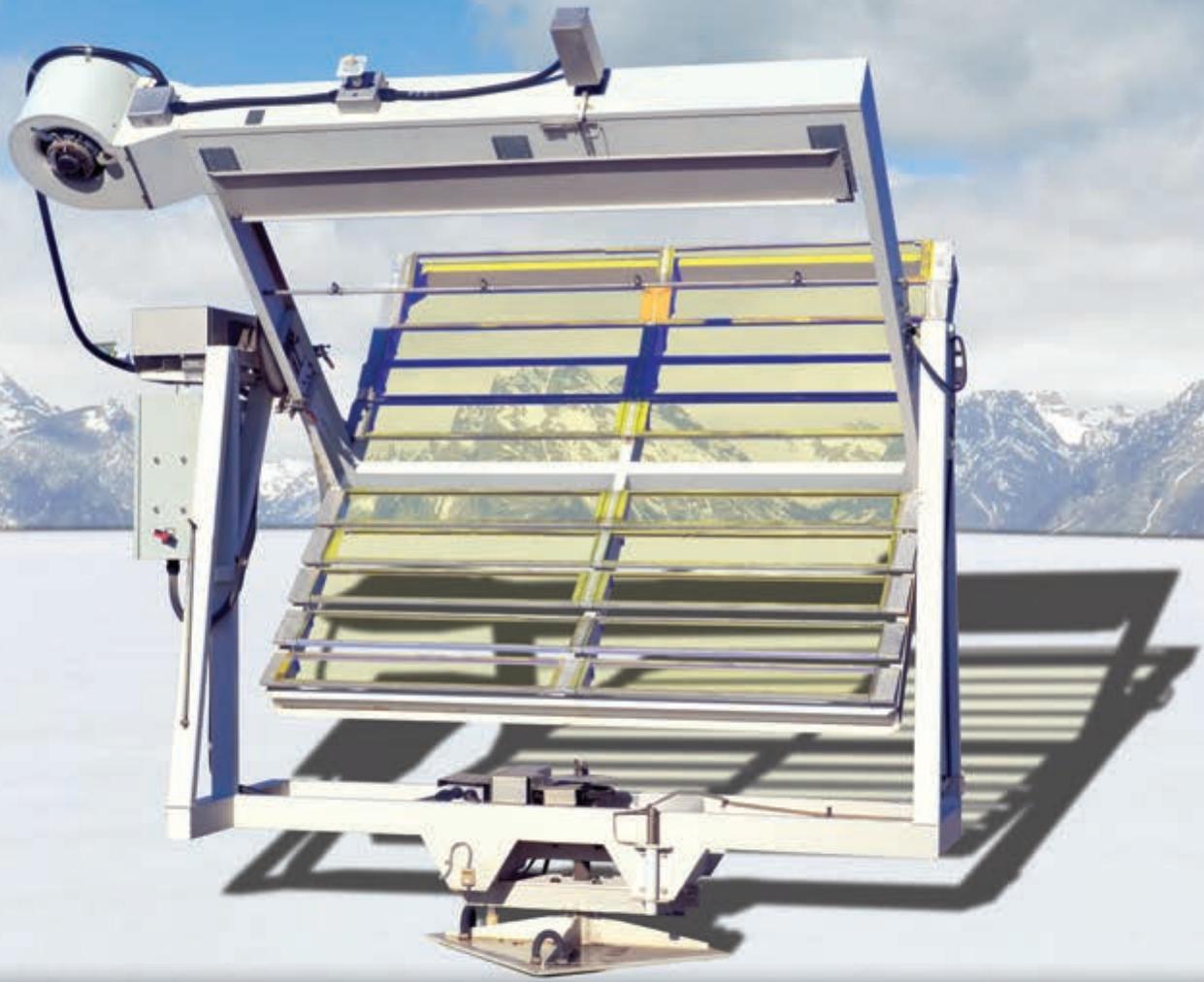


# Low-Temperature EMMA<sup>®</sup> / EMMAQUA<sup>®</sup>



# THE BENEFITS OF LOW-TEMPERATURE TESTING

## What is the Low-Temperature EMMA®/EMMAQUA®?

The Low-Temperature EMMA/EMMAQUA (LT-EMMA/EMMAQUA) is Atlas' latest innovation that utilizes "cool mirror" technology in natural exposure testing. This new outdoor testing device delivers more than 5 years of equivalent radiation exposure as would be received in a standard outdoor testing rack in South Florida in a single year, but with much cooler sample temperatures when compared to traditional EMMA/EMMAQUA testing.

The device achieves cooler sample temperatures through a patented "cool mirror" technology that has very high reflectance in the UV and near visible wavelength ranges while attenuating reflectance in the longer wavelength visible and IR portions of the solar spectrum (Figure 1).

