

1. What are the typical problems associated with CIGS and CdTe solar cells?

☒ Toxicity of materials

✓ **Correct**

That is correct

Cadmium is used in both types of solar cells.

☒ Scarcity of materials

✓ **Correct**

That is correct

Both CIGS (indium) and CdTe (tellurium) solar cells contain elements that are considered to be scarce.

☐ Energy payback times

2. Which element used in the CIGS solar cell can be considered a scarce element, that would limit the production capacity of the solar cell technology?

☐ Copper

☒ Indium

☐ Gallium

☐ Selenium

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That is correct

Indium is the 68th most [abundant material in the Earth's crust](#), with a production of just 655 tons in 2016.

3. Which factors makes thin film solar cells cheaper to manufacture in terms of energy consumption as compared to silicon solar cells?

Silicon solar panels only use one pane of glass.

✓ **Correct**

Thin film solar cells employ direct bandgap materials. This allows the use of much inner materials, which again allows for lower crystal quality to be used, since high carrier lifetimes are less important.

Thin film solar cells are typically made directly with the absorbing layers grown. This saves a lot of energy since there is no need to first produce wafers, that then needs further treatments.