

ROUGH DIAMOND COLORIMETER – ZVI YEHUDA LTD.
MODEL F- 50

1. General

1.1. Details of the colorimeter

- General Details

- * Measuring diamonds from 0.3 to 50 carat;
- * Measurement accuracy: $\pm 1/2$ a color degree;
- * 110/220 volt;
- * Rechargeable batteries – 16 hours of operation.
About 5 hours of recharging;
- * Weight of about 1 kg.

- Measurement ranges

- * Color from D-K;
- * Fancy yellow (5 degrees);
- * Blue fluorescence (5 degrees) – **ignore the result** when the stone measures STRONG BLUE FLUORESENCE;
- * Yellow fluorescence (which indicates milkiness in the stone);
- * Brown hue only in the color range D-F (3 degrees);
Comment: The stone must be boiled before the measurement of the brown hue (the stone must be unmarked, clean from the polishing wheel and not laser sawn);
Likewise, do not measure stones with a visible hue of brown
- * Detection of type 2A diamonds (3 degrees);
- * Detection of type 2B diamonds (whether it was irradiated to blue).

1.2 Measurable diamonds

- Regular diamonds (all types);
- Coated diamonds (from Congo, Russia, Sierra-Leon and Canada);
Comment: Decrease 1/2 a color degree for every millimeter of coat
- Greenish diamonds from Botswana;
Comment: Decrease 1 color grade for diamonds with light green hue,
2 color grades for green hue and 3 grades for dark green hue.

1.3 Immeasurable diamonds (Cannot be measured with the colorimeter)

- Diamonds from Brazil and Bangui (C.A.R.);
- Diamonds with unusual fluorescence – white, orange, pink etc;
- Diamonds with unusual hues – pink, green, purple red etc;
- Diamonds after laser sawing. The stone must be cleaned.

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2. Measurement

2.1 General

- The stone must touch and completely cover the “black hole” in the middle of the measuring chamber;
- If the stone does not cover the hole completely, use the Blu-Tack;
Comment: Even when using the Blu-Tack, there must be contact between the stone and the hole;
- The stone must be measured from 3 different angles (the lowest result is the right one);
- A sawn stone must be measured from the facets.

2.2 Turning on / Recharging

- The on/off switch is located at the back of the machine;
- The charger socket is located at the back of the machine;
Comment: Use only the charger provided with the machine;
- After turning on the machine, wait 20 seconds, during which a “WARM-UP PLEASE WAIT” message will appear, with a counter, that counts down the seconds until the beginning of the calibration process.
- The machine is ready when the TEST and CALIB touch buttons appear at the bottom of the screen.

2.3 Measuring

- Lift the cover, and place the stone in the middle of the measurement chamber (1 stone at a time);
- Close the cover;
- Press the TEST touch button at the bottom left of the screen;
- Measurement results will appear in 5 seconds;
- If a “CHECK FANCY” touch button appears, press it;
- When 4 touch buttons with different weights appear, press the appropriate one;
- Fancy result will appear immediately.

2.4 After Measuring

- Lift the cover, and press the purple “EX UV” touch button at the bottom of the screen, and visually check if there is any fluorescence in the stone. Ignore the results if there is any kind of unusual fluorescence (white, orange, pink etc.)
- Use the black plastic covering to darken the chamber, when the need arises.

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3. Results

Color

The color details appear in 2 stages:

- COLOR – the basic color of the stone, appears in red at the 2nd line of the result screen, and defines the basic color of the diamond, disregarding fluorescence, brown hue etc.
- RESULT – the conclusive color, appears in green at the center of the 1st line of the screen, and defines the final color, based on the details of the blue fluorescence, or invalidating the result due to strong blue fluorescence, yellow fluorescence or brown hue (in D-F);
 - D-K results will appear with + or – sign (D, DE, E, F+,F, F-, G+, G etc.)
 - A stone, which is less than K, will be checked for fancy yellow;
Comment: Ignore the color results under K. They are meaningless.
 - The final result refers to a round stone in a very good polish and up, and in fancy yellow to the special fancy polish;
 - In fantasy (Pear, oval, heart, princess, emerald etc.), decrease ½ a color degree in D-E, and 1 color degree for all the rest;
 - D color stones with strong fluorescence, will sometimes result as C (non-diamond stones will also sometimes result as C).

Blue Fluorescence

- The blue fluorescence details appear in blue at the 3rd line of the result screen;
- The details include classification into 5 levels - NONE, FAINT, LIGHT, MEDIUM and STRONG;
- A number will also appear, defining the luminescence;
- The final result includes the effect of the blue fluorescence, if exists;
- A blue blinking question mark will appear in the result line, when a strong blue fluorescenced diamond is measured, as a reminder to ignore the result.

