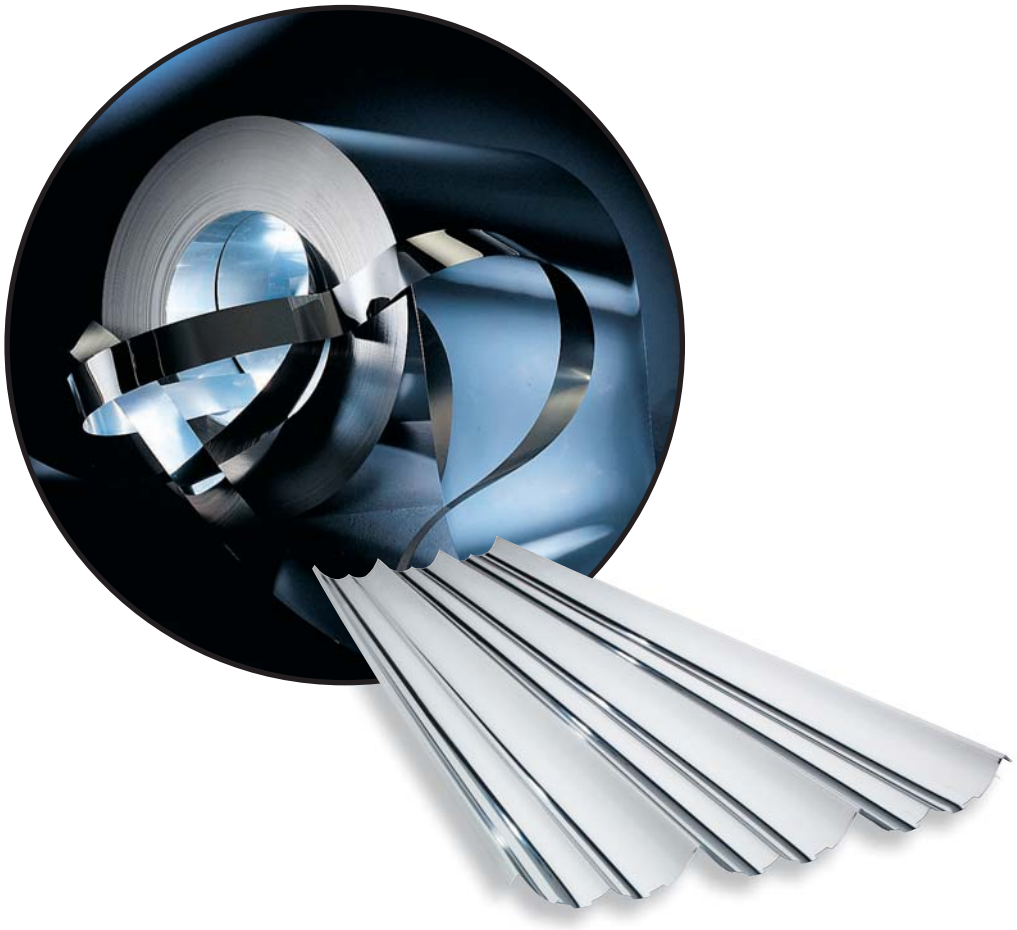


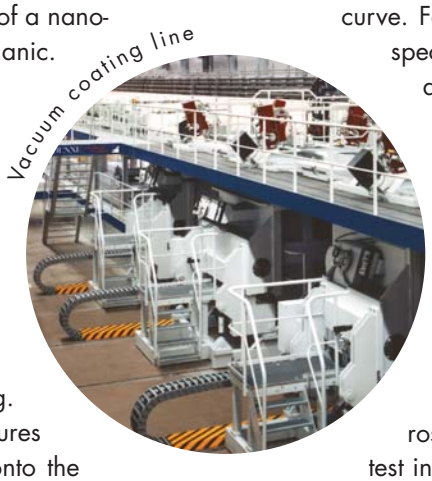
alanod

# MIRO-SUN

# MIRO-SUN®

## Weatherproof high reflective aluminium sheet

ALANOD MIRO® reflector materials for external applications have the product name - MIRO-SUN®. In addition to weather resistance these products also have a high total light reflectance and a high total solar reflection. The excellent corrosion resistance of MIRO-SUN® is due to application of a nano-composite-top-coating that is inorganic.




