



TQM™ Digital Radiometer

A precision instrument used to measure exposure lamp intensity in a narrow spectral band where photoemulsion is at its most sensitive. Using this measurement, and the stencil manufacturer's recommended exposure dose, you can quickly calculate correct photoemulsion and stencil film exposure times. This eliminates lengthy and less accurate testing procedures that are difficult to interpret. Our TQM Radiometer can also be used to check (depending on usage) bulb degradation periodically. The battery-operated device provides a convenient digital readout.

The spectral band most effective in exposing stencil materials is the 400-430 nanometer range. SaatiPrint's TQM Digital Radiometer uses a sensor containing a wavelength-selector filter that isolates only this violet/blue light. The only exception is low-vapor pressure mercury "black lights" (365 Nm range) requires a different filter.

Through extensive testing, stencil manufacturers can compile the necessary data to determine the exposure dose required by a product used in almost any condition.



You can determine the optimum exposure time by dividing the recommended exposure dose for the product in use, by the measured intensity at the exposure surface.

Once a lamp has been measured, and exposure times calibrated, they can be converted to units and the exposure dose can be controlled by an integrator as lamp output changes.

MESH COUNT/EXPOSURE REQUIREMENTS IN MJ/CM WITH 405 FILTER

EMULSION	61 WHITE	86 WHITE	110 WHITE	158 WHITE	230 DYED	305 DYED	380 DYED
GRAFIC HU	600	450	270	180	180	130	130
GRAFIC DS							
TEXTIL DW	900	650	380	270	270	180	180
TEXTIL PV	40	30	20	15	40	30	25
GRAFIC PU	80	60	40	30	90	75	50

NB. Radiometer measures in $\mu\text{W}/\text{cm}$. Exposure dose is calculated in mJ/cm . (1000 micros = 1 milli)



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TECHNICAL SPECIFICATIONS: DR SERIES

SENSOR SPECTRAL RANGES	
DIX-254	230-280 nanometers
DIX-300	280-320 nanometers
DIX-365	320-400 nanometers
DIX-405	395-415 nanometers
DIX-450	420-480 nanometers
TEMPERATURE COEFFICIENT	±0.20%/°C (0 to 50°C)
POWER REQUIREMENTS	One 9 volt alkaline battery
DIMENSIONS	
READOUT UNIT	7-1/4" (18.4 cm)L x 3-1/2" (8.9 cm)W
THICKNESS	2" (5.1 cm)
WEIGHT	0.78 lb. (0.36 kg)
SENSOR	3" (7.6 cm)L x 2" (5.1 cm)W
THICKNESS	1/2" (1.3 cm)
WEIGHT	1-1/4 oz. (35.4 g)
SENSOR CORD LENGTH	4' (121.9 cm)

*Most commonly used/standard model.

PRACTICAL GUIDE TO SAATIPRINT'S TQM™ RADIOMETER

$$\text{Exposure Time (in seconds)} = \frac{\text{Exposure} \times 1000}{\text{Intensity measured (405 filter)}}$$

EXAMPLE 1

A 5 KW lamp is measured at 90", and gives a reading of 800 µW/cm. Expose Grafic HU on a 380 dyed mesh.

$$\text{Exposure Time} = \frac{130 \times 1000}{800} = 162.5 \text{ seconds, i.e., 2.7 minutes}$$

EXAMPLE 2

A homemade exposure unit with a quartz headlight is measured, and gives a reading of 100 µW/cm. Expose Textil DW on a 110 white mesh.

$$\text{Exposure Time} = \frac{380 \times 1000}{100} = 3800 \text{ seconds, i.e., 63.3 minutes}$$

EXAMPLE 3

A fluorescent tube exposure unit is measured at 1500 µW/cm. Expose Grafic DS on a 255 white mesh. Estimate down from 180 mJ/cm for a 230 dyed mesh to around 110 mJ/cm.

$$\text{Exposure Time} = \frac{110 \times 1000}{1500} = 73 \text{ seconds, i.e. 1.2 minutes}$$

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