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INSTRUCTION MANUAL

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Tin Side Detector

Cat. No. TS1320

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GENERAL DESCRIPTION

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 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 TS1320 Commercial Tin Side Detector is very helpful in identifying the tin side. Short-wave UV energy 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 fluoresce and produce a milky while 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 fluoresce when the lamp is placed on the tin side of the glass.

WARNING

Do not expose eyes and skin to shortwave ultra violet light, as rays are harmful to unprotected eyes and skin. 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 safely 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.

FEATURES

- Identify the tin side of float glass using a custom UV lamp for detection
- Also works on coated glass as long as coaling does not block UV-C energy
- Commercial design Includes a rubber boot for rugged applications
- Bulb mounting system absorbs shock of dropping the unit. better than previous competing models
- Drop tested to withstand falls up to five feet
- Momentary power switch allows user to pulse the power to see the tin side glow much easier, plus helps conserve life of batteries
- Slide switch also included for extended use of the lamp
- Low Battery indicator
- Powered by only three-AA batteries (included)
- 50% longer battery life than previous competing models, despite fewer batteries
- Protective UV blocking safety glasses included
- Replaceable lamp option, with convenient Insertion sockets for easy replacement
- Extended warranty period compared with previous models

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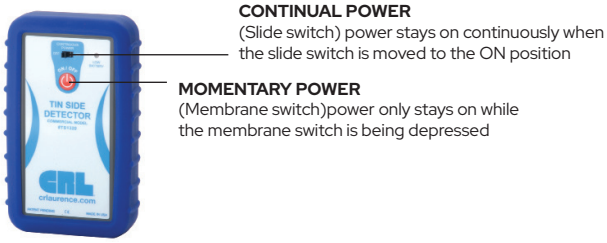
POWER SWITCH

The momentary (membrane) power switch is the preferred switch to use for the TS1320 product. This switch minimizes the use of the lamp in between tests, and extends the life of the batteries. As described later in this operating manual, being able to cycle the power on and off also aids in the determination of the tin side glow.

The continual power (slide) switch should only be used when the operator is going to be taking repeated measurements continuously, with few breaks.

OPERATION



You can use the TS1320 in three different methods. You can either choose to view the image of the lamp through the glass by placing the instrument on the bottom side of the glass, OR you can tilt the TS1320 on the top surface of the glass and view the reflection of the lamp under the meter. 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 protective UV blocking safety glasses that were supplied with the product.

TRADITIONAL BOTTOM SIDE METHOD

To test glass using the bottom side method, place the TS1320 on the bottom side of the glass, as shown in Figure 1. Tum 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 lo get stronger. There are 2 simple ways to improve the viewing of the glow. The first is louse the momentary power switch on the meter to pulse the power on and off. The pulsing power magnifies the difference between a tin side glow versus no glow. The second method is to wave the meter closer and further away from the glass surface to magnify the glow differential. 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.

If you are on the air side of the glass, there will be no milky while glow. The image of the lamp will remain unchanged as shown below.

FIGURE 1:
Tin Slide Milky while image

FIGURE 2:
Air Side (NOT Tin Side)
Dull violet lamp image

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TRADITIONAL TOP SIDE METHOD

To test glass using the top side method, place the TS 1320 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. The Intensity of the lamps reflection may even appear to get stronger. Again, there are two simple ways to improve the viewing of the glow. The first is to use the momentary power switch on the meter to pulse the power on and off. The pulsing power magnifies the difference between a tin side glow versus no glow. The second method Is to wave the meter closer and further away from the glass surface to magnify the glow differential. 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. 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

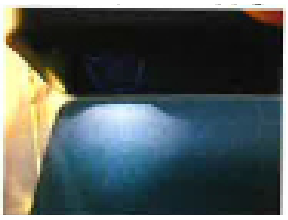
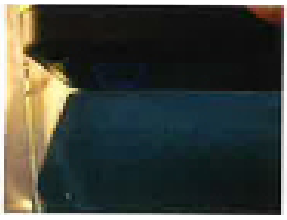


FIGURE 4:
Air Side (NOT Tin Side)
Dull violet lamp reflectlion



ADDITIONAL OPERATING TIPS

1. If the Instrument lamp does not turn on instantly, tap the meter firmly against your hand. The lamp will illuminate immediately. Please see Figure 6.

FIGURE 6:

2. In cold temperatures, the lamp may take a few moments to warm up to full intensity.
3. Pulsing the power with the momentary power switch makes it easier to differentiate if there is a tin side glow or not.
4. Waving the lamp closer and then further away from the glass, often makes it easier to see the glowing tin side image as well.

