

PLEXIGLAS® CoolTouch® Black Outside, Cool Inside

for car body and add-on automotive parts



PLEXIGLAS® CoolTouch®

Black Outside, Cool Inside



PLEXIGLAS® CoolTouch® is highly suitable for car roof applications due to its heat-reflective effect.

PLEXIGLAS® CoolTouch® is a specialty molding compound from the Performance Polymers Business Unit of Evonik Industries AG. It is particularly suitable for dark-colored exterior applications because its special formulation enables it to reflect solar heat radiation. Car roofs made from PLEXIGLAS® CoolTouch® show up to 22 per cent less heat buildup than components made from conventional materials. They therefore reduce the

temperature inside the vehicle by an average of 5°C, related to the solar radiation on a regular summer's day in Central Europe. The air conditioning in cars with roofs made of PLEXIGLAS® CoolTouch® reaches the comfortable temperature of 22 to 23°C some 10 minutes faster than the AC in cars with conventional roofs. That saves energy for climate control and reduces CO₂ emissions by 25 per cent.



Interior temperature after parking in the sun

	T interior (°C)
PLEXIGLAS® CoolTouch® roof	~22
Plastic-roof	~27
Steel-roof	~32

22 °C



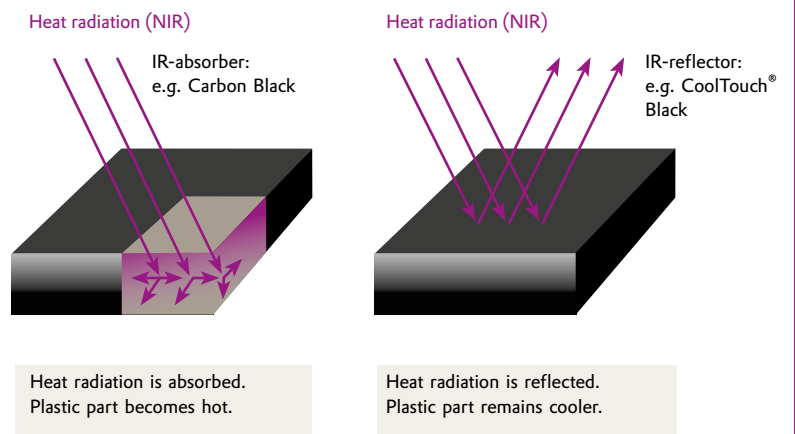
Automobile manufacturers rely on PLEXIGLAS®

Practice shows that PLEXIGLAS® molding compounds have proved their worth in non-transparent automotive applications (NTAA). Automotive OEMs have been using the opaquely colored, usually jet-black molding compounds from Evonik for more than 10 years, and these are meanwhile employed in 30 standard vehicle models. So far, the molding compounds have mainly been used for high-gloss pillar panels, spoilers and mirror housings.

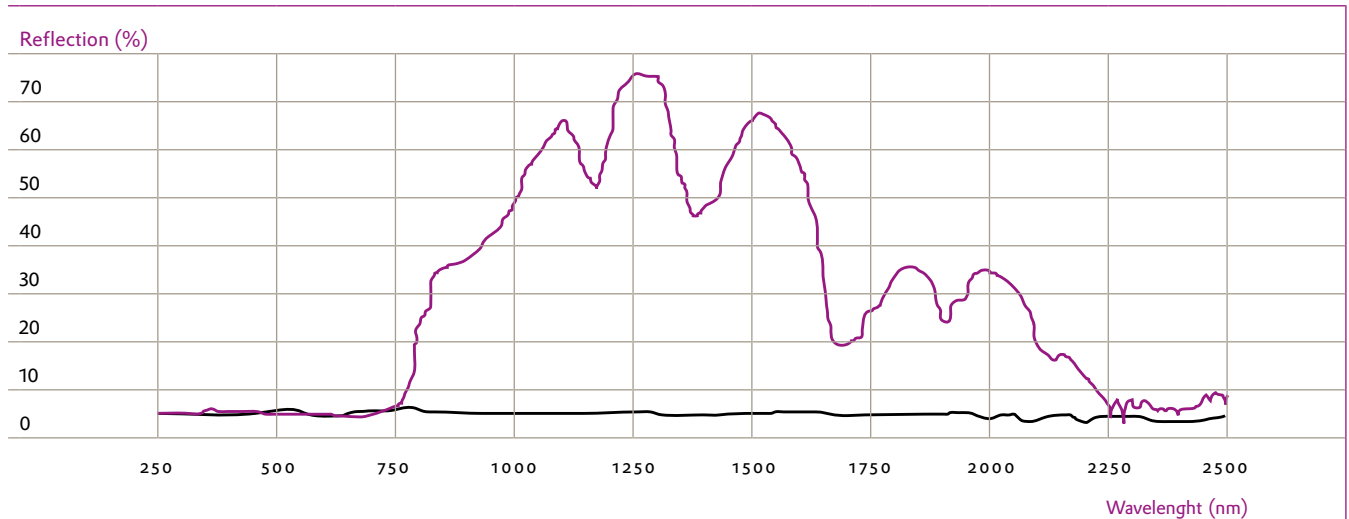
PLEXIGLAS® CoolTouch® offers added value

