

Accelerated Weathering Test



Decoral LAB



Research and Development



COPPER EFFECT series



MRK-010-0069

TEST DI INVECCHIAMENTO ACCELERATO:

Invecchiamento accelerato

Tutti i campioni vengono sottoposti all'irraggiamento di lampade allo xenon ed a cicli umido/secco mediante speciali apparecchiature (Q-Sun, SolarBox). Tali apparecchiature vengono utilizzate in conformità agli standard internazionali imposti dalla norma ISO 11341 rispettando le seguenti impostazioni:

- intensità luminosa, $550 \pm 20 \text{ W/m}^2$ (290-800 nm)
- temperatura del pannello nero, $65 \pm 5^\circ\text{C}$
- ciclo umido 18 minuti
- ciclo secco 102 minuti

Alla fine dei test, che normalmente hanno una durata minima di 1000 ore, viene valutata la variazione di brillantezza (EN ISO 2813, con angolo di incidenza 60°) ed il cambiamento di colore ΔE (metodo CIELAB ISO 7724/3) rispetto ai valori di partenza. Questo permette di stabilire, in maniera parametrizzata, l'invecchiamento delle varie superfici testate. La corretta conduzione dei test viene verificata attraverso l'utilizzo di campioni in bianco ad invecchiamento noto.






Figure: apparecchiature per l'invecchiamento accelerato.
Pictures: equipment for the Accelerated Weathering Test

Accelerated Weathering Test

All samples are exposed to radiation of Xenon lamps and to wet/dry cycles by special equipment (Q-Sun, SOLARBOX). Such equipment is used in accordance with international standards imposed by norm ISO 11341, i.e. complying with the following settings:

- light intensity, $550 \pm 20 \text{ W / m}^2$ (290-800 nm)
- black panel temperature, $65 \pm 5^\circ\text{C}$
- wet cycle 18 minutes
- dry cycle 102 minutes.

At the end of the test, whose minimum duration is 1000 hours, Residual Gloss (EN ISO 2813, with an angle of incidence 60°) and Colour Variation ΔE (CIELAB method - ISO 7724 / 3) are measured comparing pre-test values. In this way it is possible to evaluate the aging of surfaces using standard indexes. The accuracy of the test is verified through the use of samples in white, whose aging behaviour is known.

ID Test Report	PROD. VERNIC	COD. FILM	PROG. N°	IMMAGINI
TR-IA-162-2011	9C-036-A004	6052/01	162	
TR-IA-160-2011	9C-036-A004	5007/01	160	
TR-IA-165-2011	9B-036-A004	6052/01	165	
TR-IA-164-2011	9B-036-A004	6047/03	164	
TR-IA-167-2011	9G-036-A004	6052/01	167	
TR-IA-166-2011	9G-036-A004	5007/01	166	



Laboratory
Test

No. 303



Device:
Solar 3000RH



Total duration:
1002h

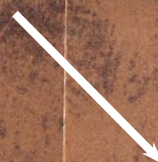
Unexposed area
(reference)

Exposed
area



Unexposed area
(reference)

Exposed
area



LAB. ID NUMBER: 25130
POWDER COATING: 9C-036-A004
HEAT TRANSFER FILM: --
colour variation (ΔE): **1,53**
residual gloss: **78%**

LAB. ID NUMBER: 25135
POWDER COATING: 9C-036-A004
HEAT TRANSFER FILM: 6052/01
colour variation (ΔE): **1,85**
residual gloss: **92%**

Technical Remarks

Excellent residual gloss and very low colour variation (ΔE), after 1002 hours.

Technical Opinion:

**Suitable for
OUTDOOR USE**

Test was carried on samples prepared according to technical specifications supplied by raw materials manufacturers. However, the resistance against accelerated weathering test is only one of the conditions necessary for the evaluation of the resistance of the finished product. For a final assessment see further analysis on natural exposure in Florida.



Laboratory
Test

No. 303



Device:
Solar 3000RH



Total duration:
1002h

Unexposed area
(reference)

Exposed
area



Unexposed area
(reference)

Exposed
area



LAB. ID NUMBER: 25136
POWDER COATING: 9B-036-A004
HEAT TRANSFER FILM: --
colour variation (ΔE): 1,7
residual gloss: 92%

LAB. ID NUMBER: 25140
POWDER COATING: 9B-036-A004
HEAT TRANSFER FILM: 6047/03
colour variation (ΔE): 2,16
residual gloss: 94%

Technical Remarks

Excellent residual gloss and very low colour variation (ΔE), after 1002 hours.

