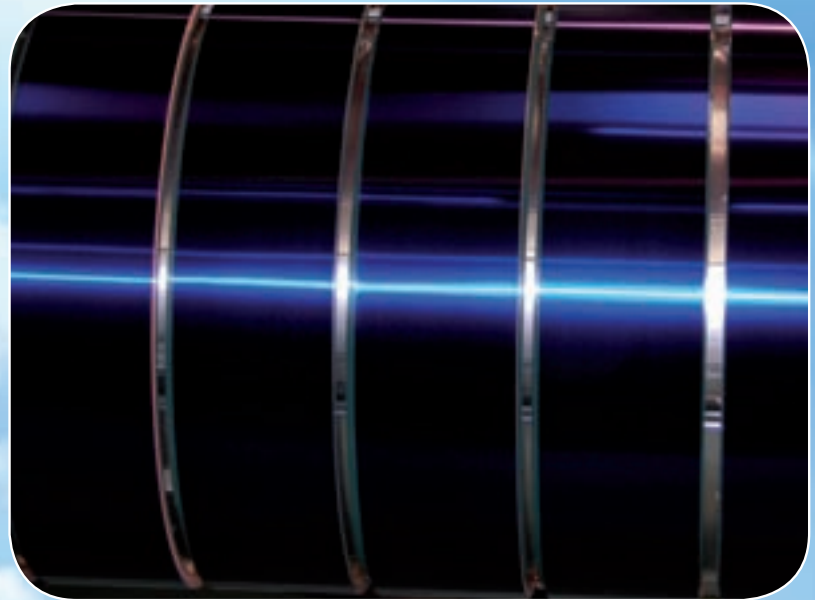




ArcelorMittal

SOLARCEO®



The Solar Selective Coating
by Arceo

Arceo

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Arceo

As a world leader in steel manufacturing, **ArcelorMittal** strives to stay at the forefront in coating processes.

With **R&D** centres that employ 1,300 people and have an annual budget of \$190 million, the group is continuously developing new products and **supporting its customers** by researching and developing new steel-based systems.

ARCEO, a subsidiary company of **ArcelorMittal**, is located in Liège (Belgium) and has an industrial production line totally dedicated to PVD (Physical Vapour Deposition) technology. The principle of PVD consists of accelerating ions under a vacuum and colliding them with a coating material. This removes atoms away from the material and deposits them evenly across the surface of the sheet to be coated.

This technology enables many different types of new development that can be applied to every market in which the ArcelorMittal Group is active: **energy management** (solar and lighting), automotive, construction, industry etc.



➔ Solarceo® product

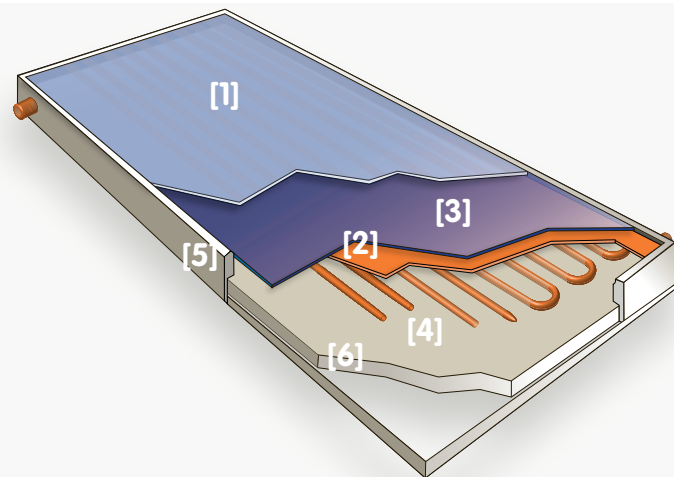
A thermal solar installation consists of one or more solar collectors, circuitry with pumps to transport the conducting fluid and a boiler.

Manufacturing a solar collector requires protective glass panels [1] in front of the solar absorber (metal substrate [2] with selective coating [3] to absorb solar energy and emit as little energy as possible) and copper tubes [4] welded on the back of the absorber. This system is fixed in an outer compartment [5] providing insulation [6] and rigidity to the solar panel.

Solar absorber production uses PVD technology. Selective coating is developed by choosing coating layers to maximize absorption of solar energy, while minimizing thermal emission (black body theory: any hot material emits radiation).

Solarceo® is available on 3 substrates: copper, aluminium and aluminium with protective back coat.

Solarceo® on steel can be provided on special request.

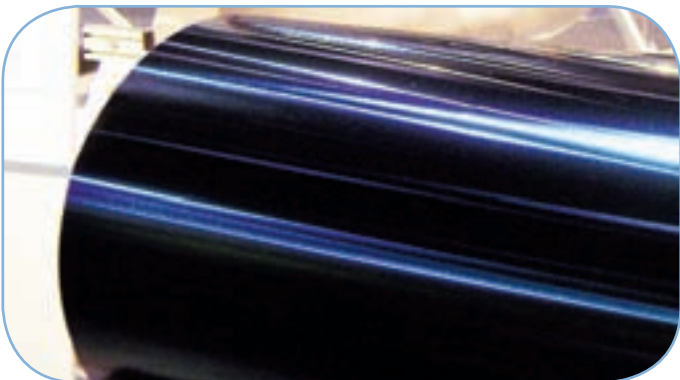


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Specifications

Product specifications	Solarceo on Cu	Solarceo on Al
Solar absorptance	$\alpha=95\% (\pm 2\%)$	$\alpha=95\% (\pm 2\%)$
Solar emittance	$\varepsilon=5\% (\pm 2\%)$	$\varepsilon=5\% (\pm 2\%)$
Certifications	Optical performances certified by Fraunhofer and SPF Long term stability: ISO/CD 1295.2 Task 10 test of the IEA	
Substrate	DHP-Cu (EN135PP & EN1652)	Al alloy AW 1080 A (EN 573-3)
Elastic limit	$R_p 0.2 \geq 180 \text{ Mpa}$ $R_p 0.2 \geq 26.11 \text{ ksi}$	$R_p 0.2 = 130 \text{ Mpa}$ $R_p 0.2 = 18.85 \text{ ksi}$
Tensile strength	$R_m = 240 - 300 \text{ Mpa}$ $R_m = 34.81 - 43.51 \text{ ksi}$	$R_m = 150 \text{ Mpa}$ $R_m = 21.76 \text{ ksi}$
Hardness	65 – 95 HV	Temper H19
Elongation	~ 8%	~ 2%
Thermal conductivity	350 W/mK 202 Btu/(ft h °F)	235 W/mK 136 Btu/(ft h °F)

Supply Specifications	Solarceo on Cu	Solarceo on Al
Standard width	700 - 1200 mm 27.56 - 47.24 in	700 - 1250 mm 27.56 - 49.21 in
Standard thickness	0.2 mm 0.008 in	0.3 / 0.4 / 0.5 / 0.6 mm 0.012 / 0.016 / 0.020 / 0.024 in
Delivery format	Coils, slit coils or sheets	
Temporary protection	Strippable film or paper interleave	
Standard packaging	Plastic or paper on wooden pallet	



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Transforming tomorrow



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