## What are the Benefits?

The new LT-EMMA/EMMAQUA device performs accelerated testing while:

- Providing higher acceleration at significantly lower temperatures
- Allowing testing of temperature-sensitive materials that may not be suitable for standard EMMA/EMMAQUA
- Being fully compliant to ASTM G90 requirements

## Temperature's Effects

ASTM G90 devices can effectively cool many test materials. However, there are several situations where this cooling methodology does not adequately maintain sample temperatures within acceptable limits. Elevated temperatures can adversely affect samples and potentially compromise test results by causing unnatural weathering degradation.

Oftentimes, even moderate temperature increases in accelerated testing may cause significant adverse appearance effects on test materials. The result may cause these materials to become darkened or charred.

Frequently, high exposure temperatures can cause even greater damage to mechanical properties on temperature-sensitive materials and may cause them to warp and develop other structural damage.

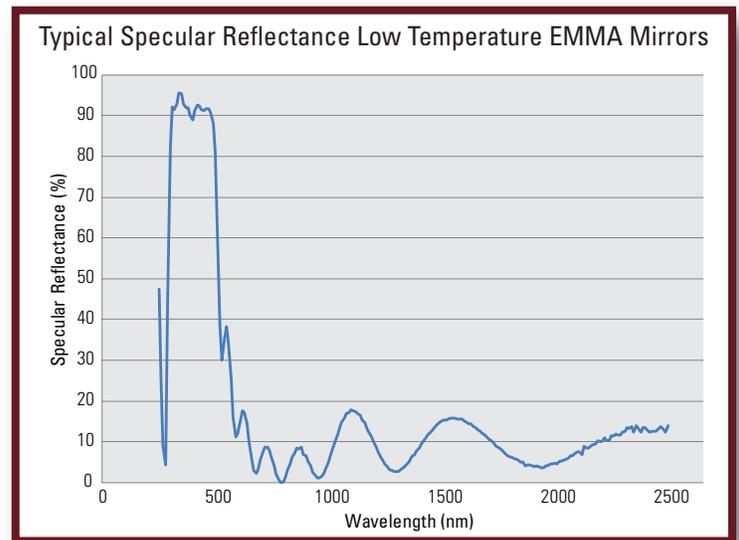


Figure 1

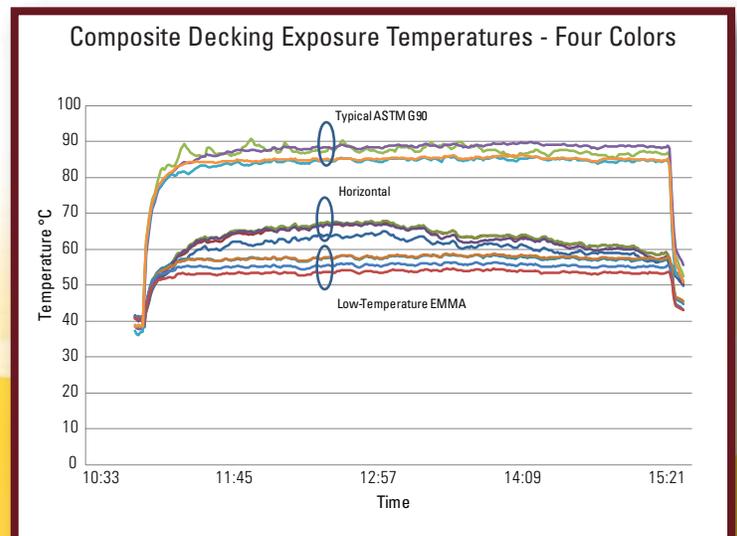


Figure 2

# Effects of Low-Temperature Testing

The Low-Temperature EMMA®/EMMAQUA® device provides a solution to long-standing concerns over outdoor accelerated weathering of temperature-sensitive materials (Figure 2). Analyzing black standard temperature (BST) and black panel temperature (BPT) measurements on the Atlas LT-EMMA/EMMAQUA device has shown that temperatures remain significantly lower than that of standard ASTM G90 devices (Figure 3) while successfully achieving high irradiance levels (Figure 4).

