

# Q-SUN Tester Training

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[View Recorded Presentation](#)

# Q-Lab's Live Tester Training Series

Today is the second of a three-part webinar series on basic operation of our weathering and corrosion testers featuring live hands-on video content.

All upcoming and archived webinars can be accessed at:

[q-lab.com/webinars](http://q-lab.com/webinars)

Date	Topic
06 Jun	QUV
13 Jun	Q-SUN
20 Jun	Q-FOG

# Administrative Notes

You'll receive a follow-up email from [info@email.q-lab.com](mailto:info@email.q-lab.com) with links to a survey, registration for future webinars, and to download the slides

Use the Q&A feature in Zoom to ask us questions today!



## Thank you for attending our webinar!

We hope you found our **Q-SUN Operator Training** webinar to be helpful and insightful. The link below will give you access to the slides and recorded webinar.

You can help us continue to provide valuable and high quality content by completing our 3-question [survey](#) about your webinar experience. Every piece of feedback is carefully reviewed by a member of our team.

We consistently hold seminars and webinars about weathering, corrosion, standards, and more. The best way to keep up with news and events is by following us on [Facebook](#), [Twitter](#) and [LinkedIn](#).

# Q-SUN Principles of Operation

# Q-SUN Xenon Arc Models

Simulate light (outdoor direct sunlight, indoor filtered light); heat (elevated temperature), and water (humidity and water spray)



# Q-SUN Overview (Flat Array)

- 1) User interface
- 2) USB port for data transfer
- 3) Xenon lamps with irradiance control
- 4) Optical filters
- 5) Water spray
- 6) Onboard irradiance sensors
- 7) Black Panel Temp sensor
- 8) Specimen holders
- 9) Relative Humidity/CAT sensor



# Q-SUN Overview (Rotating Rack)

- 1) User interface
- 2) USB port for data transfer
- 3) Xenon lamps with irradiance control
- 4) Optical filters
- 5) Water spray
- 6) Onboard irradiance sensors
- 7) Black Panel Temp sensor
- 8) Specimen holders
- 9) Relative Humidity/CAT sensor



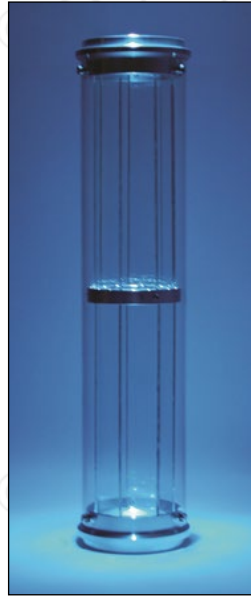
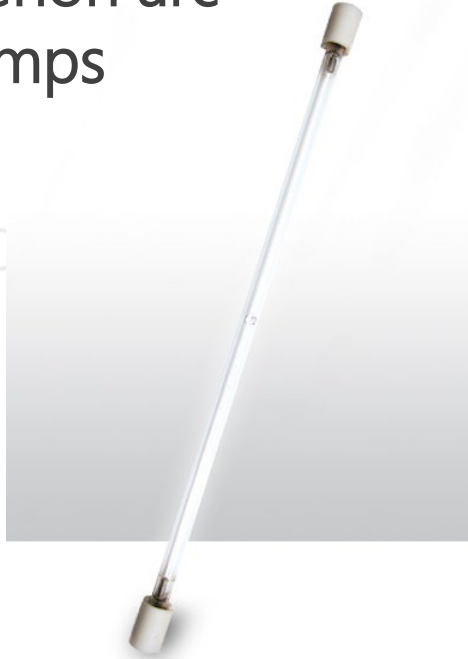
# Q-SUN Optional Features

