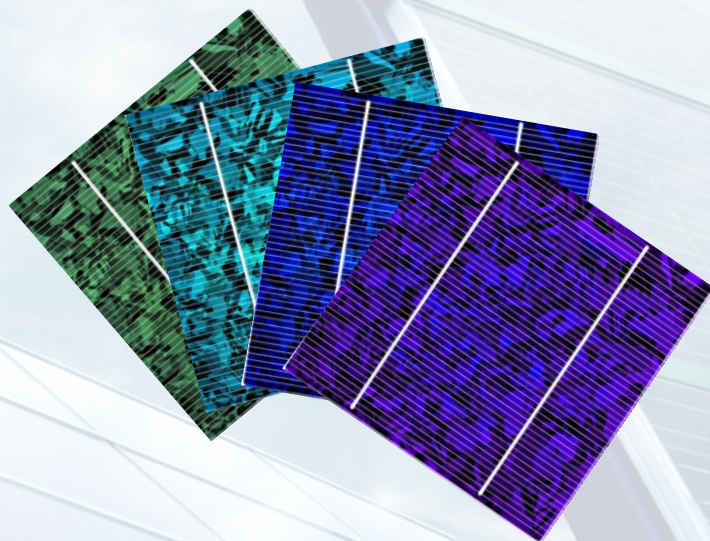


Photovoltaic cell measurements

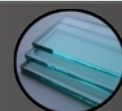
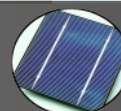
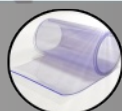
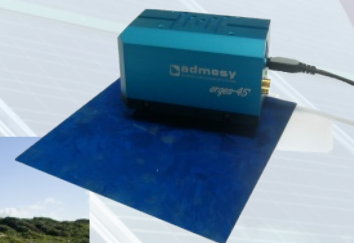
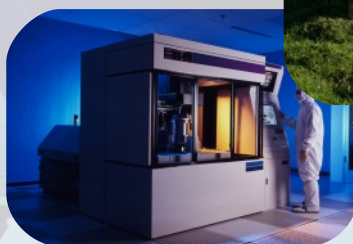
Control the thickness of the AR coating by colour

The Arges-45 reflective colorimeter is ideal for measuring the colour of your photovoltaic cell. The colour of the cell is directly related to the thickness of the Anti-Reflective coating. The thickness of the AR coating determines, among others, the efficiency of the cell. The Arges-45 is robust and easy to integrate in your production line and less expensive compared to an ellipsometer.

AR coating thickness (nm)	Colour
70	Brown
100	Dark violet
120	Royal blue
150	light blue
170	yellow green
200	yellow
.....	
.....	



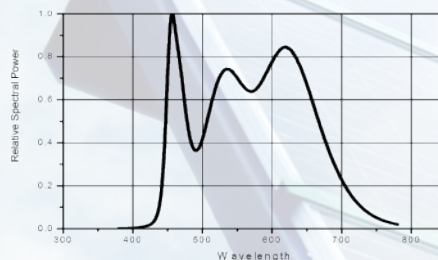
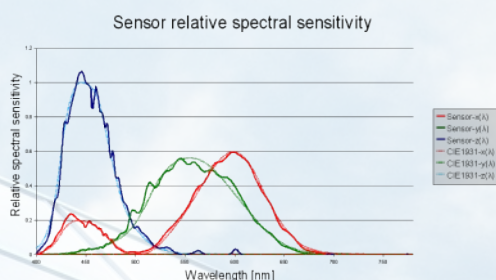
- 👁️ **AR coating thickness control by colour**
- 👁️ **Appearance control of the cell**
- 👁️ **High speed colour (CIE1931) measurements**
- 👁️ **In-line non contact measurement**
- 👁️ **Stable over time and temperature**
- 👁️ **Optical stabilised light source**
- 👁️ **Installation support**



Photovoltaic cell measurements

Arges-45 colorimeter

- Spectral response approximates CIE1931 CMF
- XYZ based interference filter
- High speed, up to 10.000 XYZ samples per second
- Colour spaces in CIELab, XYZ, Yxy, Yuv and Luv
- USB and RS232 connection
- Compact size, easy mounting
- White LED light output
- Self regulating light source



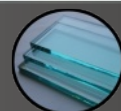
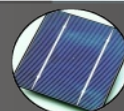
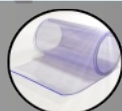
Getting started