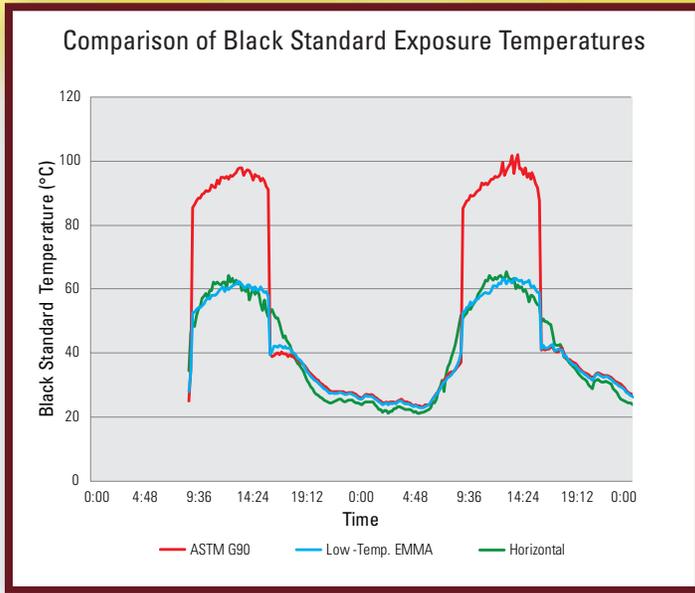


Figure 3

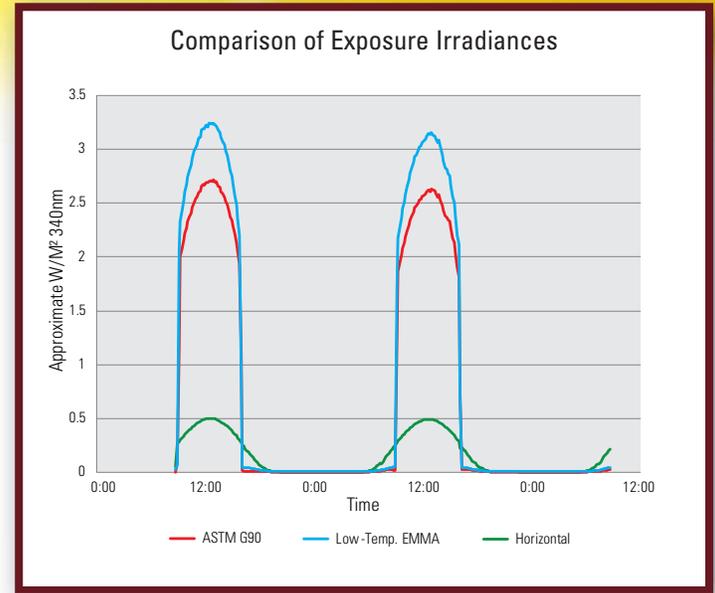
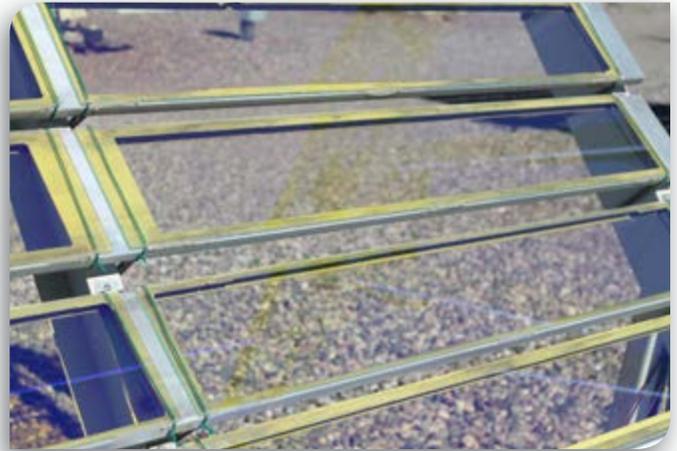


Figure 4

## Ideal Materials for LT-EMMA/EMMAQUA Testing

- Materials that require a long service life
- Dense materials
- Temperature-sensitive materials such as vinyl siding and composite decking
- Coatings applied to metal panels
- Materials that perform well in EMMA or EMMAQUA testing but would benefit from lower temperatures



## Applications

- Adhesives
- Automotive Exteriors
- Elastomers
- Packaging
- Plastics
- Sealants
- Agricultural Films
- Building Materials
- Glass (Architectural & Automotive)
- Paints & Coatings
- Roofing





## Global Support, Weathering Exposure Sites & Laboratories

### ■ Corporate Offices

Chicago, Illinois USA ■ Linsengericht, Germany ■ Shanghai, China ■ São Paulo, Brazil  
Élancourt, France ■ Mörfelden-Walldorf, Germany ■ Bangalore, India ■ Leicester, United Kingdom

### ● Outdoor Exposure Sites & Laboratories

Miami, Florida USA • Phoenix, Arizona USA • Sanary, France • Chicago, Illinois USA • Duisburg, Germany • Leicester, United Kingdom  
Hoek van Holland, The Netherlands • Chennai, India • Prescott, Arizona USA • Loveland, Colorado USA • Medina, Ohio USA  
Keys, Florida USA • Jacksonville, Florida USA • Alberta, Michigan USA • Hainan, China • Guangzhou, China  
Turpan, China • Seosan, Korea • Miyakojima, Okinawa, Japan • Choshi, Japan • Kirishima, Japan  
Singapore • Melbourne, Australia • Townsville, Australia • Novorossiysk, Russia  
Gelendzhik, Russia • Moscow, Russia

### ▲ Local Sales & Service Support

To contact your local Atlas Sales representative please visit <http://atlas-mts.com/contact/local-representatives/>

For general inquiries please contact us at [atlas.info@ametec.com](mailto:atlas.info@ametec.com)

[www.atlas-mts.com](http://www.atlas-mts.com)