The solid pigments, such as **Syrox S150 Black** and **Syrox S451 Blue**, ensure opacity and maintain the black's rich, dark appearance.

In summary, **Panther Black** combines RheoLight and effect pigments to achieve a color that enhances visibility while retaining the characteristics of traditional black metallic finishes.

VISIBILITY LABEL

The Visibility Label rates the visibility of different colors for mobility, from A (very visible) to G (hardly visible), and ND (Not Detectable)

fig 1.

LEFT :

5% RheoLight (G)

MIDDLE :

0% RheoLight (ND)
(Not Detectable)

RIGHT :

15% RheoLight (F)

It takes into account how easily colors can be seen by people, computers, and LiDAR in three dimensions. This rating helps people choose safer colors for bicycles by showing how visible they are in challenging lighting conditions.



fig 2.

LEFT :

5% RheoLight (G)

Detectable

Visible LiDAR Pointcloud

MIDDLE :

0% RheoLight (ND)

Not Detectable

No LiDAR Pointcloud

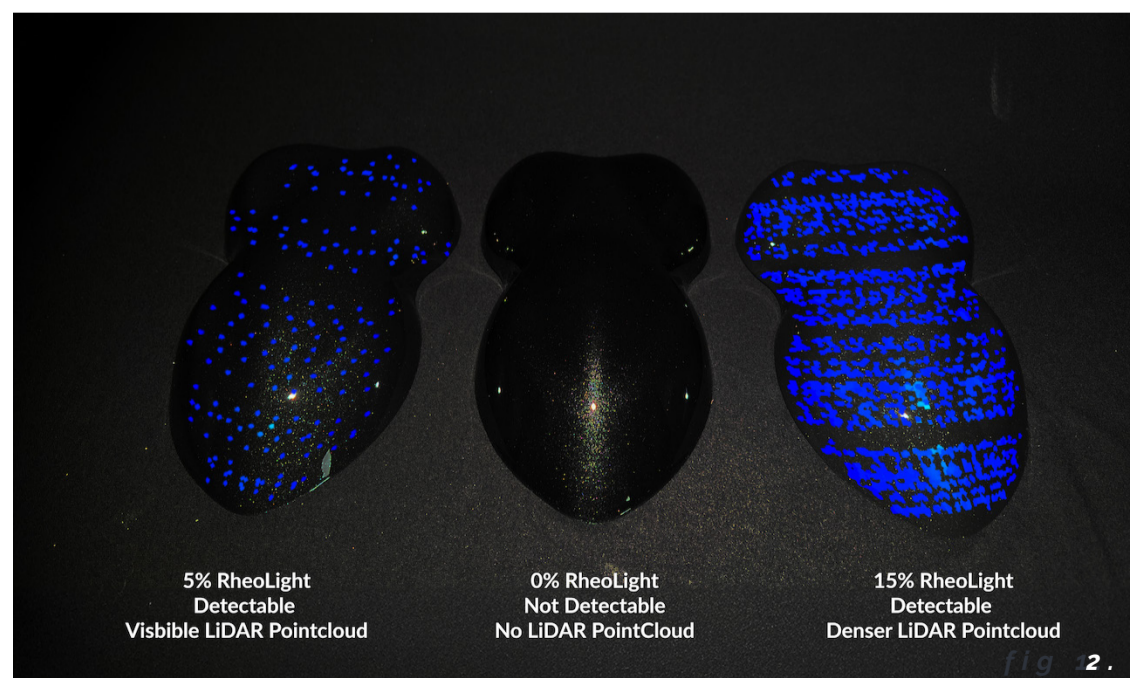
RIGHT :

15% RheoLight (F)

Detectable

Denser LiDAR Pointcloud

In the image below, it's clear that without RheoLight, the LiDAR system struggles to recognize the shape of the car and fails to generate a point cloud. However, when RheoLight is introduced, it boosts the detectability of black surfaces, and increasing the concentration leads to a denser point cloud.



Panther Black Overview

Color Name: Panther Black

Inspiration: Visible Black, LiDAR improvement

Base Color:

- Primary Hue: Deep, Rich Black
- Undertones: Subtle Reflective Effect

Function:

- Panther Black enhances visibility and maintains a deep, rich black finish for both safety and aesthetics.