**Main applications**
for MIRO-SUN® are solar- and daylight applications.

It can be used for **CPC mirrors** (CPC = Compound Parabolic Concentrator) in vacuum tube collectors. In this application, it is typically processed by roll forming. The form of the CPC mirror ensures that all the sun light is directed onto the absorber tubes.

MIRO-SUN® is also intended for **parabolic solar reflectors or heliostats**. At the focal point of the mirror there is an absorber tube. In the tube flows a synthetic oil which is heated by the concentrated sun light reflected from the mirrors. Heat exchanger systems transfer the energy to steam, subsequently driving turbines and electric generators.

In addition MIRO-SUN® can be used to **direct light in daylight systems** in outdoor environments.

All standard MIRO-SUN® qualities are delivered with a protective layer also on the reverse side. The quality with the highest specular reflection is MIRO-SUN® back side lacquered and, on request, we can supply MIRO-SUN® without back side lacquered.

**MIRO-SUN® PV for Photovoltaic Applications**
While for general visible light applications, the spectral reflection needs to be centred around 550 nm, for photovoltaic (PV) applications the relative sensitivity of the cells is different to the photopic curve. For silicon based cells, the maximum spectral sensitivity is between 750 nm and 950 nm.
That is why we offer a PV matched product under the codes:
MIRO-SUN® PV back side lacquered and MIRO-SUN® PV (without back side lacquered).

**Corrosion tests and adhesion tests on MIRO-SUN®**
MIRO-SUN® has passed several corrosion tests at an external accredited test institute. These were for example:

- 1000 h acetic salt spray test (DIN 50 021)
- 672 h ΔT-Test (DIN 50 928, chapter 9.5)
- 24 h boiling test after GSB directive
- 500 h QUV-B test (DIN EN ISO 4892-3)

In addition to this ALANOD conducted several internal tests on MIRO-SUN® which are documented in a 19 page brochure. This document is available on request.

# MIRO-SUN®

## Weatherproof high reflective aluminium sheet

**Application:**

- Parabolic solar collectors/
  Secondary mirrior in Fresnel-Systems
- CPC-mirrors under tube-collectors
- Daylight utilisation systems/Venetian blinds

**Construction:**

Based on our MIRO®-product range which produces approx. 95% total light reflection we have developed MIRO-SUN® especially for outdoor-applications.

A continuous air-to-air PVD-process applies a super-reflective layer (MIRO®) to coil anodized material and afterwards (MIRO-SUN®) is protected by a Nano-Composite by a coil-coating process.

The back side can be supplied with different finishes.

**Sizes:**

| | |
|---|---|
| Production width: | up to 1250 mm |
| Material gauge: | 0.3 – 0.8 mm |

**Available in:**

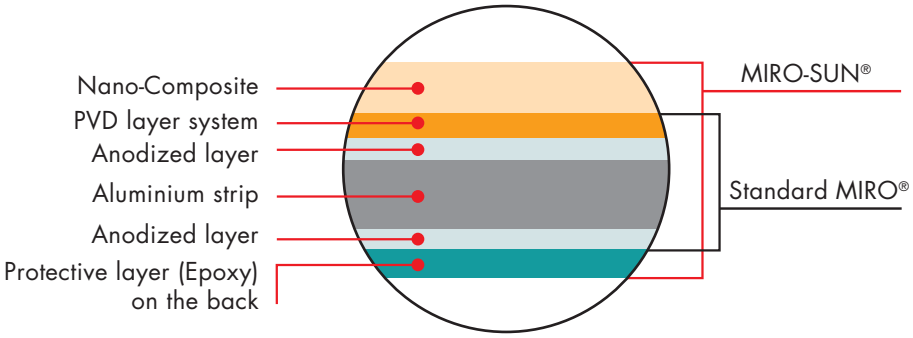
slit coil or sheets, with protective film