Model/ Configuration		Tester Features					
		Gen 4 + High Irradiance (-E) <sup>3</sup>	Humid Control (-H)	Chamber Air Chiller (-C)	Water Spray (-S)	Back Spray (-BS) <sup>6</sup>	Dual Spray (-DS) <sup>6</sup>
Xe-1	Xe-1-BE	●					
	Xe-1-BCE	●		●			
	Xe-1-SE	●			●		
	Xe-1-SCE	●		●	●		
	Xe-1-WE	●			● <sup>4</sup>		
Xe-2	Xe-2-HE	●	●				
	Xe-2-HSE	●	●		●		
	Xe-2-HBSE	●	●		●	●	
Xe-3	Xe-3-HE	●	●				
	Xe-3-HCE	●	●	●			
	Xe-3-HSE	●	●		●		
	Xe-3-HSCE	●	●	●	●		
	Xe-3-HBSE	●	●		●	●	
	Xe-3-HBSCE	●	●	●	●	●	
	Xe-3-HDSE	●	●		●		●
	Xe-3-HDSCE	●	●	●	●		●
	Xe-3-HDSBSE	●	●		●	●	●
	Xe-3-HDSBSCE	●	●	●	●	●	●



# Q-SUN Light Delivery

Xenon arc lamps



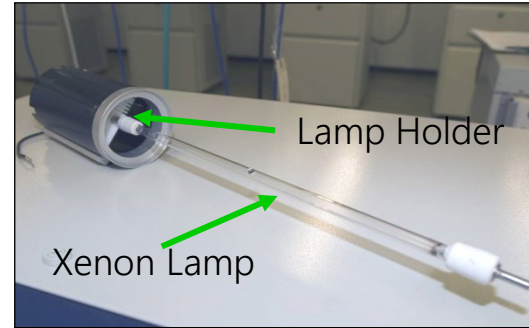
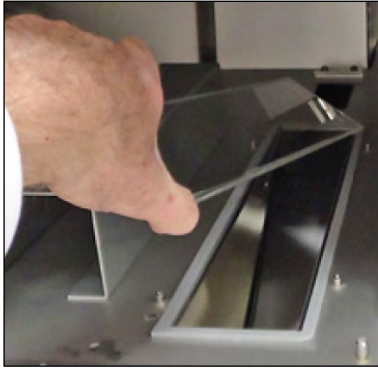
Xe-2 lantern