Characteristics:

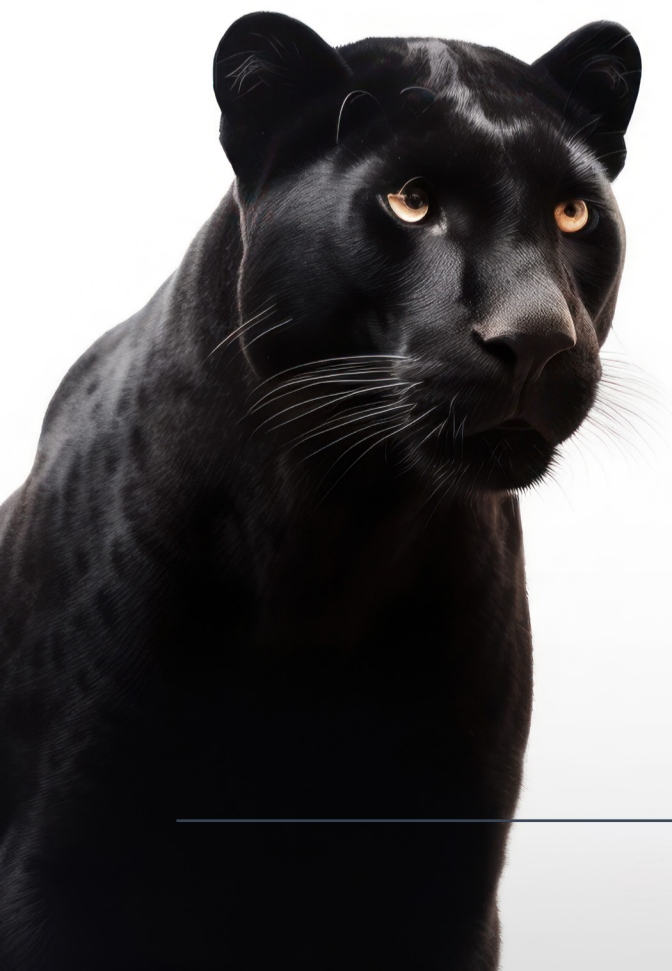
- Finish: High gloss clearcoat
- Visibility: Enhanced under higher angles of light
- Durability: Formulated to resist environmental exposure and maintain performance over time

Applications:

- Primary Use: Automotive coatings, especially for vehicles prioritizing visibility and safety
- Secondary Use: Suitable for any application where enhanced black visibility is desired

Purpose:

- Design Objective: To develop the first-ever visible black for automotive use, offering improved visibility while retaining the deep, rich look of traditional black metallic
- Market Positioning: A functional, innovative black that enhances safety and improves visibility without compromising the iconic black finish.



LOOK INSIDE



Formulation 0% RheoLight

Component	Weight percentage (%) in grams
Syrox S150 Black	77,6
Syrox S451 Blue	1,4
Merck Xirallic Amur Black	4,2
Toyal EMR-D762E	0,1
Syrox S940 (Dilution)	16,7
Total	100,0

Formulation 5% RheoLight-Base WB CTL

Component	Weight percentage (%) in grams
Syrox S150 Black	73,8
Syrox S451 Blue	1,3
Merck Xirallic Amur Black	4,0
Toyal EMR-D762E	0,1
Syrox S940 (Dilution)	15,8
RheoLight-Base WB CTL	5,0
Total	100,0

Formulation 15% RheoLight-Base WB CTL

Component	Weight percentage (%) in grams
Syrox S150 Black	66,0
Syrox S451 Blue	1,2
Merck Xirallic Amur Black	3,5
Toyal EMR-D762E	0,1
Syrox S940 (Dilution)	14,2
RheoLight-Base WB CTL	15,0
Total	100,0

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Crystal Glass Pigments

SAFETY MADE BEAUTIFUL



Ink Invent BV

Twentehaven 5, 3433 PT Nieuwegein, The Netherlands

Email: info@inkinvent.com - Phone: +31 35 74 00 174

www.inkinvent.com - www.rheolight.com