Gardner Liquid Color Standards

This set of eighteen liquid-filled tubes is an instrument used for the quick visual evaluation of the colors of varnishes, resin solutions, drying oils and other related transparent fluids. The standard color solutions in the tubes against which the samples are compared comply with the tolerances of the current version of ASTM D 1544.

1. Safety Information

Used correctly, this device does not pose any danger, either mechanical or electrical. The following paragraphs contain information about the safe use of the device.

Before switching on the device, make sure that the voltage label on the device matches the voltage of your power outlet.

The device must be plugged into a grounded outlet.

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**Warning**

This equipment has a 3-wire, grounding power cord. To prevent electrical hazards, do not remove or defeat the ground prong on the power cord.

Replace the cord if it becomes damaged.

Only use the accessories specifically provided for the device. Incorrect use of accessories is not covered by the warranty (see delivery package and technical specifications). The manufacturer does not accept liability for damage caused by failure to observe the safety information.

Please ensure that all replacement parts are the correct size and type. Never resort to other types of fuses or short circuiting.

Avoid exposure to continuous humidity and condensation, especially make sure to work only with properly sealed tubes.

Apart from changing the lamp, do not carry out any mechanical or electrical repairs. The device must only be opened by trained specialists. Please consult our technical customer service.

2. Description

The instrument consists of a sturdy rack in which eighteen tubes of colored fluids are inserted into numbered positions. Empty spaces between these positions allow the placing of a tube filled with sample solution between two adjacent standards to assist in
comparing colors. A panel of frosted glass behind the tubes provides a background of diffuse white light when viewing the tubes. Sunlight from a window or a source of indoor light is usually sufficient for using the regular Liquid Color Standards (Catalog # 6412). The illuminated Liquid Color Standards are provided with their own source of cool white fluorescent light behind the frosted glass panel. Use of this standard light source allows for comparison of evaluation.

The colors of the Gardner Scale range from almost colorless water white through shades of yellow and range to rusty red. Standards 1 through 8 are solutions of potassium chloroplatinate; they are light in value and have a very slight greenish hue. These standards are most often used in testing preparations that have not been heated during the manufacturing process. Standards 9 through 18 are solutions of ferric chloride and cobalt chloride; they are darker and are used to test varnish, oil and resin preparations which have reached full color development through heating.

The solutions are standardized at 25°C, but cooler determinations made between 20°C and 30°C are substantially correct, since no appreciable change in color occurs within this range.

3. Method of Operation:

Pour a sample of the test liquid into an empty color comparison tube (Catalog # 64046. Insert the filled tube in the space between the standards which appear closest in color to the sample. Determine if the color appears to be equal to, slightly more, or slightly less in intensity than the color of the adjoining standards. Express your conclusion numerically.

Example: If the sample appears identical to #8, give it a value of 8. If it is slightly darker than #14 but much lighter than #15, call it 14+, if it is slightly lighter than #14, call it 14-, if the color appears to be between #4 and #5, but no closer to one than the other, give it a score of 4.5 or 4-5.
4. Lamp Replacement 6410/6411

Warning
First switch off instrument and disconnect it from the power supply by pulling the plug out of the power outlet. Do not open the cover until it has cooled down.

Tilt the lid to the back and remove the lamp, by turning it 90 degrees. Take the lamp out and replace it with a new one. **Important:** Use only fluorescent lamps according to the specifications (please refer to technical specifications).
5. **Technical Specifications:**
Voltage: 230V/50Hz
Power consumption: 80 VA
Operating temperature: +10°C to +40°C
Storage temperature: 0°C to +50°C
Dimensions: 66 x 15 x 15 cm
Weight: 6.35 kg
Lamp: Fluorescent lamp 18W Cool White

6. **Delivery Information**
6410 Gardner Liquid Color Standards with illumination, 230V
6411 Gardner Liquid Color Standards with illumination, 115V
6412 Gardner Liquid Color Standards without illumination
6406 Set of 144 empty tubes

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