

BATTERY REPLACEMENT

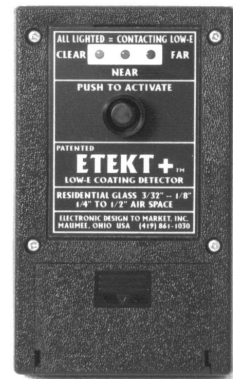
The TS1300 is powered by 4 AA alkaline batteries. If the lamp stops operating or becomes dim, replace the batteries. Alkaline batteries will offer the longest life. Before replacing the batteries, be sure to turn the power off. To access the batteries, remove the battery cover on the end of the enclosure by pressing the thumb in the center of the battery cover and sliding the removable door over and off. Replace the batteries and install the cover. Be sure to install the batteries correctly (polarity +/-). A polarity sticker is included inside the battery compartment. Installing the batteries backwards may cause permanent damage to the lamp and will not be covered by the product warranty. If the unit is going to be stored for more than a month, we recommend removing the batteries during storage.

WARRANTY

The manufacturer warrants all models of the TS1300 to be free from defects in material and workmanship under normal use and service as specified within the operator's manual. The manufacturer shall repair or replace the unit within ninety (90) days from the original date of shipment after the unit is returned to the manufacturers factory, prepaid by the user, and the unit is disclosed to the manufacturers satisfaction, to be thus defective. This warranty shall not apply to any unit that has been repaired or altered other than by the manufacturer. The aforementioned provisions do not extend the original warranty period of the unit which has been repaired or replaced by the manufacturer. Batteries are not covered by warranty.

The manufacturer assumes no liability for the consequential damages of any kind through the use or misuse of the TS1300 product by the purchaser or others. No other obligations or liabilities are expressed or implied. All damage or liability claims will be limited to an amount equal to the sale price of the TS1300, as established by the manufacturer.

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Tin Side Detector

Model# TS1300
For Float Glass

OPERATOR'S MANUAL

During the production of float glass, one side of the molten glass comes into contact with a bath of molten tin. Traces of tin or tin oxide metal are deposited on the surface of glass as it is removed from the molten tin bath. This surface of the glass is identified as the "TIN SIDE" surface of the glass. The opposite side of the glass is denoted as the "AIR SIDE". The presence of the tin is invisible to the human eye. Glass processors find it beneficial to know which surface of the glass is the tin side surface, since the tin side of the glass results in a smoother surface (among other reasons).

The Tin Side Detector is very helpful in identifying the tin side. Short-wave UV radiation causes the tin to fluorescence at a frequency that is visible to the human eye. When the lamp is placed on the tin side surface, the tin will fluorescence and produce a milky white image that is visible to the human eye. If you place the lamp on the non-tin side of the glass, the lack of tin results in no fluorescence and therefore only the duller image of the UV lamp is seen. Since the float glass substrate does not transmit the UV light, the tin coating on the opposite side of the glass is not exposed to the UV energy, and therefore it will only fluorescence when the lamp is placed on the tin side of the glass.

Never view the image of the lamp directly without placing a piece of glass between your eyes and the lamp. We recommend the user wear the UV Blocking safety glasses supplied with the product. UV light is not visible to the human eye. Although the UV lamp may appear dim, recognize that this is only a small percentage of the intensity being emitted by the lamp. Your eyes cannot detect the full intensity of the short-wave UV lamp.



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UV DESCRIPTION & SAFETY

Ultraviolet (UV) light falls in the spectrum of light between x-rays and visible light (180 nm to 400nm). The UV range is broken into 3 spectrums:

UVA: Long wave UV (315 to 400 nm)

UVB: Mid-range UV (280 to 315 nm)

UVC: Short wave UV (180 to 280 nm)

Ultraviolet light is below the visible light spectrum and therefore is not visible to the human eye. This is part of the danger of UV light. Your eyes are not aware they are being exposed to the UV energy.

Float glass blocks the transmission of the majority of the energy in the UVC spectrum. Therefore it is safe to view the image of the TS1300 lamp through a piece of float glass. HOWEVER, it is still recommended to always wear your safety glasses during the operation of the TS1300. This will protect your eyes from accidental exposure to the UVC rays when handling the product.

CAUTION:

THE TS1300 PRODUCT USES A UVC (SHORT WAVE) LAMP. SHORT WAVE UV IS HARMFUL TO THE EYES AND SKIN. PROPER PROTECTION MUST BE WORN WHEN OPERATING THIS PRODUCT.

