

RESISTANCE TO ARTIFICIAL WEATHERING (XENON ARC)

Application

This method describes the operation of the weatherometer when used to evaluate resistance of materials such as paint, particularly base/clear metallic enamels, to artificial weathering.

Apparatus Required

- . Weatherometer with xenon arc lamp.
- . Absorption edge UV-filters.
- . Refrigeration Cooling equipment.
- . Light monitor.
- . Air heaters.

1. Weatherometer

Model 65 XW-WRC, CI65-WRC or approved equivalent apparatus.

Sources:

Atlas Electrical Devices Co.
4114 N. Ravenswood Avenue
Chicago, Illinois USA

Brabender Technologie KG
Postfach 35 01 58
4100 Duisburg

Westlairs Ltd.
North Green
Datchet
Slough SL3 9JH

2. Xenon Arc Lamp

Either 6000 Watt xenon arc lamp available from Fa. Osram or 6500 Watt xenon arc lamp as supplied by Atlas Electrical Devices Co.

Water circulating through this lamp absorbs long infrared wavelengths.

As this is a gas discharge lamp it will, with continued use, progressively drop in intensity.

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Note:

1. If no light monitor is available, the xenon burner should be replaced after 1000 operating hours.
2. Replace the outer coaxial filter after 1000 hours use and the inner coaxial filter after 400 hours use.

3. Absorption Edge UV-Filters

Type WG 280	WG 305
WG 295	WG 320

Size in mm: 220 x 70 x 3 (polished)

Source: Jenaer Glaswerke Schott & Gen.
Postfach 2480
6500 Mainz 1

Control of Radiation Intensity

During the first few hours of operation the burner tube and its inner and outer filter glasses rapidly change in their transmission characteristics. After this, a point of stabilisation is reached and further changes occur at a much slower rate and can be compensated by raising the voltage of the burner tube.

The automatic control of the intensity of radiation is at 310 nm to 60 $\mu\text{W}/\text{cm}^2$ nm. The test and the control are made behind the absorption edge filter WG 280. This filter has no influence on the intensity of radiation at 310 nm.

Black Panel Temperature

During illumination the mean black panel temperature is 60 °C. The black panel should be replaced after 4000 hours of use, as the surface is slowly changed by the UV-radiation.

Air Temperature

During the illumination period: 50 °C
During the dark period: 10 °C

Heat is introduced into the test chamber by radiation from the arc lamp and if necessary by additional electric air heaters.

Heat is removed from the chamber by introducing filtered fresh air from refrigeration condensing coils.