



## **READ THESE INSTRUCTIONS CAREFULLY BEFORE HANDLING THE RECEIVER TUBES WITHIN THIS PACKAGING**

You have acquired high quality receiver tubes. Although these are industrial products, they should be handled with care. The efficiency and durability of the solar collector you will build with it, depend from your right handling. We advise you to read carefully following guidelines for correct manipulation on the moment you receive the tubes till the final servicing of the parabolic trough collector system.

- Selective coated receiver tubes from Energie Solaire S.A. are produced with great care. They are rinsed and dried after processing them in the galvanic plating line. Once dry, they are each packed in a separate plastic protective PE sleeve. This way Energie Solaire S.A. assures that the tubes are delivered in perfectly clean conditions and are not exposed to any damaging substances until their delivery at the customer.
- Do not leave the packaging with the tubes outside, exposed to outdoor weather conditions. Exposure to sun or rain can cause irreversible damage to the receiver tubes.
- Once the packaging is opened the tubes should not be left exposed to sunshine or high temperatures within the plastic protective sleeve. Since the receiver tubes have a highly performing selective coating, they heat up quickly. In case of exposure the protective plastic sleeve will most probably melt on the tube and damage the coating.
- Once out of their protective sleeve, do only manipulate the tubes with perfectly clean soft non abrasive textile gloves. Sweat or fat of naked hands sticks on the coating and causes rapid alteration of the tube surface once exposed at high temperature.
- The surface area of the tubes should be left perfectly clean before mounting them into the protective cylindrical glass tubes.
- Energie Solaire S.A. selective coated tubes are delivered in perfectly clean condition. However, should cleaning or rinsing be necessary, due to soldering operations you have to perform, or no careful handling of the tube, it is only allowed to do this using demineralised water free of chlorides or ethanol and clean soft with non abrasive textile.
- If the tubes are soldered together, take particular care to clean the soldering area. No chemical substances should be left on the tube.
- Do not rinse the tubes with tap water or any other type of cleaning fluids. Tap water for instance might contain chlorides or other organic material, which, when exposed to high temperature, can cause corrosion of the tube and damage to the selective coating.
- When assembling several receiver tubes, take particular care to align them perfectly.

- During operation receiver tubes are daily subject to strong dilatation due to high temperature fluctuations. Therefore you should care for a collector design allowing free dilatation of the tubes.
- The supports should guide the receiver tubes in a proper way. Take care to calculate the appropriate distance between guiding supports. Too high distances will allow excessive tube bending due to its proper weight, eventually leading to a non coaxial set-up with the glass tube. On demand Energie Solaire S.A. can supply tube bending information due to proper weight. Note also the straightness tolerance of the tube in the Energie Solaire S.A. technical specification sheet.
- Misalignment of the tube supports can cause permanent deformation of the receiver tubes especially under high temperature fluctuation, which will be enhanced due to the dilatation phenomena.
- The selective coating on the receiver tubes stands temperatures up to 300°C. If exposed to higher temperatures, the coating optical properties will deteriorate and irreversible damage will be caused. Stagnation temperatures in parabolic trough collectors can rise up to 600°C under solar radiation. Thus, a “bump proof” mechanism should be implemented on the parabolic trough collector, that avoids any possible stagnation situation under sunshine radiation, even in case of a failure of the collector operation.
- The selective coating of the receiver tubes is extremely resistant and resists to temperatures up to 300°C even without vacuum, also at atmospheric pressure. A unique feature indeed! However, it is strongly advised not to leave it exposed directly to outside air. The cylindrical glass cover will protect it from aggressive outdoor weather conditions. In the case a glass cover is broken and does not protect the coating properly, it should be replaced immediately.
- The delivered tubes are made of 1.4301, 1.4307 or 1.4404 stainless steel. Do take particular care in using a heat carrying fluid, which does not cause any corrosion hazard to the tube.
- After servicing the parabolic trough collector system, control it on a regular base, in order to be able to detect possible malfunctioning as early as possible. A regular control is the best guarantee for a long installation life time.

Energie Solaire SA is not liable for any damages on supplied receiver tubes, in case the customer does not follow the above described recommendations and instructions. Please read also the Energie Solaire SA sales conditions regarding the product guarantee conditions (you can download them at [www.energie-solaire.com](http://www.energie-solaire.com)).