

	<b>Gautam Solar Private Limited</b>	Document No.	GSPL/IQC/WI/001
	Document Title: Quality(IQC)	Issue No.	01-12-2024
	Type of Document: WI For Gel Content Test of EVA	Rev. No./Date	00
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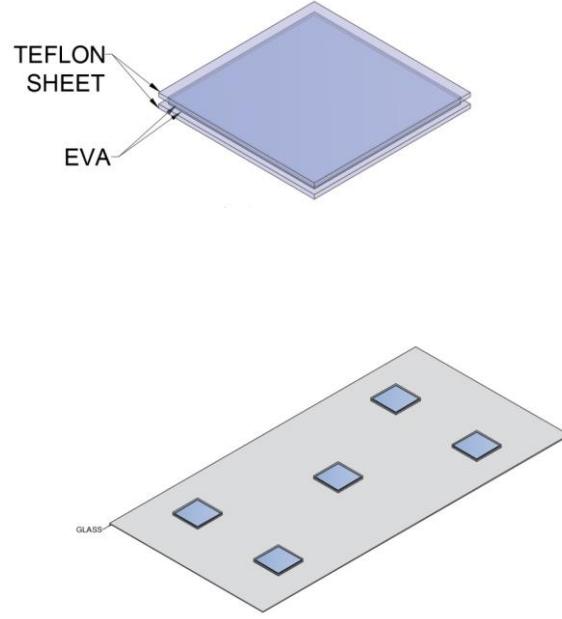
1. **Purpose:** To Establish Work Instruction for Gel Content Test.
2. **Scope:** For all Types of Encapsulant material
3. **Authority and Responsibility:** IQC and IPQC Engineer
4. **Procedure:** As below

**NOTE:**

**Rules for Operating Personnel**

1. Never use a machine if you are not trained or not Familiar with it.
2. Never Remove Shield or Machine Guard.
3. Wear Proper PPE as Per Requirement.
4. Check the Safety device on a regular, periodic basis to confirm correct operation
5. Always maintain a safe distance when the machine is under operation.
6. Never try to climb or extent your hand over safety device, Equipment and Guards.

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Work Instructions (Steps)	Pictures	Check Points
<p>1) Cut 10 square pieces of EVA of size 15cm x 15cm.Put them inside two teflon sheets of dimension 25 cm x 25cm respectively.</p> <p>2) Arrange the samples on the Glass as shown in the figure</p>		<ul style="list-style-type: none"> <li>Always wear personal protective equipment while performing the test</li> <li>Wear Hand Gloves and Mask</li> </ul>

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3) Weight empty filter papers for each sample (W1) (Fig.1).



Fig.1



Fig.2

4) Cut cured sample EVA into small pieces.(Discard 2mm border of the cured samples) weight so as to make 1g of each sample(W2) (Fig.2) .

5) Wrap the Samples (1 g cure eva) inside Filter Papers (Fig.3).

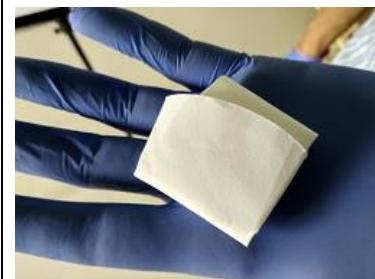


Fig.3



Fig.4

**6) If Heating Oven is used,**

Put the samples in beakers with 100 ml Toluene/Xylene (Fig.4).

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Place the beakers inside Heating oven at 60°C for 20 hours (Fig.5.1, Fig.5.2).

**7) If Soxhlet Apparatus is used,**

Fill the round bottom flask with 250 ml of Toluene / Xylene. Put the sample in the extractor and heat the Toluene / Xylene at 100°C for 8 hours.

8) Now put that sample into oven for drying at 105°C for 4 hours (Fig.7).

9) After 4 hours of drying, weigh that sample (W3) (Fig.8).

10) Gel content (Gel fraction) is calculated as follows:

$$\% \text{ Gel Content} = \frac{(W3 - W1)}{W2} \times 100$$

Where,

W1 = Weight of empty filter paper

W2 = Weight of initial sample EVA



Fig.5.1



Fig.5.2

- Always wear personal protective equipment while performing the test

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W3 = Weight of residual specimen.

**Acceptance Criteria:**

Gel Content must be between  
75 % to 95 %



Fig.6



Fig.7



Fig.8

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#### General safe work warning symbols:

	Machine Grounding
	Danger High Voltage and No Touching
 Danger	In an Urgent situation and if not avoided, it will result in serious casualties.
 Warning	Potential urgent situation, and if not avoided, it will result in serious casualties.
 Warning	Potential situation if not avoided, it will result in Minor injuries or property loss.

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