

# Elcometer 6070 MA68II Multi-Angle Spectrophotometer



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The Elcometer 6070 is the “ultimate” portable multi-angle spectrophotometer. Five viewing angle of 15° to 110° allow accurate evaluation of the variation in metallic, pearlescent and special effect paint finishes.

The remote operation feature allows measurement data to be stored. The stored data can be printed directly to a serial printer in a QA report format or downloaded to QA-Master® 2000, X-Rite’s Windows® based quality control software package.

### At a glance

- Compact, portable spectrophotometer.
- Viewing angle at 15 to 100°.
- Evaluate variation in a variety of paint finishes.

## Appearance

Appearance measurement is a way of putting numbers to characteristics of surfaces that we see. The ability to independently quantify appearance allows for products to be similar whenever and wherever the product is manufactured or coated.

Elcometer provide a comprehensive range of hand held instruments to measure most of the individual characteristics that generate the overall appearance of a material or coating.

## Gloss

The ability of a surface to reflect light without scattering is known as Gloss. Gloss is measured by directing a constant power light beam at an angle to the test surface and then by monitoring the amount of reflected light. Different surfaces require different reflective angles. Elcometer Glossmeters cover the range necessary to measure almost any surface from high gloss to matt, from large to small surfaces - flat or curved

## Haze

Some materials appear to have considerable difference in gloss yet give comparable readings when measured with a glossmeter at one angle. These materials can be separated by measuring at a second angle and comparing the difference of the two readings. Haze is defined by ASTM D4039 as the difference between gloss at 60° and the gloss at 20°.

| Model          | Description                                | Part Number  |
|----------------|--|--------------|
| Elcometer 6070 | XRITE MA68II Multi-Angle Spectrophotometer | K0006070M001 |

|                                    |   |
|------------------------------------|---|
| <b>Measuring Geometrics</b>        | 45° illumination<br>15°, 25°, 45°, 75°, 110° aspecular viewing<br>Angular Accuracy $\pm 0.15^\circ$<br>Fibre optic pick-up, coupled with DRS technology |
| <b>Measurement Area</b>            | 12mm (0.5") diameter  |
| <b>Light Source</b>                | Gas-filled tungsten lamp, color corrected to approximately 4000°K   |
| <b>Illuminant Types</b>            | C, D50, D65, D75, A, F2, F7, F11 and F12  |
| <b>Standard Observers</b>          | 2° and 10°  |
| <b>Receiver</b>                    | Blue-enhanced silicon photodiodes   |
| <b>Spectral Range</b>              | 400 – 700nm   |
| <b>Spectral Interval</b>           | 28 band spectral measurement:<br><br>10nm interval from 400nm – 640nm<br><br>20nm interval from 640nm – 700nm<br><br>15nm bandwidths                    |
| <b>Spectral Data Output</b>        | Spectral reflectance values are available for output from the RS232 port for 5 angles at 10nm intervals from 400nm 700nm                                |
| <b>Measurement Range</b>           | 0 to 400% reflectance   |
| <b>Measuring Time</b>              | Approximately 2 seconds   |
| <b>Inter-Instrument Agreement</b>  | 0.18 $\Delta E^*$ average on reference BCRA tile set<br>0.35 $\Delta E^*$ maximum on any chromatic tile<br>0.15 $\Delta E^*$ maximum on any grey tile   |
| <b>Short-Term Repeatability</b>    | 0.10 $\Delta E^*_{ab}$ on white ceramic (standard deviation)  |
| <b>Lamp Life</b>                   | Approx 500,000 measurements   |
| <b>Power Supply</b>                | Six rechargeable AA Ni-metal hydride batteries included – removable battery pack; 7.2 VDC rated @ 1400 mAh  |
| <b>AC Adapter Requirements</b>     | MA68: 90 – 130VAC, 50 – 60Hz, 15W max<br>MA68X: 180 – 260VAC, 50 – 60Hz, 15W max<br>12 VDC @ 700mA  |
| <b>Charge Time</b>                 | In Instrument: 4 hours (50%), 16 hours (100%)   |
| <b>Measurements per Charge</b>     | 1,000 5-angle measurements  |
| <b>Data Storage (Five Angles)</b>  | 200 Standards, 850 Samples  |
| <b>Data Interface</b>              | Patented bi-directional RS232, 300 – 19,200 baud  |
| <b>Display</b>                     | 4-row by 20 character supertwist dot matrix LCD   |
| <b>Operating Temperature Range</b> | 50° to 104°F (10 to 40°C)<br><br>85% Relative Humidity Maximum (non-condensing)   |
| <b>Storage Temperature Range</b>   | -4° to 122°F (-20° to 50°C)   |
| <b>Weight</b>                      | 1.4kg (3.2lbs)  |
| <b>Dimensions</b>                  | 116 x 76 x 225mm (4.56" x 3.0" x 8.85")   |
| <b>Supplied with</b>               | Calibration Standards, Operating Manual, AC Adapter and Carrying Case   |

### **Shade**

This is the measurement of darkness or lightness of a surface. Only shading is measured, irrespective of colour, and is referred to as 'whiteness'. The test surface is illuminated at an angle of 45° and the intensity of scattered light at the perpendicular (0°), is measured on a grey scale where black is 0% and white is 100%.

### **Opacity**

This is the degree to which a coating will obscure the surface to which it has been applied. Opacity is measured in a similar way to shade, however opacity, or hiding power, as defined by ISO 2814 involves measuring whiteness of a known film of test material on both a black (less than 5%) and a white (greater than 75%, less than 85%) substrate. A full range of opacity test charts are available – See Leneta Test Charts for further information.

### **Colour**

The ability of a material to absorb certain wavelengths of light and reflect others. For example a black material reflects no light across the complete colour spectrum, whereas a pure white material reflects all of the light. All other colours reflect light at different points of the spectrum. Colour is quantified by the material's Red, Green and Blue (RGB) values.

## Related products



Elcometer 6075/1

The SP60 is an affordable sphere colour spectrophotometer, designed to give fast, precise and accurate colour measurement information on materials ranging from paper and paint to plastics and textiles. Supplied with an 8mm fixed aperture.



Elcometer 6075/2

The SP62 is an affordable sphere colour spectrophotometer, designed to give fast, precise and accurate colour measurement information on materials ranging from paper and paint to plastics and textiles and is supplied with 4mm, 8mm or 16mm fixed apertures.



Elcometer 6075/3

The most popular product suitable for most coating applications, the SP64 colour spectrophotometer is fast, accurate and ideal for measuring a wide range of materials. Supplied with a switchable aperture size, the user can select the test area of 4mm or 8mm or it can be supplied with an optional fixed 16mm aperture.



Elcometer 6060

The Elcometer 6060 is a versatile 0/45 spectrophotometer, with interchangeable apertures for 4mm, 7mm or 15mm measurement areas. A wrist strap and tactile side grips make the instrument easy to hold. Read-outs are large and easy to see. A rechargeable battery pack allows extended operation of the instrument.



Elcometer 6060/4

The Elcometer 6060/4 has all of the functionality of the Elcometer 6060 but with tighter inter-instrument agreement and JOB capability. The JOB function is a programmed sequence of specific steps to assist the operator in the colour measurement process. Up to six lines of specific instructions per measurement routine can be downloaded from X-Rite software and displayed on the LCD screen.



Elcometer 6090

The X-RiteColor® Master Software, has the power to measure, analyse, control and communicate colour data through one sophisticated, yet simple software program that helps you reduce cycle time, create multiple colour formulation matches and increase efficiency of your colour data communication.

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