The new molding compound from Evonik offers an additional benefit for NTAA: PLEXIGLAS® CoolTouch® reflects most of the sun's infrared radiation as compared with the standard. In relation to the entire solar spectrum, dark-black PLEXIGLAS® CoolTouch® reflects 21 per cent of the solar energy (total solar reflectance, TSR).

Reduced heat buildup with PLEXIGLAS® CoolTouch®



Increase in IR-reflection due to CoolTouch® Black



PLEXIGLAS® CoolTouch® Black



PLEXIGLAS® Standard Black

PLEXIGLAS® CoolTouch® for car body parts



A PLEXIGLAS® roof produces less noise when it rains and hails.

The beneficial effect of CoolTouch® is noticeable when applied in a roof module as soon as the air conditioning is switched on. In the summer months, the air conditioning unit often runs at full blast, which pushes up fuel consumption and CO₂ emissions. In a dark vehicle that is exposed to direct sunlight all day, the interior can easily heat up to 70°C. That is a torment for people and materials alike.

A practical test conducted by Evonik together with the State Materials Testing Institute (MPA) based in Darmstadt, Germany, proved the effectiveness of CoolTouch®. In this test, temperatures were measured in and on three vehicles under the Spanish sun. The only difference between the three black cars was their roof material. The major finding provided by the test was that PLEXIGLAS® CoolTouch® makes it possible to reduce the temperature inside the car by 5°C. In addition to savings related to air conditioning, a roof equipped with PLEXIGLAS® is 17% lighter than a steel roof, which reduces fuel consumption and CO₂ emissions still further.

PLEXIGLAS® CoolTouch®: An excellent combination for car roofs

PLEXIGLAS® instead of steel	CoolTouch®
Weight reduction	Lower plastic part temperature
Better heat insulation	Lower temperature inside car
Pleasant acoustic properties	Less fuel consumption for air conditioning
Hail resistance	Reduced CO ₂ emissions
Chemical resistance (VDA 621-412)	



PLEXIGLAS® is more **hail-resistant** than steel and does not dent in a hailstorm.

PLEXIGLAS® CoolTouch® for add-on automotive parts

Another field of application for PLEXIGLAS® CoolTouch® are injection-molded **add-on car body components**. In these, the specialty molding compound ensures greater dimensional stability and thus reduces the gap width. It also makes it possible to reduce any unpleasant creaking noises that may be caused by expansion of the components.

Savings of up to 40 percent can be achieved when producing the components from PLEXIGLAS® molding compound because there is no need to paint the parts. The injection mold provides high-gloss parts with molded-in color that are ready for assembly. The production process is significantly shorter and there is no need for coatings and solvents, which is further good news for the environment.

PLEXIGLAS® CoolTouch®: Advantages for add-on parts at a glance

PLEXIGLAS®	CoolTouch®
Weight reduction	Dimensional stability
Reduction in manufacturing costs	Reduced gap width
No VOC (volatile organic compounds)	Less creaking
Easy to polish	



From molding compound to finished component

A coextruded composite material is normally used for roof applications. This multilayer film consists of a polymer carrier material with one or two PLEXIGLAS® cap layers: the CoolTouch® color layer and a transparent cap layer to achieve a greater depth effect. This multilayer film can be backmolded, foam-backed or compressed with another polymer after thermoforming.

Add-on parts are usually produced in an one or two-component injection molding process.

PLEXIGLAS® CoolTouch® lets car manufacturers and driver keep cool, both in terms of costs and climate.

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Certified to DIN EN ISO 9001 (Quality) and DIN EN ISO 14001 (Environment)

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