Optical filters



Xe-1 / Xe-3 flat filter

# Optical Filters and Lamps



Xe-1  
and  
Xe-3

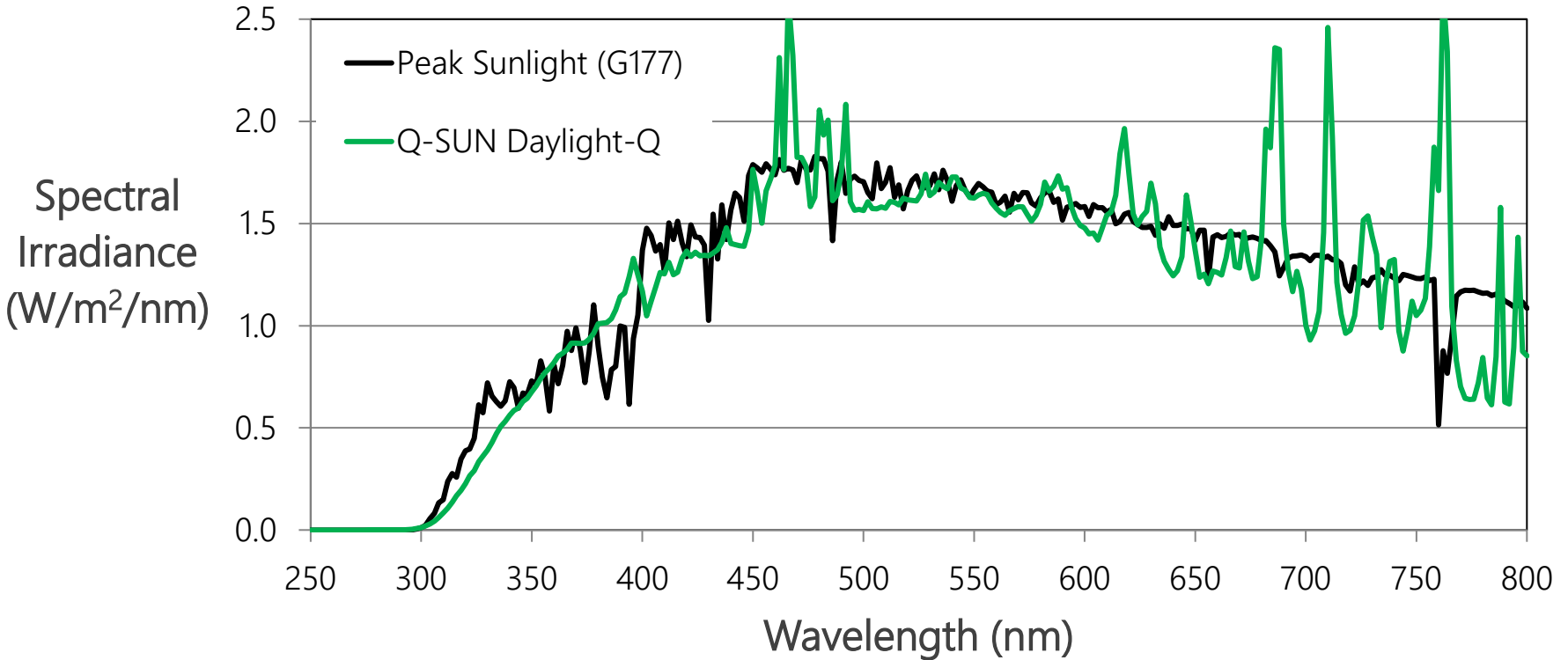


Xe-2



Filter  
Lantern

# Xenon Arc Spectrum



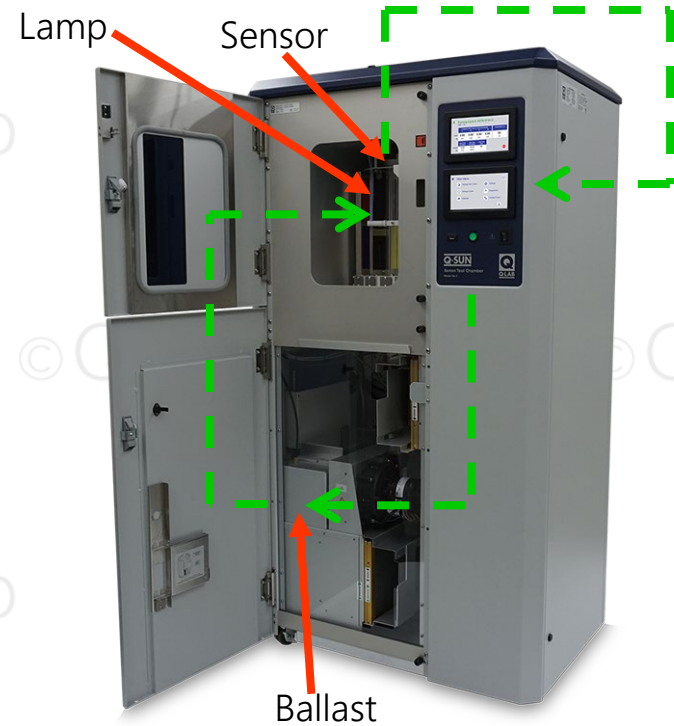
# Q-SUN Irradiance Capability

	Xe-1 & Xe-3 Irradiance Values Typical (& Maximum) <sup>A,B,C</sup>			Xe-2 Irradiance Values Typical (& Maximum) <sup>A,B,C</sup>		
	W/m <sup>2</sup> /nm @340 nm	W/m <sup>2</sup> /nm @420 nm	W/m <sup>2</sup> @TUV (300-400 nm)	W/m <sup>2</sup> /nm @340 nm	W/m <sup>2</sup> /nm @420 nm	W/m <sup>2</sup> @TUV (300-400 nm)
Daylight-F <sup>D</sup>	0.80 (1.30)	1.50 (2.40)	75 (125)	0.80 (0.95)	1.50 (1.70)	75 (85)
Daylight Q <sup>D</sup>	0.68 (1.10)			0.68 (0.80)		
Extended UV (-Q/B, -Quartz <sup>E</sup> )				0.51 (0.61) <sup>F</sup>		
Daylight-B/B <sup>D</sup>				70 (108)		
Window (-Q, -B/SL)				42 (68)		
Window (-SF5, -IR, -B04 <sup>G</sup> )				-		