Yellow Fluorescence

- A yellow blinking warning will appear in the 4th line, if there is yellow fluorescence in the diamond;
- A yellow question mark will appear in the result line;
- The existence of yellow fluorescence in the stone, indicates cloudiness and/or milkiness in the stone (even if not visible to the eye)
- The final color of a polished yellow fluorescenced stone will be 3-5 color degrees lower than the basic color, and the stone will be cloudy and/or milky;

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- The 4th line will remain empty, if there is no yellow fluorescence
Comment : The existence of yellow fluorescence has to be also verified visually, at the end of the measurement

Brown Hue

- Brown hue is only measured for the color range D-F;
- “TLB?” result indicates a light brown hue, which means a decrease of 1-2 color degrees from the basic color (Equivalent);
- “LB!” result indicates a significant brown hue, and causes a decrease of 3-6 color degrees from the basic color (Equivalent).

Type 2A results

- If the stone is 2A, a message will appear in white in the 5th line :
“TYPE 2A WHITE”- the stone is white and 2A, either naturally or from HPHT;
“TYPE 2A BROWN” – the stone is 2A, and HPHT is needed to whiten it;
“TYPE 2A MIXED” – the stone contains more than one kind of diamond, and is not suitable for HPHT.
- The 5th line will remain empty, if the stone is not 2A;
- Most synthetic stones are 2A.

Type 2B results

- If the stone is 2B blue or gray, a white message will appear in the 5th line;
- A 2B blue result means that the stone was not radioactively irradiated to change its color to blue (alternatively, it could mean a synthetic stone).

Fancy Yellow results

At the end of the fancy yellow measurement, the machine will give 1 of 5 results :

NO FANCY YELLOW – the color of the stone is M-Z;
LIGHT FANCY YELLOW;
FANCY YELLOW;
INTENSE YELLOW;
VIVID YELLOW.

- The stone must be checked from a number of angles to verify the uniformity of the color.

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- The fancy result refers to the best color that can be produced from the diamond by polishing the stone in the model and angles characterized with fancy polishing.

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Calibration

!!! Make sure that the measuring chamber is empty, and there is no stone or Blu-tack inside the chamber, before turning on the machine and before every calibration. !!!!

- The machine calibrates itself automatically at the end of the initial warm-up process;
- A calibration can be initiated by pressing the red CALIB touch button;
- The machine will present a reminder for calibration every 20 minutes. It is advised to perform the calibration when the reminder appears.
- The duration of the calibration is about 5 seconds.

Batteries

- It is possible to operate the machine with the charger provided with the machine (Do not use any other charger);
- When the batteries are fully charged, it is possible to work for 16 hours;
- Battery state column is on the right side of the screen;
- A full battery is indicated with 8 green squares;
- When the battery is being charged, the topmost square will blink;
- 4 yellow squares indicate that the battery is ½ full;
- 2 blinking red squares indicate that are 3 hours of work left;
- A “PLEASE RECHARGE” message will appear when the battery is empty;
- It is possible to charge the battery at any stage;
- The duration charging an empty battery is about 5 hours.

Troubleshooting

After getting a warning message, turn off the machine for 5 seconds, and turn it back on with the measuring chamber empty.

| Message | Explanation |
|---------------------|--|
| SYSTEM FAILURE | Make sure that the chamber is empty and the cover is closed, and then recalibrate. If the error message repeats itself , send the machine for repair |
| MEASUREMENT FAILURE | The measurement was interrupted, and should be repeated. In coated stones the message will appear if the stone is too dark to be measured |

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| CALIBRATION WARNING COLOR | The accuracy is ± 1 color degree. Visually check the fluorescence and brown hue results. |
| CALIBRATION WARNING BLUE UV | Visually check for blue fluorescence |
| CALIBRATION WARNING YELLOW UV | Visually check for yellow fluorescence |
| CALIBRATION WARNING BROWN | Visually check for brown hue |
| CALIBRATION WARNING 2A | Ignore 2A results |

Comment : In any case of a “CALIBRATION WARNING” message, send the machine for repair as soon as possible.

Warranty

- Every machine is guaranteed a 5 year full warranty, except for cases of deliberate damage or drop;
- Any attempt to open the machine will result in damage to the machine, and will cause cancellation of the warranty;
- Only use the charger provided with the machine;
- The touch buttons should be touched only with fingers, and not with tweezers, or any other sharp object;
- During flight – carry the machine on-board and not in a suitcase.