

1. What is meant by energy pay back time of a solar cell?

- ☒ The time the solar cell needs to be operated in order to pay back the energy used for its production
- ☐ The number of times the solar cell pays back the energy used in its production
- ☐ The total time of energy production expected for a given solar cell

✓ **Correct**

That is correct

Silicon solar cells have a relatively long energy payback time, since they require a lot of energy during their production.

2. Which types of silicon are suitable for solar cell production?

- ☐ Metallurgical grade silicon
- ☐ Polycrystalline silicon
- ☒ Multicrystalline silicon

✓ **Correct**

That is correct

Multicrystalline silicon is commonly used for solar cell production

- ☒ Monocrystalline silicon

✓ **Correct**

That is correct

Monocrystalline silicon is commonly used for solar cell production

3. What is the main difference between multicrystalline and monocrystalline silicon solar cells?

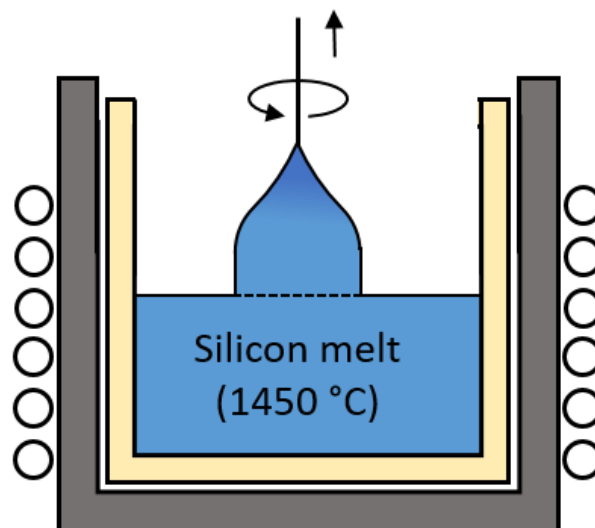
Mono crystalline solar cells are more efficient because they are cut from a single source of a silicon. Multi crystalline solar cells are blended from multiple silicon sources and are slightly less efficient.

✓ **Correct**

Monocrystalline silicon is made in a process that allows a perfect single crystal to be grown. Therefore in monocrystalline silicon there are now grain boundaries and therefore no recombination losses at grain boundaries.

In the case of multicrystalline silicon the production starts with polysilicon melted in a crucible. At the bottom monocrystals forms, when the crucible is cooled. Column growth is insured by cooling the crucible from the bottom. Between the columns there will be boundaries where recombination can take place.

4. Which silicon production method is depicted?



- ☒ Czochralski
- ☐ Column growth
- ☐ Float zone

✓ **Correct**

That is correct

In the Czochralski method a seed crystal is dipped into a bath of molten polysilicon and then while the seed crystal is withdrawn, a crystal grows and eventually forms a full rod of monocrystalline silicon.

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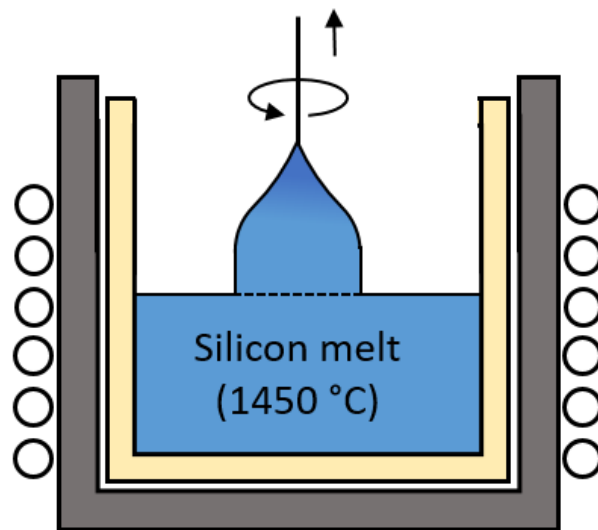
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