



# Self-cleaning coating for solar panels





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AC10166 Solar coatings impressively improve the economic efficiency of solar panels.

Reflectance is reduced, cleaning effort is significantly reduced and by the way, solar panels coated with AC10166 also clean our air.

This is "green technology" to perfection.

And is mainly made possible by changing the refraction of light on the glass surface. This way, the available solar energy can be optimally utilised.

The improvement in efficiency makes real money. Added to this are the savings for cleaning the modules and the avoided power losses in case of pollution.





# Benefits:

- ▶ Increasing efficiency by reducing reflection and improving light transmission on the solar panel.
- ▶ Photo catalytic self-cleaning prevents performance loss due to contamination of the glass surface. The coating promotes the service life of the
- ▶ System by improving the scratch resistance and hardness of the glass.
- ▶ Active environmental protection by avoiding cleaning measures and air purification by breaking down pollutants.
- ▶ Such as bird droppings, fine dust and organic particles.



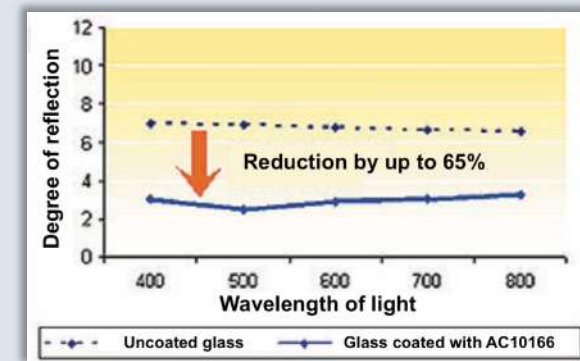
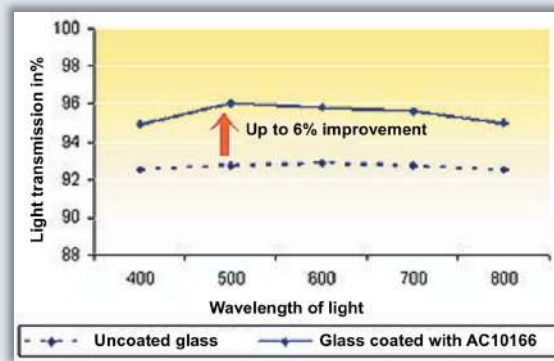
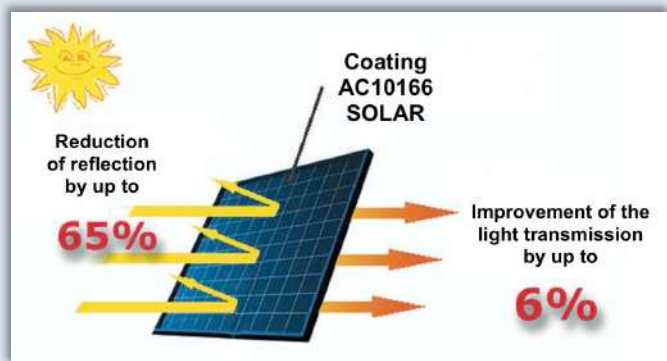


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Increased efficiency by reducing reflection and improving the improving light transmission on the solar panel

The low reflection increases the light transmission of a collector window coated with AC10166® by up to 6%.

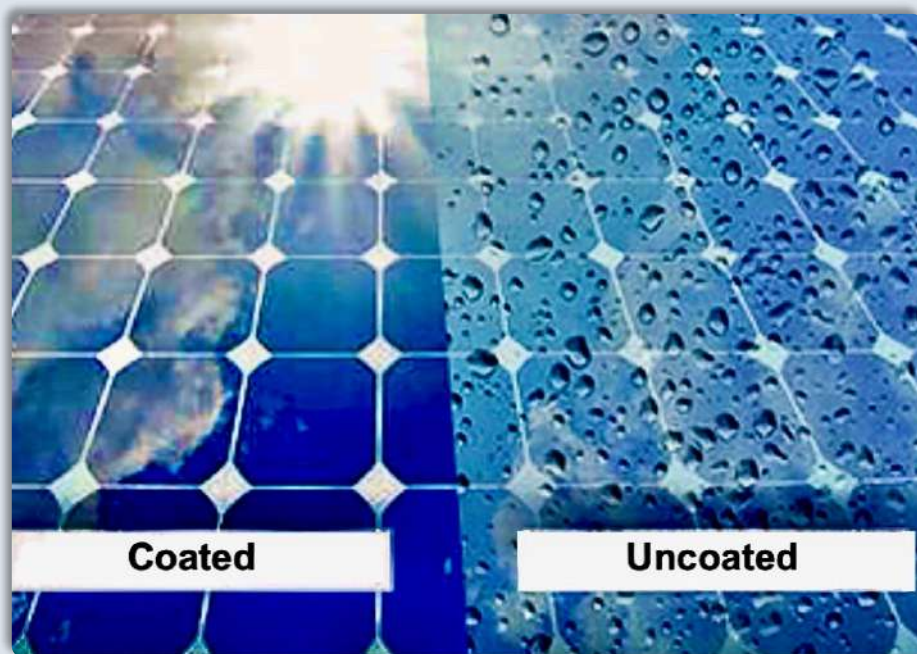
An AC10166® coating reduces reflected sunlight by up to 65% compared to an uncoated module.



An important aspect for coating solar panels is economic efficiency.



