



## LOW CARBON + TRACEABLE

### Verified solar supply chain solution

JA Solar plays a leading role in supply chain management with our Integrated Traceability System (ITS) modules as a fully integrated Ingot to Module Solar provider.

To play the central role in the global energy transition **ITS LOW CARBON** solar panels have 40% less embedded carbon compared to standard modules with third party verification in accordance with ISO 14067.

Possible through advanced low carbon solutions and rigorous supply chain management.

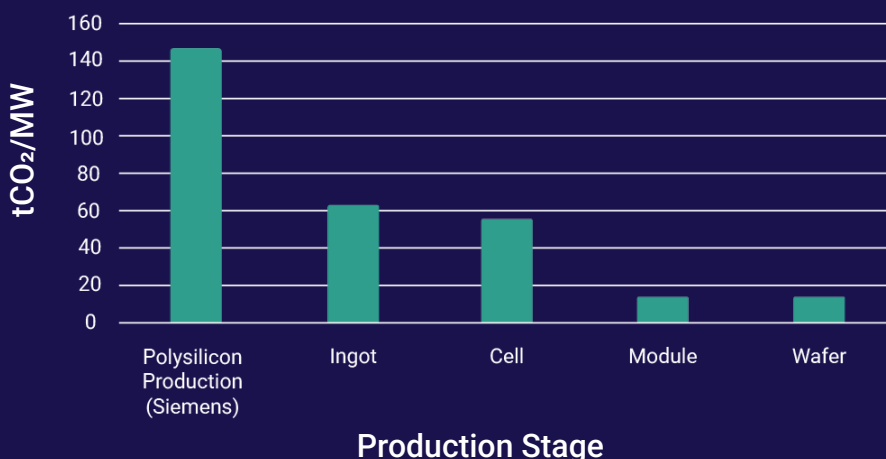
“Clients are concerned we are doing our best to address the carbon embedded in the panels”

## JA SOLAR ITS LC - FEATURES

- 50% FBR (Fluidised Bed Reactor) Polysilicon
- 50% Ingot recycling
- Life Cycle Analysis module and cell and ingot
- Tracked and documented with a 3rd party verified ISO report



### Solar Supply Chain CO<sub>2</sub> Emissions By Production Process



### About FBR Polysilicon

The manufacture of Polysilicon is the most carbon intensive stage of solar manufacturing. By using FBR (fluidised bed reactor) rather than the traditional Siemens method polysilicon, energy consumption is reduced up to 80% due to lower operating temperatures and continuous production capacity.

# THE ISO CARBON FOOTPRINT ASSESSMENT

The amount of embedded carbon in the final module is reduced by more than 1/3rd - and by using recycled Ingot the overall cradle to gate carbon is up to 40% less.

These figures are verified in a third party (Kapstan) report:

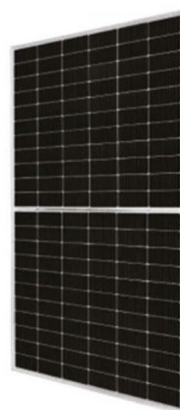
## Product Carbon Footprint Assessment

### ISO 14067

Mono-crystalline modules JAM54D40LB and JAM54D41LB by JA Solar



N-Type Bifacial Double Glass  
High Efficiency Mono Module  
435 Wp ~ 460 Wp  
JAM54D40LB and JAM54D41LB



### RESULTS

Total GHG emissions of the module:

For the scope cradle to gate (in kgCO<sub>2</sub>/kWp):

	435W	435W	435W	435W	435W	435W
Chinese Default	626.8	619.7	612.7	605.9	599.3	592.8
JA Solar Standard	461.5	456.3	451.1	446.1	441.2	436.4
JA Solar Low Carbon	378.0	373.7	369.5	365.4	361.3	357.4