**Optical values (DIN 5036-1 and -3):**

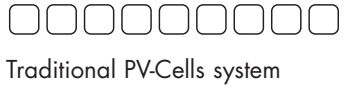
| | |
|---|---|
| Degree of total light-reflection (Rho) | > = 93% |
| Degree of solar reflection (AM 1.5) | > = 89% |

(spectral reflection-measurement see diagram)

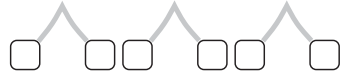
## MIRO-SUN® Layer System



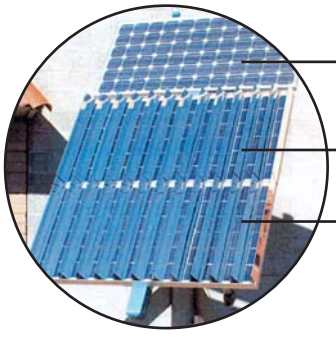

## PV-Modules with Reflectors made of MIRO-SUN® PV



Traditional PV-Cells system



System with MIRO-SUN® PV



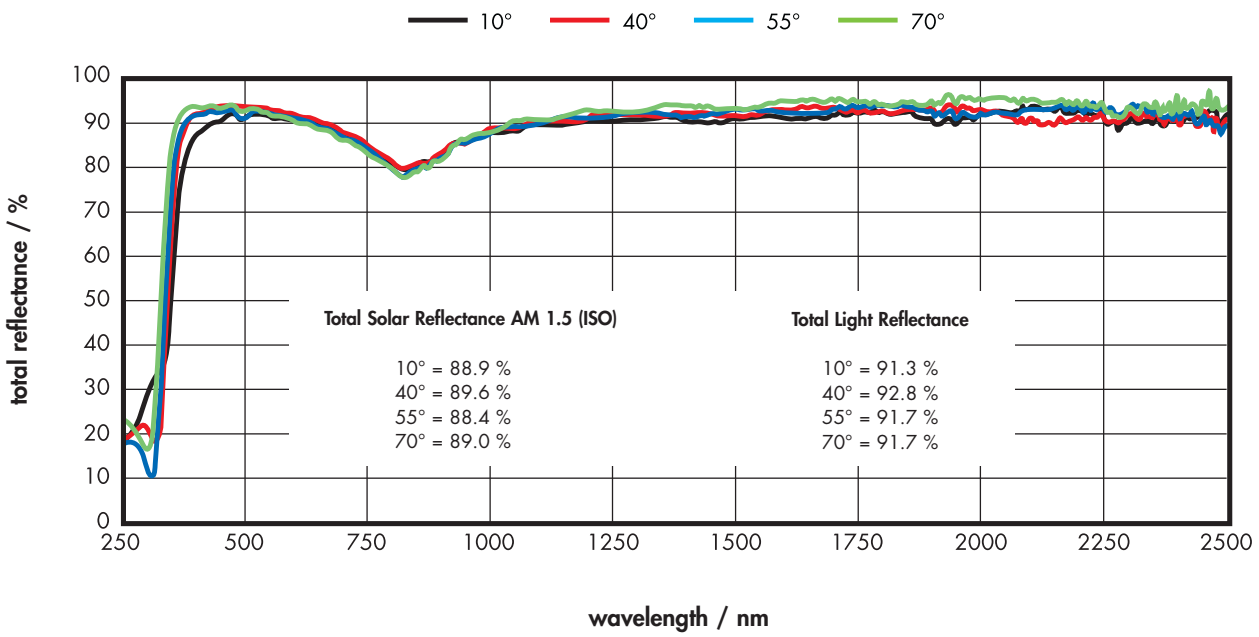
**no reflectors**

**72 cells/module = 170 W**

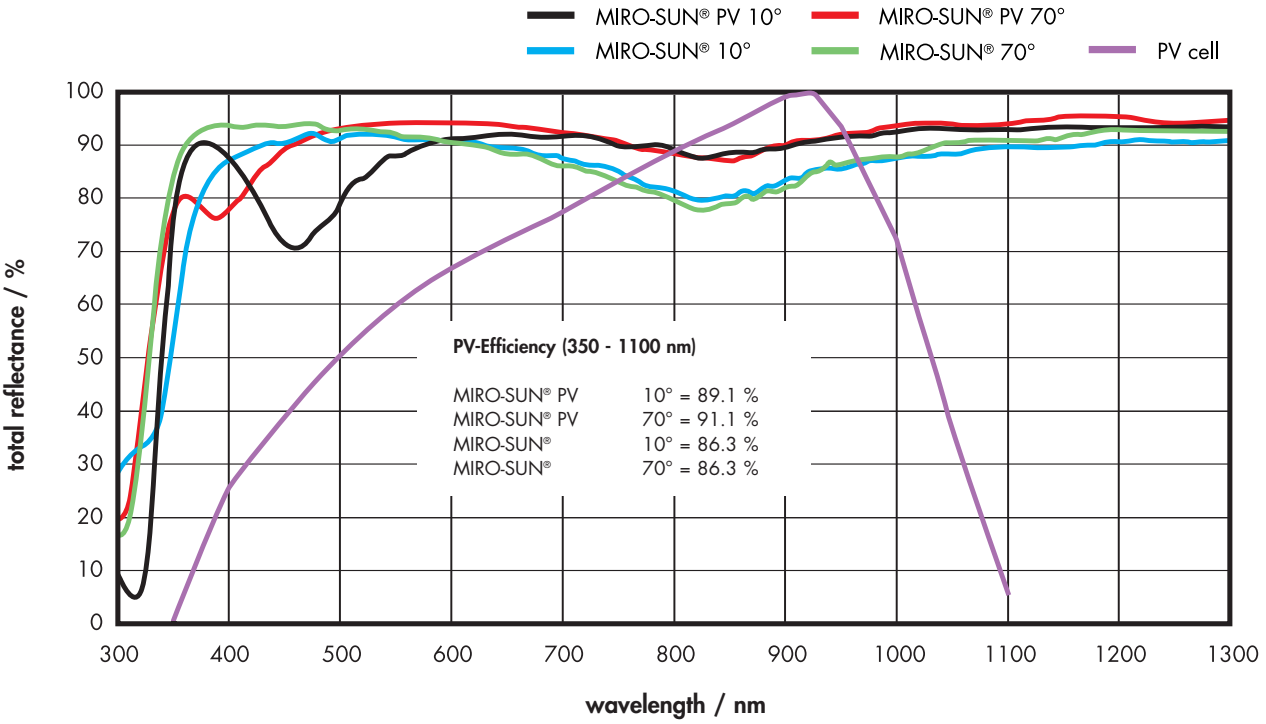
