INSTRUCTION No. 08/2018 -Customs

F. No. 528/90/2016-STO (TU)

Government of India
Ministry of Finance
Department of Revenue
(Central Board of Indirect Taxes and Customs)
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North Block, New Delhi
Dated:06.04.2018

To,

All Principal Chief Commissioner of Customs/ Principal Chief Commissioner of Customs & Central Excise/ Principal Director General,
All Chief Commissioner of Customs/ All Chief Commissioner of Customs & Central Excise/ Director General,
All Principal Commissioner of Customs/Customs (Preventive),
All Commissioner of Customs/ Customs (Preventive).

Madam/Sir,

Subject: clarification regarding classification of Solar Panel/Module equipped with Elements - regarding.

Attention is invited to the Board's Letter dated 22.09.2016 (copy enclosed) on the classification of solar modules, wherein, it was clarified that:

a) If the solar panel/module is equipped with elements and these elements supply the power to an external load i.e. a motor, an electrolyser etc., then the solar panel/module is classifiable under CTH 8501.

b) However, if the solar panel/module is equipped with elements but these elements do not supply the power to an external load i.e. a motor, an electrolyser etc., then the solar panel/module is classifiable under CTH 8541.

c) Solar panel/module without element is classifiable under CTH 8541.

2. In this regard, Board has further received representations from the trade regarding classification of solar modules/panels equipped with bypass diodes. The trade is of the view that the function of the bypass diodes in the module is to protect the solar modules/panels at the time of shading of solar cells and not to control the direction of the current. Therefore, in their opinion, solar modules equipped with bypass diode merits classification under Heading 8541.

3. The issue has been examined by the Board with reference to the decisions of World Customs Organizations in the matter and in this regard it is stated that the most common function of a diode is to allow an electric current to pass in one direction (in forward biasing), while blocking it in the opposite direction (in reverse biasing). Depending on its position in the solar module/panel, it is referred as bypass diode or blocking diode.

Bypass diodes: These are commonly connected in parallel across pairs of solar cells or linear interconnected strands of cells, and prevent damage to solar cells when one or more cells receive much lower solar radiation than the rest of the array (as when the suns rays are temporarily blocked by a tree limb or other article producing shade). Under normal conditions with no shading, every cell on the module will generate power and the bypass diode will be inactive as it will remain in reverse bias position. However, if part of the module becomes shaded (e.g. by a leaf or an object), the shaded cells will cease to generate power and will consume the energy produced by the active cells. As a result, the shaded cells would overheat and deteriorate. Bypass diode, therefore, protects the shaded cells from overheating, damage by diverting the electrical current around strings with shaded cells and through an external circuit. When part of the module becomes shaded, the bypass diode wired in parallel to the string with shaded cells will conduct current. As a result, the current will flow through the bypass diode and around the shaded string. Therefore, solar modules/panels equipped with such diodes would not meet the terms of the exclusion of the Explanatory Note to heading 85.41 and merits classification under CTH 8541.

Blocking Diode: On the other hand, blocking diodes are usually attached in a series to the final output of the solar panel or module, and control the aggregate output (for example, preventing a reverse power flow from a connected electric accumulator). Therefore, the function of blocking diodes is to prevent a reverse power flow from connected devices. Since the blocking diode blocks the current in the opposite direction, which can be considered as a control of the direction of the current as mentioned in the Explanatory Note to heading 85.01, therefore, solar modules/panels equipped with blocking diode merits classification under CTH 8501.

4. In view of above, it is clarified that:

a. the solar panels or modules equipped with bypass diodes are classifiable in heading 8541.
b. the solar panels or modules equipped with blocking diodes are classifiable in heading 8501.
c. the solar panels or modules equipped with blocking diodes and bypass diodes are classifiable in heading 8501.

5. Difficulty faced, if any, may be brought to notice of the Board.

Yours faithfully

(Piyush Bhardwaj)
STO (TU)