1 Installation

- 👁️ Install the driver supplied on the USB stick
- 👁️ Connect the Arges-45 to your PC and let the PC automatically search for the driver
- 👁️ Install the Admesy colorimeter application supplied on the USB stick
- 👁️ Run the Admesy colorimeter application

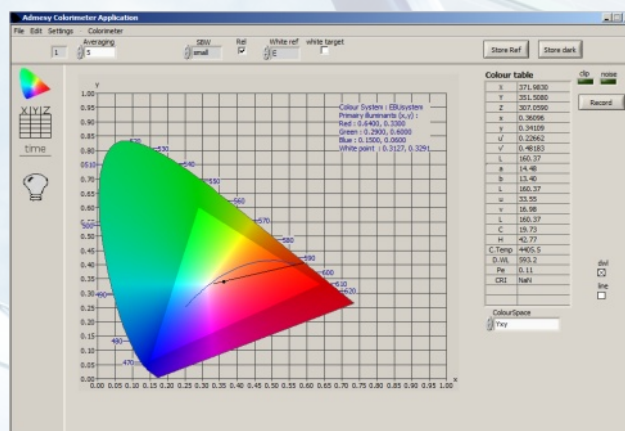
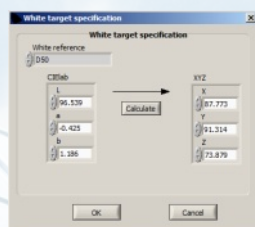
2 Admesy colorimeter application

- 👁️ Below settings you can find "set white target". With this setting you can input the value of your reference white tile
- 👁️ With "average" you can set the nr. of samples of which you will get the average, max 4000



Photovoltaic cell measurements

- With the "Colour Space" box you can select the displayed colour space (usually CIELab)
- With the "abs/rel" checkbox you can set the measurement mode to absolute or relative
- With the "White ref box" you can set the desired white reference (D65, D50.....).
- With the "white target" checkbox you can select whether the white reference value of your white target is used or not
- The colour table displays all colour space values



3

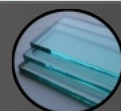
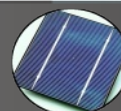
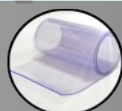
Starting your measurement

- Set the variables to the following: Average 2000, white ref to D50 or D65 (most common), colour space to CIELab. The "Store target" button will appear.
- Make your setup according situation **A**, put the white reference tile underneath the Arges45.
- Set the "abs/rel" checkbox to relative mode. The "Store ref" button will appear.
- Push the "Store ref" button, now you have set your white target for your setup.

A

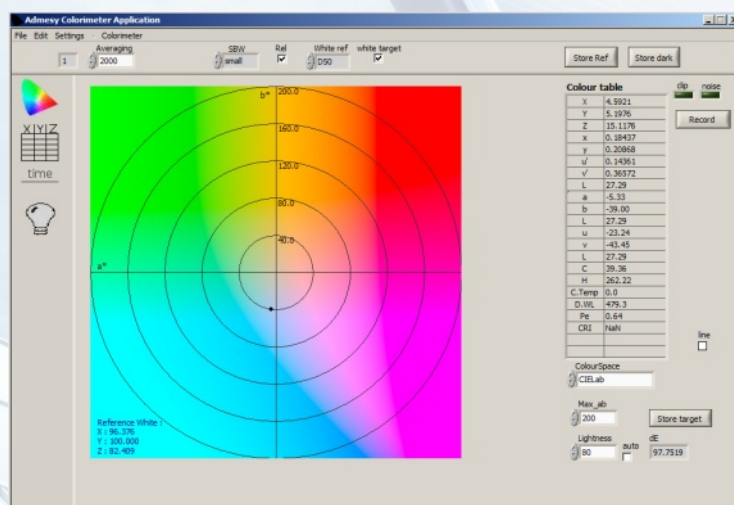


B



Photovoltaic cell measurements

- Make your setup according situation **B**, put the photovoltaic cell underneath the Arges-45
- In the colour table you will see the result. Most commonly used is the Lab value
- For comparison between 2 samples you can use the "Store target" button. Put your "master cell" below the Arges-45 and push "Store target", the dE will now show your delta E between new cells and the "master sample"



4 Results

- You can now measure the colour difference between different photovoltaic cells. This is an indicator for the Anti-Reflective coating thickness
- For data logging many options are possible which are not discussed in this document
- For more detailed technical support ask your local distributor.