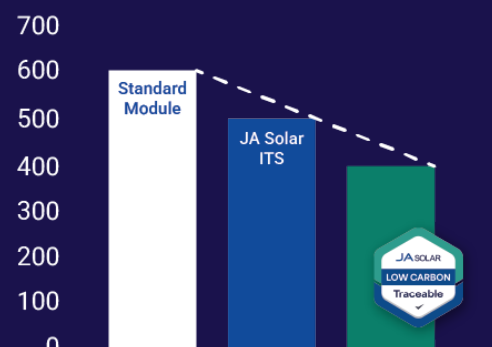
LCA practitioner(s)	Practitioner: Laurène MEJEAN Kapstan - 1790 Chem. de Saint-André 69760 Limonest, France contact@kapstan.fr
LCA reviewer(s)	Reviewer: James Yang - SGS LCA engineer SGS-GSTC Standards Technical Services Co., Ltd. 4/F, Building 1, GCL Plaza, No.99 Si'an Street, Suzhou Industrial Park, Suzhou, China ee.shanghai@sgs.com
Software & database	Simapro 9.6.0.1 Ecoinvent v3.10 for secondary data modelling National electricity mix was used for production in all LCAS
Impact assessment method	IPCC02021 GWP100a v1.0
Study compliance	ISO14040/44:2006 ISO14067:2018



Look out for this label on all low carbon ITS modules:

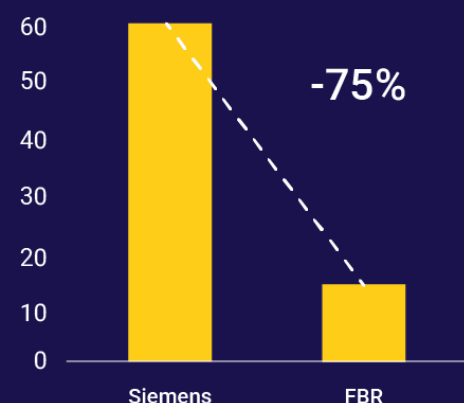
<p>晶澳 Crystal Silicon Photovoltaic Modules</p> <p>WARNING: This unit produces electricity exposed to light. Cables and conductive parts should not be connected to a circuit. Do not disconnect under load. No disconnection on charge.</p> <p>All electrical data at standard test condition: AM1.5 G 1000W/m² T=25°C</p> <p>Made in China</p>	<p>TYPE JAM54D41-450LB</p> <p>Peak power(P<sub>max</sub>) 450W</p> <p>Open circuit voltage (V<sub>oc</sub>) 40.30V</p> <p>Max. power voltage (V<sub>mp</sub>) 32.99V</p> <p>Short circuit current (I<sub>sc</sub>) 14.81A</p> <p>Max. power current (I<sub>mp</sub>) 13.54A</p> <p>Power Selection 0~5W</p>	<p>IEC 61215-1/-1-1/-2: 2016 and IEC 61730-1/-2: 2016</p> <p>Maximum overcurrent protection rating 20A</p> <p>Safety class based on IEC 61140 Class II</p> <p>Maximum system voltage 1500V</p> <p>Power production tolerance ±3%</p> <p>Open circuit voltage tolerance ±3%</p> <p>Short circuit current tolerance ±5%</p>	<p>UK CA CE</p> <p>Shanghai JA Solar Technology Co., Ltd. No.118, Lane 3111, West Huanchang Road, Fangshan District, 201401 Shanghai, P.R.China</p> <p>Current Class-H ITS LC 1234</p> <p>23C0106210000005</p>
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How does JA Solar compare to the carbon footprint of other modules?

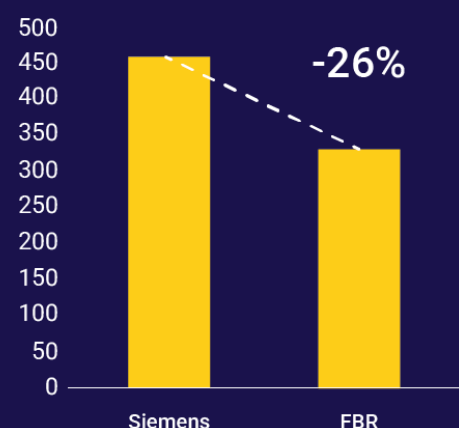


## Polysilicon Production Stats

### Electricity consumption



### CO<sub>2</sub> emissions



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