OPERATION

You can use the TS1300 in two different methods. You can either choose to view the image of the lamp through the glass by placing it on the bottom side of the glass, OR you can tilt the TS1300 on the top surface of the glass and view the reflection of the lamp. You may find that one approach may work better for certain glass samples and various lighting conditions. BEFORE performing any tests, we recommend putting on the UV blocking safety glasses that were supplied with the product.

BOTTOM SIDE METHOD:

To test glass using the bottom side method, place the TS1300 on the bottom side of the glass, as shown in Figure 1. Turn on the power, but do not view the image of the lamp unless it is placed behind the glass. If the bottom side is the TIN SIDE of the glass, the image of the lamp will appear milky white (Figure 1). The intensity of the lamp may even appear to get stronger. In certain situations it may be easier to view the milky white image at a slight angle. Viewing the image at an angle is especially helpful when working with tinted and reflective glass.

Figure 1: Tin Side

Milky white image

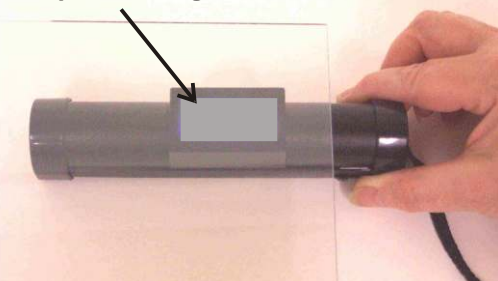


Figure 2: Air Side (NOT Tin Side)

Dull violet lamp image



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OPERATION -- Continued

If the bottom surface of the glass is NOT the TIN SIDE, then it is the AIR SIDE. The air side of the glass will result in the lamp image appearing normal (violet color) (Figure 2).

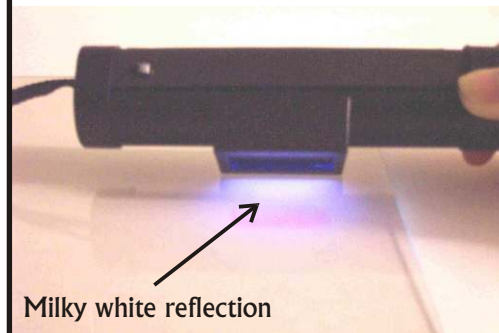
TOP SIDE METHOD:

To test glass using the top side method, place the TS1300 on the top surface of the glass, as shown in Figure 3. Using this method, it is important that you put on your UV blocking safety glasses. Turn on the power, but DO NOT look directly at the lamp. Tilt the unit at a slight angle so you can view the REFLECTION of the lamp.

If the reflection of the lamp on the glass appears milky white (Figure 3), then the top surface of the glass is the TIN SIDE. Again, the intensity of the lamps reflection may even appear to get stronger.

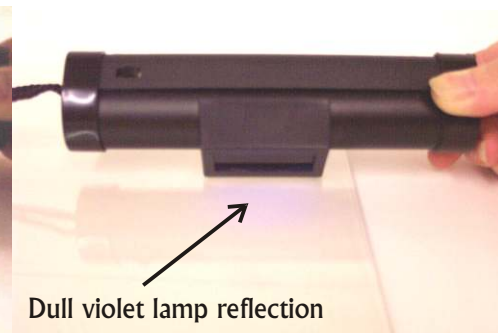
If the top surface of the glass is NOT the TIN SIDE, then it is the AIR SIDE. The air side of the glass will result in the lamp image appearing normal (violet color) (Figure 4).

Figure 3: Tin Side



Milky white reflection

Figure 4: Air Side (NOT Tin Side)



Dull violet lamp reflection

LAMP (TUBE) REPLACEMENT

The TS1300 includes a short wave UV lamp inside the enclosure. If the lamp stops working, confirm that your batteries are fresh. If you have replaced the batteries and installed them correctly (double-check polarity), it may be necessary for you to replace the short wave UV lamp. The replacement lamp is PART# TS1305 and is available from your dealer.

To replace the lamp, turn the unit off first. Use a Phillips screwdriver to remove the end caps from both ends of the product. Grasp the tube on one of its metal ends, using your fingers or a needle-nose pliers. Rotate the lamp and remove it easily. Replace the new lamp in the same fashion. Fully reassemble the unit before turning power on to check the new lamp.

Remember, DO NOT stare at the lamp output directly. Either look at the image through a piece of float glass, or put on your UV(C) blocking safety glasses.