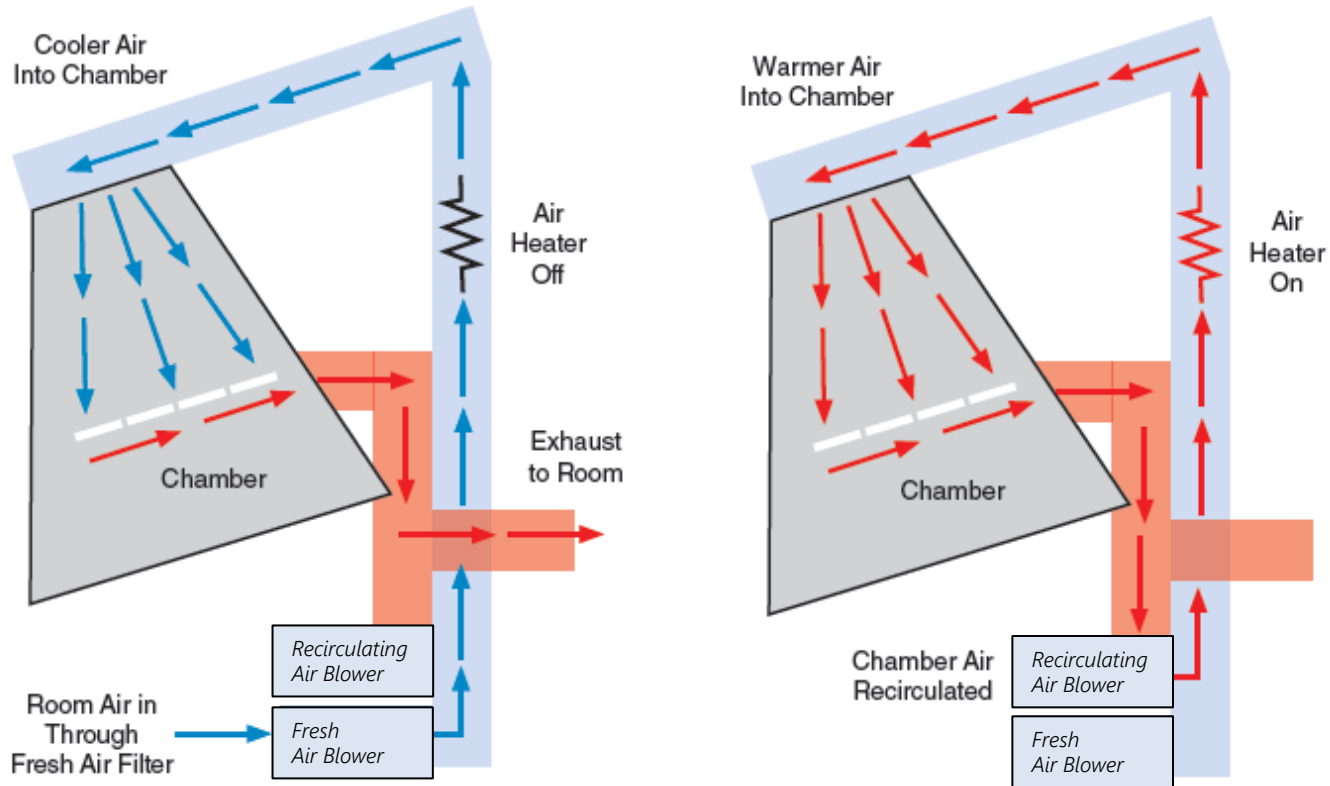
*Achievable irradiance values vary by optical filter, tester type, and control point*

# SOLAR EYE Irradiance Control System



- SOLAR EYE Irradiance Control maintains the same light output at all times
- Ballasts control lamp output
- Allows for excellent repeatability and reproducibility