Technical Opinion:

**Suitable for
OUTDOOR USE**

Test was carried on samples prepared according to technical specifications supplied by raw materials manufacturers. However, the resistance against accelerated weathering test is only one of the conditions necessary for the evaluation of the resistance of the finished product. For a final assessment see further analysis on natural exposure in Florida.



Laboratory
Test

No. 303



Device:
Solar 3000RH



Total duration:
1002h

Unexposed area
(reference)

Exposed
area



Unexposed area
(reference)

Exposed
area



LAB. ID NUMBER: 25136
POWDER COATING: 9B-036-A004
HEAT TRANSFER FILM: --
colour variation (ΔE): 1,7
residual gloss: 92%

LAB. ID NUMBER: 25141
POWDER COATING: 9B-036-A004
HEAT TRANSFER FILM: 6052/01
colour variation (ΔE): 2,67
residual gloss: 97%

Technical Remarks

Excellent residual gloss and very low colour variation (ΔE), after 1002 hours.

Technical Opinion:

**Suitable for
OUTDOOR USE**

Test was carried on samples prepared according to technical specifications supplied by raw materials manufacturers. However, the resistance against accelerated weathering test is only one of the conditions necessary for the evaluation of the resistance of the finished product. For a final assessment see further analysis on natural exposure in Florida.



Laboratory
Test

No. 303



Device:
Solar 3000RH



Total duration:
1002h

Unexposed area
(reference)

Exposed
area



Unexposed area
(reference)

Exposed
area



LAB. ID NUMBER: 25142
POWDER COATING: 9G-036-A004
HEAT TRANSFER FILM: --
colour variation (ΔE): **1,51**
residual gloss: **67%**

LAB. ID NUMBER: 25143
POWDER COATING: 9G-036-A004
HEAT TRANSFER FILM: 5007/01
colour variation (ΔE): **3,9**
residual gloss: **69%**

Technical Remarks

Excellent residual gloss and very low colour variation (ΔE), after 1002 hours.

Technical Opinion:

**Suitable for
OUTDOOR USE**

Test was carried on samples prepared according to technical specifications supplied by raw materials manufacturers. However, the resistance against accelerated weathering test is only one of the conditions necessary for the evaluation of the resistance of the finished product. For a final assessment see further analysis on natural exposure in Florida.



Laboratory
Test

No. 303



Device:
Solar 3000RH



Total duration:
1002h

Unexposed area
(reference)

Exposed
area



Unexposed area
(reference)

Exposed
area



LAB. ID NUMBER: 25142
POWDER COATING: 9G-036-A004
HEAT TRANSFER FILM: --
colour variation (ΔE): **1,51**
residual gloss: **67%**

LAB. ID NUMBER: 25147
POWDER COATING: 9G-036-A004
HEAT TRANSFER FILM: 6052/01
colour variation (ΔE): **3,36**
residual gloss: **72%**

Technical Remarks

Excellent residual gloss and very low colour variation (ΔE), after 1002 hours.

Technical Opinion:

**Suitable for
OUTDOOR USE**

Test was carried on samples prepared according to technical specifications supplied by raw materials manufacturers. However, the resistance against accelerated weathering test is only one of the conditions necessary for the evaluation of the resistance of the finished product. For a final assessment see further analysis on natural exposure in Florida.



Laboratory
Test

No. 303



Device:
Solar 3000RH



Total duration:
1002h

Unexposed area
(reference)

Exposed
area



Unexposed area
(reference)

Exposed
area



LAB. ID NUMBER: 25130
POWDER COATING: 9C-036-A004
HEAT TRANSFER FILM: --
colour variation (ΔE): **1,53**
residual gloss: **78%**

LAB. ID NUMBER: 25131
POWDER COATING: 9C-036-A004
HEAT TRANSFER FILM: 5007/01
colour variation (ΔE): **2,34**
residual gloss: **94%**

Technical Remarks

Excellent residual gloss and very low colour variation (ΔE), after 1002 hours.

Technical Opinion:

**Suitable for
OUTDOOR USE**

Test was carried on samples prepared according to technical specifications supplied by raw materials manufacturers. However, the resistance against accelerated weathering test is only one of the conditions necessary for the evaluation of the resistance of the finished product. For a final assessment see further analysis on natural exposure in Florida.