

Weathering conditions in Xenotest-equipment used at the Dept. of Materials Testing (Röhm Analytical Services)

In the dept. of materials testing we use two different types of weathering equipment. The older series was manufactured by HERAEUS and is called Xenotest 1200. The new series is manufactured by ATLAS and is called Xenotest Beta LM. Those machines are smaller but offer higher irradiation power (adjustable) so that the accelerating factor is higher.

In general, accelerated weathering is performed according to international standards ISO 4892-1 entitled – “Plastics Methods of exposure to laboratory light sources – and ISO 4892-2 “Xenon Arc sources”.

The following table summarizes the test parameters.

Type	1200	Beta LM	According to
UV irradiance (300 – 400nm)	45 W/m ²	60 W/m ²	Beta LM : recommendation in ISO 4892-2
Irradiation source	Xenon bulb	Xenon bulb	ISO 4892-2
Exposure	discontinuous (Samples turn once every minute).	continuous (same side of sample always faces the Xenon bulb)	Beta LM: ISO 4892-2 1200: Not according to standard.
Accelerating factor compared to natural weathering	10 : 1	14 : 1	ballpark figure: depends on material and property studied
Temperature	55 °C	65 °C	Beta LM = ISO 4892-2 (recommendation)
Temperature sensor type	Black panel temperature (BPT), (unregulated)	Black Standard Temperatur (BST) (regulated)	ISO 4892-1 1200 = § 5.2.2.2 Beta LM = § 5.2.2.1
relative humidity and conditions	18 min. rain dest. H ₂ O, 102 min. dry at 65% r.h.	18 min. rain dest. H ₂ O, 102 min. dry at 65% r.h.	ISO 4892-2
sample format (optical testing)	60x45 mm ² = 0,0027 m ²	40x 45 mm ² = 0,0018 m ²	
capacity: # of opt. samples / unit	600	132	
net capacity (f. optical samples)	3 x 1,62 m ² = 4,86 m ²	2 x 0,24 m ² = 0,48 m ²	
cooling	water-cooled	air-cooled	