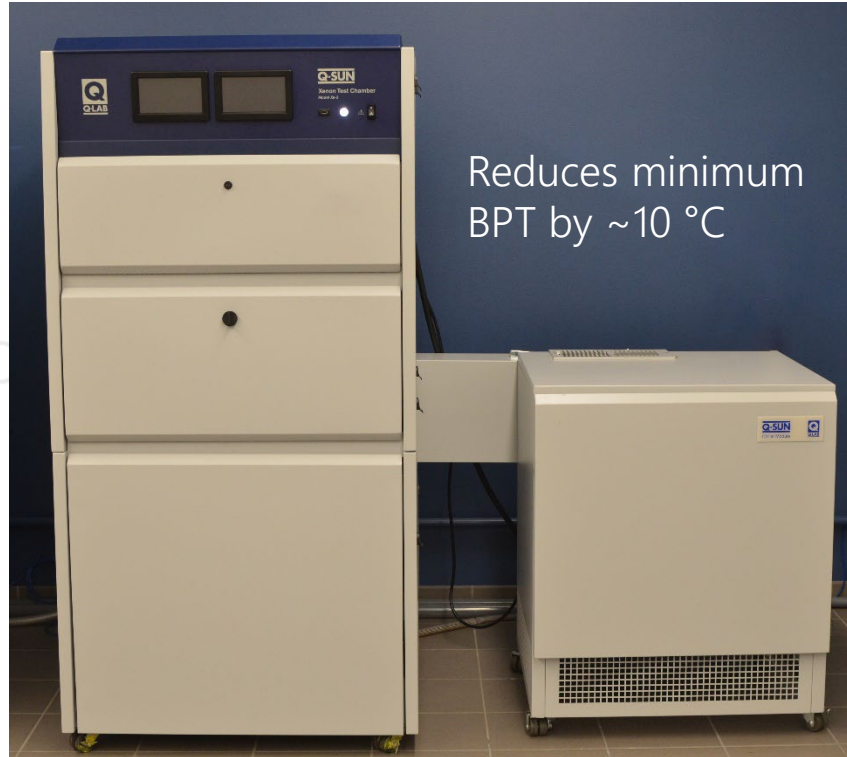
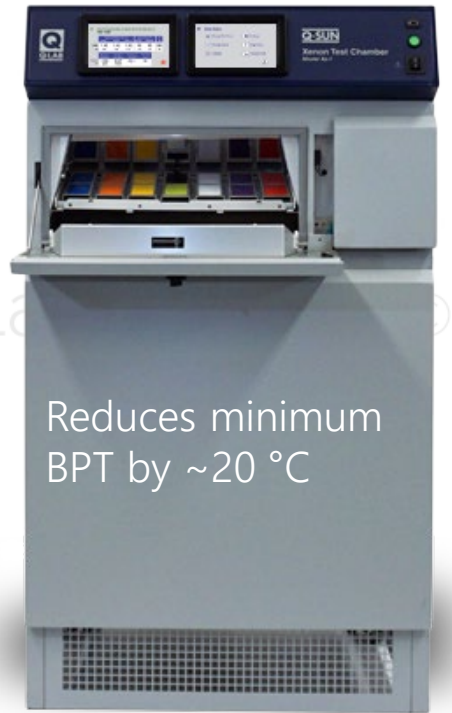
# Temperature Control



# Black Panel Temperature Sensors

Panel	Construction	ASTM Designation	ISO Designation	Temp Range (°C)
	Black painted stainless steel	Uninsulated Black Panel	Black Panel	45-110
	Black painted stainless steel mounted on 0.6 cm white PVDF	Insulated Black Panel	Black Standard	50-120

# Optional Chiller (Xe-1 / Xe-3)





# Q-SUN Water Delivery

- Water Spray (optional)
  - Front
  - Back (Xe-2 / Xe-3)
  - Dual (Auxiliary) (Xe-3)
  - Immersion (Xe-1)
- Relative Humidity control (Xe-2 / Xe-3)



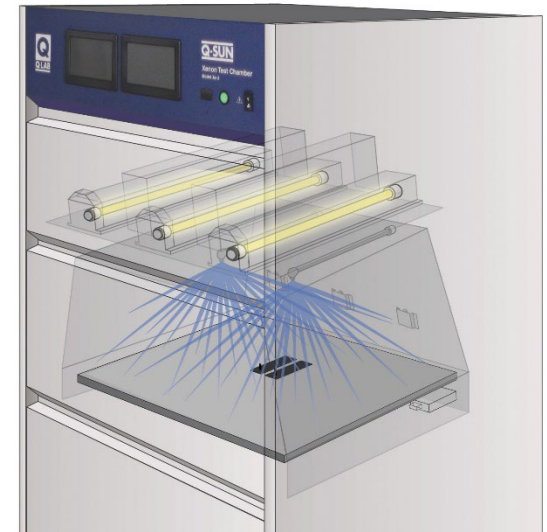
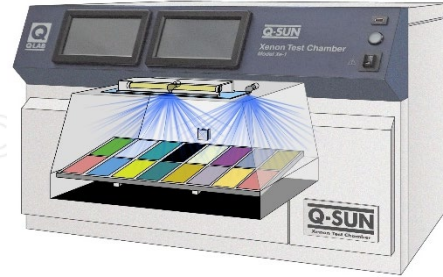
# Q-SUN Water Quality