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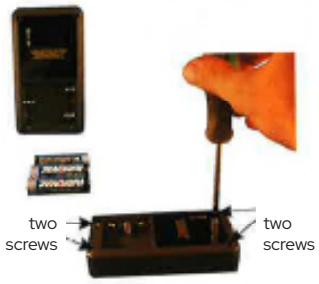
LAMP REPLACEMENT

The TS1320 includes a custom short wave UV lamp inside the enclosure. If the lamp stops working, confirm that your batteries are still functional. If you have replaced the batteries and installed them correctly (double-check polarity) and the instrument is still not working, It may be necessary for you to replace the short wave UV lamp. The replacement lamp is PART# TS1310 and is available from your dealer.

To replace the lamp, the unit off first. **WARNING: YOU MUST REMOVE THE BATTERIES BEFORE SERVICING THE INSTRUMENT**. There are dangerous high voltages present inside the enclosure, and the electronics should never be touched when powered. Use a Phillips screwdriver to remove the four screws of the enclosure. Please note, two of the screws are located behind the battery compartment cover.

FIGURE 8: Remove batteries and four screws from enclosure



The body of the lamp is held in place by foam pieces, while the terminals are inserted into sockets In the circuit board. Carefully pull the old lamp out of the sockets. Pay special attention to the foam pieces as you may have to peel them away from the bulb. Leave as much of the foam in place as possible, as this helps provide shock absorption to the bulb during use.

FIGURE 9: Remove the old lamp and replace with new

The replacement bulb should never be handled with bare fingers. Please use gloves when handling the replacement bulb. The replacement bulb will be sent to you with the terminals crimped at the proper location. DO NOT MAKE ANY ADJUSTMENTS TO THE TERMINALS, AS THEY ARE EXTREMELY FRAGILE. Carefully press the lamp terminals into the receptacles. 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 blocking safety glasses (included).

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BATTERY REPLACEMENT

If the low battery indicator illuminates, the instrument Is warning that the batteries should be replaced in the near future. It is possible that the TS1320 product will continue to work for some time after the indicator illuminates. It is totally safe to continue using the instrument while the low battery indicator is Illuminated. Monitor the intensity of the lamps to know the exact time that !he batteries need replaced. The TS1320 is powered by three AAA alkaline batteries. Alkaline batteries are required for the best performance of this device. Before replacing the batteries, be sure to turn the power off. To access the batteries, you must first remove the rubber boot from the product. Next you can remove the battery cover on the back side of the enclosure by pressing your thumb in the center on the battery cover and sliding the removable lid off. Replace the batteries and Install the cover. Be sure to install the batteries correctly (polarity +/-): A battery polarity indicator 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.

REPLACEMENT PARTS

PART#	DESCRIPTION
TS1310	Replacement Lamp
TS1317	Replacement Rubber Boot

WARRANTY

The manufacturer warrants the electronics included In all models of the TS1320 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 twelve (12) months from the original date of shipment after the unit is returned lo the manufactures factory, prepaid by the user, and the unit is disclosed lo 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, lamps, rubber boot, and front panel interface com· potents are not covered by warranty.

The manufacturer assumes no liability for the consequential damages of any kind through the use or misuse of the TS1320 product by the purchaser or other. No other obligations or liabilities are expressed or imported. Al damage or liability claims will be limited to an amount equal to the sale price of the TS1320, as established by the manufacturer.

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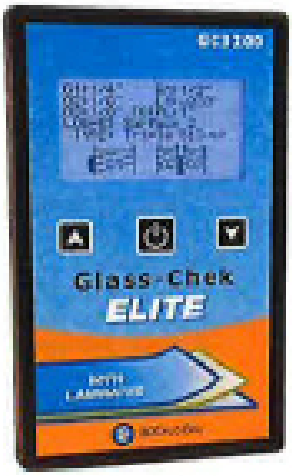
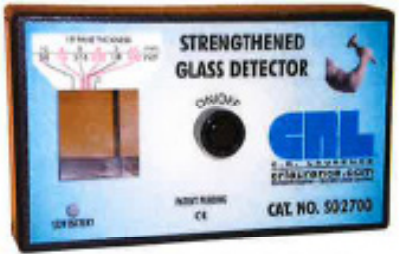
RELATED PRODUCTS



"Glass-Chek ELITE"
Identify location and type of low e coatings as well as glass, lami & air space thickness. Good for single, double & triple pane windows. (Model# GC3200)

"ETEKT+
Dual Pane Low E Coating Detector
(Model# AE1601)

Digital Tin Side Detectors
(Model # TS2300)



STRENGTHENED GLASS DETECTOR"
(Model# SG2700)
Identify Strengthened/Tempered Glass

"The EDGE" Low- E Coating Detector
(Model# CM2030)
Low-E coating & Edge Deletion Detector

"LOW-E CARD" & "LOW-E CARD+"
(Model# AE2200 & AE2250)
Credit Card Size Low-E Detector