**with reflectors**

**2 modules with 48 cells each and reflectors made of MIRO-SUN® PV = 2 x170 W**

## Total spectral reflectance of MIRO-SUN® in the solar range



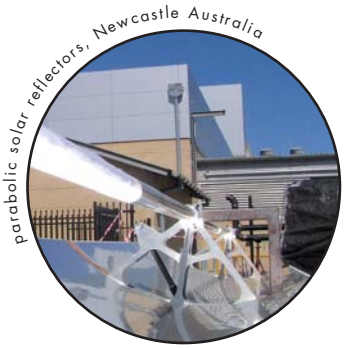

## Comparison of total spectral reflectance and PV-cell-efficiency with standard MIRO-SUN® and PV-matched MIRO-SUN® PV



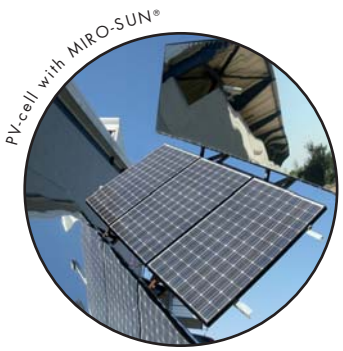
# MIRO-SUN®

## Weatherproof high reflective aluminium sheet

# MIRO-SUN® – Projects






Projects from:
EG Solar E.V., Altötting/Germany · Peter Leenders, Düsseldorf/Germany · New Energy Partners Pty Ltd, Gordon/Australia
Solitem GmbH Technologiezentrum, Aachen/Germany · WS Energia, Oeiras/ Portugal



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MIRO-SUN/E/02.08