

## ELECTROSCOPE - gold leaf

**Cat: EM1811-001 gold leaf type in shielded metal housing**

### DESCRIPTION:

The Gold Leaf Electroscope is an old style and has been replaced by the more robust Metal Vane type (EM1810-001). A very thin leaf of gold is bonded to a vertical metal strip and, when an electrostatic charge is deposited on the plate, the leaf deflects away from the metal strip.

During transport, it is difficult to guarantee that the gold leaf will not break from the strip inside the electroscope. For this reason, 3x strips of gold leaf are supplied separate and the user must fit the gold leaf to the strip.

### **EM1811-001 (gold leaf)**



**Note the graduations**



**Physical size: 95x58x106mm LxWxH**

**Weight: 0.19 kg**

The whole electroscope is housed in a metal (shielded) case with an earthing socket to prevent electrostatic charge from appearing on the case and perhaps causing errors in measurement.

The housing contains glass viewing panels front and rear with one panel removable. The panels are to prevent tampering with the vane and also to prevent air currents from causing errors in readings. The removable panel permits the insertion of Radioactive Sources and other devices into the case as required for some experiments.



**NOTE:** To prevent the removable glass panel from easily falling out of the housing, the edge of the glass catches on the slot in the top plastic moulding. To remove the glass panel, it must be first centralised before sliding it through the slot in the moulding.

The vane moves close to a small scale with a projection at each 10° interval. This is used to compare the vane deflections and thus to compare electrostatic charges. The instrument is otherwise used the same as a normal gold leaf electroscope.

**NOTE:** For an electroscope to perform properly it must be:

- **CLEAN:** Free of all dirt and dust both inside and out.
- **DRY:** Free of all moisture. If the housing is moist, the charge will leak away and will not remain on the vane assembly.
- **SENSITIVE:** If the gold leaf is buckled or torn the electroscope will lose sensitivity and perhaps will not deflect at all.

### **Fitting the Gold Leaf:**

Because of the very fragile nature of gold leaf and because of the breakage problems during transport, the gold leaf is supplied separately and it is necessary for the customer to fit the gold leaf to the Electroscope. There are 3 leaves supplied with each electroscope to allow for mishaps.

**Caution: The strip of gold leaf is very delicate and fragile.**

- If touched with the fingers, it will probably adhere and be destroyed.
- Do not breath directly on the strip or it may blow away or wrinkle and become most difficult to handle.

### **The technique for fitting the gold leaf:**

- Remove the glass side panel and lay the electroscope on a table so that the face of the metal bracket which faces towards the plastic quadrant is upwards. The face of the metal bracket must be clean and smooth. Be sure it is not sticky. Wipe with methylated spirits to clean it if necessary.
- Using a small pin and working through the opening, lay a narrow (1 mm or less) track of normal office glue across the aluminium support bracket at position 38mm down from the plastic top plate. Be sure the glue line is straight and square across the bracket. A line is sometimes marked on the bracket to indicate the glue line. This glue line is the line on which the gold leaf will hinge and it should be level with the upper tip of the plastic quadrant.
- Very slowly and carefully take the gold leaf and remove the upper paper covering. This will expose the piece of gold leaf supported on the lower paper only. Handle only the paper support, do not attempt to touch the gold leaf with the fingers or the gold leaf will probably be destroyed.
- Using the removed paper piece, very gently and gradually move the gold leaf along so that the end of the gold leaf strip overhangs the paper support by about 3mm.
- Carefully line up the gold leaf parallel to and on the centre line of the bracket and lower gently so that the over-hung piece of gold leaf lays across the glue line. Upon touching the glue line the gold leaf will immediately adhere.



- Being careful not to tear the gold leaf, slowly withdraw the support paper from the glue line so that the gold leaf is gently dragged from the paper support to lay flat on the face of the metal bracket. When the housing is stood upright and tilted to one side, the gold leaf should be seen to hinge at the glue line and pivot in an arc so that the tip of the gold leaf strip points towards the 'pips' on the plastic quadrant.
- Remember there are 3 leaves provided with each electroscope to provide the user with 3 attempts. After fitment, if there are leaves remaining, keep them in a safe place to allow for a future repair.

**Designed and manufactured in Australia**