

How much indium can be extracted from photovoltaic panels

What happens if a photovoltaic system delivers an indium supply?

The system delivers an indium supply (Figure 13 c) resulting in an installed photovoltaic collection capacity (Figure 13 d). Comparing the curves in Figure 13 b,d indicate what is going on: how the indium supply falls short of the indium demand by a huge amount. The demand for indium is satisfied until about 2024-2026.

How many photovoltaic technologies require indium?

Ten of these photovoltaic technologies require indium, five of them require gallium in addition to indium, three of them require antimony in addition to indium, one technology requires tellurium in addition to indium, three of them require selenium in addition to indium and six of them demand silver in addition to indium.

Will indium production lag behind demand for photovoltaic solar panels?

Boosting this could greatly alleviate supply pressures. Projections indicate that indium production will reach its peak between 2025 and 2030, while the peak for photovoltaic solar panels due to indium shortages is anticipated around 2090, with an installed capacity of 1200 GW. Thus, the growth of photovoltaic capacity may lag behind actual demand.

Does the indium price increase enough to increase photovoltaic capacity?

The indium price does increase enough to increase the indium recycling some, but yields limitations prevail. The result shows that the photovoltaic capacity demanded is far larger than what can be realized in reality. It appears to be not enough indium available.

What percentage of indium supply comes from extraction?

The part of supply that comes from extraction is about 83,000 tons. The difference between extraction and supply is estimated to come from recycling. Thus, predicted indium supply will be about 26% of the indium demand.

How does indium shortage affect the production of solar panels?

The physical indium shortage and the dependence on an unresponsive source metal extraction rate may have ramifications for the production of large volumes of solar panels for electricity generation.

You can extract about 500 grams of silver from a tonne of solar panels, but only 165 grams of silver from a tonne of ore, he says. "A photovoltaic panel at the end of its life still has a lot to ...

Nowadays, CdTe technology is the most popular thin-film solar panel technology and it is the preferred option by the top manufacturers of thin-film solar panels in the world. In ...

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Copper indium gallium selenide (CIGS) is a commercially available, thin-film photovoltaic (PV) technology (Kim et al., 2021), with efficiencies of 23.6 % at the cell and 19.2 % at the module ...

The copper indium gallium selenide (CIGS) panel represents an example of young technology that shows high energy efficiency, kept at extreme weather conditions. Its average lifetime is around 25 years, and a ...

Overall, 95% (2.4 g m⁻² CIGS) of the indium could be extracted to the D2EHPA phase. Simultaneously, by nanofiltration the consumption of D2EHPA was reduced by >60% due to ...

The increasing need for indium in photovoltaic technologies is set to exceed available supply. Current estimates suggest only 25% of global solar cell demand for indium can be met, posing ...

In this study, waste thin-film solar panels with an area of 400 cm² were cut from commercial CIGS thin-film solar energy panels (1234 ± 652 ± 35 mm). A typical commercial ...

A copper-indium-gallium-selenium (CIGS) solar panel (SL2-120) with double-sided glass was obtained from Hanergy Photovoltaic Technology Co., Ltd. The aluminum frame was removed, ...

Results show that liquid-crystal displays and photovoltaic panels will drive indium future demand, increasing its current demand by 2.2-4.2, 2.6-7.0, and 6.8-38.3 times for the 8.5, 14, and 60 TW scenarios, ...

This is the newest type of solar panel. It stands as the most versatile of the three types because of its unique flexibility and process -- instead of only relying on silicon, thin-film solar panels can ...

When Tao published a review paper on solar-panel recycling in June 2020, he calculated that the value of raw materials that could be extracted from a used panel would be around \$10. By June 2021 ...

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