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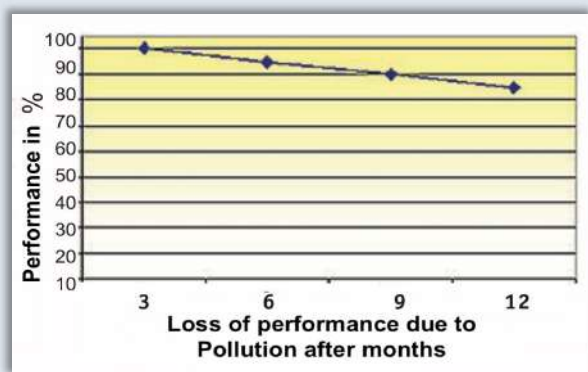
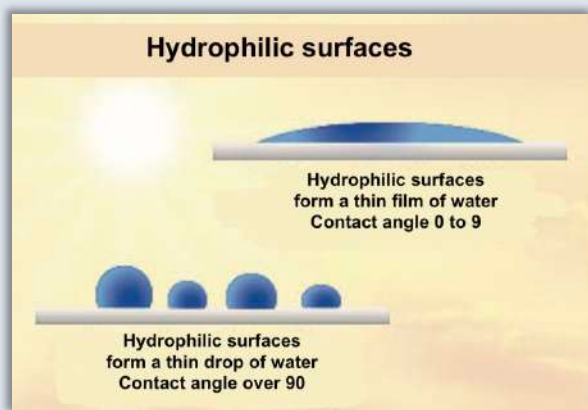
The photocatalytic self-cleaning prevents loss of performance due to soiling of the glass surface.

Allcera® products are photocatalytically active. When exposed to light, oxygen radicals form on their surface. The activated oxygen breaks down molecules and organic dirt particles that come into contact with the surface.

The substances broken down in this way are simply washed away by the rain. This effect is supported by the superhydrophilic property of a window coated with Allcera®, as rainwater can no longer form drops on the surface but runs off in a thin layer of water.



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The coating increases the service life of the modules by improving the scratch resistance and hardness of the glass.

With an average application thickness of approx. 100 nm, AC10166 is a solid surface protection. The coating develops a hardness of 7H and protects the glass surface with a guaranteed lifetime of 15 years. The application is carried out using the HVLP process. This can be done during industrial production as well as on the assembled module. In industrial production, the drying time can be accelerated by adding heat. AC10166 is water-based and completely harmless to humans and animals.

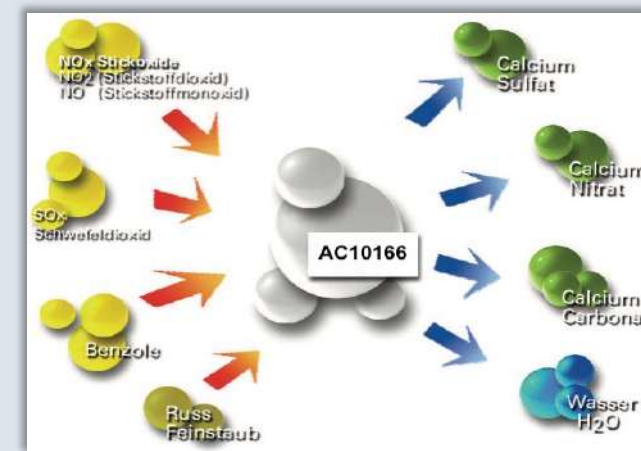


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Active environmental protection through avoidance of cleaning measures and air purification through the decomposition of pollutants and particulate matter.

The oxygen activated by Allcera® also effectively breaks down air pollutants such as nitrogen oxides (NO<sub>x</sub>) and organic particulate matter. Nitrogen oxides from car exhaust pollute the air in our inner cities. They cause respiratory problems and attack buildings. Allcera® converts the toxic nitrogen oxides into non-toxic nitrate, among other things.

In addition to the environmental aspect, avoiding cleaning measures naturally also significantly reduces maintenance costs





# The Economy:

By reducing reflections and the resulting improved light transmission, the electrical output of a coated module increases by up to 3% A system with an output of 100 Kw (peak) has an annual output of about 92,000 Kw /h in Germany

Coating with AC10166 also brings:  $3\text{kw} \times 920 \text{ sun hours} / \text{year} \times 15 \text{ years} = 41,400 \text{ Kw more power}$

The surface, which is always clean, prevents performance losses that, depending on the degree of soiling, can be as high as 15%. In our example, we assume an average surface contamination loss of about 5%. With a system output of 100 Kw (peak), these are:  $5\text{KW} \times 920 \text{ sun hours/year} \times 15 \text{ years} = 69,000 \text{ Kw more power}$

Fast charging stations with solar panels



Bus shelters with integrated solar panels



Floating solar panels SolOcean Vienna (Austria)



220 kWp PV-Anlage in Petrovija (Croatia)



4.8 MWp PV plant in Bobitz (Germany)







# Technical data :

Technical data: Product name: AC10166

Application area:

Glass surfaces Solar panels Properties:  
Self-cleaning coating with superhydrophilic properties, air purification.

Application:

Hvlp spray technology

Possible for private and industrial applications

Specification:

Water-based solution of.

<1% titanium dioxide and silicon dioxide

Appearance: Semi-transparent

Liquid Active material in solution: 1.6% PH  
value: 4.0 +/- 0.5 Crystal structure: Rutile

(tio<sub>2</sub>) Particle size: 8 - 20 nm

Consumption: 25 - 30ml / m<sup>2</sup>

Durability: 15 years





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Biobased Materials

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