- Purified (RO/DI) water is **required**
- Spray water requires even higher purity and also low silica
- Q-Lab follows ASTM G151 recommendations

Water Delivery	Resistivity ( $\Omega \cdot \text{cm}$ )	Conductivity ( $\mu\text{S}/\text{cm}$ )	Silica (ppm)	Total Dissolved Solids (ppm)	pH
Spray	> 5 M	< 0.2	< 0.1	< 0.1	6-8
Humidity	> 200 k	< 5.0	No requirement	< 2.5	6-8

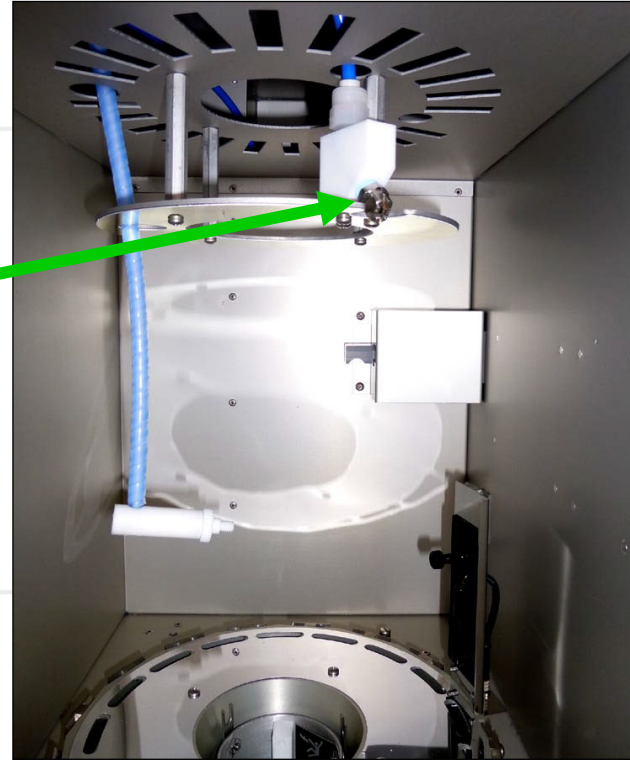
# Xe-1 / Xe-3 Water Spray System

- Features
  - Pulse Rate Control
  - Automatic Fault Detector
- Two nozzles, used for:
  - Mist
  - Thermal Shock
  - Erosion



# Xe-2 Water Spray System

- Features
  - Pulse Rate Control
  - Automatic Fault Detector
- One nozzle, used for:
  - Mist
  - Thermal Shock
- Second Nozzle for optional Back Spray



# Specialized Test Modes



Xe-1 Immersion



Xe-3 Dual Spray

# Relative Humidity Control (Xe-2 / Xe-3)

- Feedback Loop System
- RH/CAT Sensor
- Main Controller
- Humidity Generator
  - Nebulizer in Xe-2
  - Boiler in Xe-3



Xe-2



Xe-3



# Specimen Mounting

- Specimen Capacity
  - Xe-1: 17 (51 × 102 mm)
  - Xe-2: 31 (45 × 132 mm)
  - Xe-3: 55 (51 × 102 mm)
- Type of holder
  - Open-Backed (thick, rigid specimens)
  - Solid-Backed (flexible specimens)
  - Three-dimensional
- Specimen Tray
  - Solid
  - Mesh (open)
- Masking
  - Commonly used in textile testing

Thank you for your time.

*Questions?*  
info@q-lab.com

We make testing simple. |

