

Accelerated Weathering Test



Decoral LAB
Research and Development



POWDER ON POWDER IMITATION



MRK 010-0016

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.





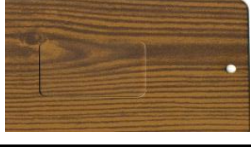



Figure: apparecchiature per l'invecchiamento accelerato.
Pictures: equipment for the Accelerated Weathering Test

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-73-2013	DS 791	1304/02	73	
TR-IA-75-2012	DS 791	2531/03	75	
TR-IA-49-2011	DS 721	1304/01	49	
TR-IA-57-2011	DS 721	2531/02	57	
TR-IA-70-2011	DS 742	2531/01	70	
TR-IA-88-2012	DS 772	2531/02	88	



Laboratory
Test

No. 296



Device:
QSun 3000



Total duration:
1011h

Unexposed area
(reference)

Exposed
area



Unexposed area
(reference)

Exposed
area



LAB. ID NUMBER: 24298
POWDER COATING: DS 721
HEAT TRANSFER FILM: --
colour variation (ΔE): **0,25**
residual gloss: **96%**

LAB. ID NUMBER: 24299
POWDER COATING: DS 721
HEAT TRANSFER FILM: 1304/01L
colour variation (ΔE): **0,88**
residual gloss: **93%**

Technical Remarks

Excellent residual gloss and very low colour variation (ΔE), after 1011 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. 296



Device:
QSun 3000



Total duration:
1011h

Unexposed area
(reference)

Exposed
area



Unexposed area
(reference)

Exposed
area



LAB. ID NUMBER: 24298
POWDER COATING: DS 721
HEAT TRANSFER FILM: --
colour variation (ΔE): **0,25**
residual gloss: **96%**

LAB. ID NUMBER: 24308
POWDER COATING: DS 721
HEAT TRANSFER FILM: 2531/02L
colour variation (ΔE): **0,66**
residual gloss: **95%**

Technical Remarks

Excellent residual gloss and very low colour variation (ΔE), after 1011 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. 296



Device:
QSun 3000



Total duration:
1011h

Unexposed area
(reference)

Exposed
area



LAB. ID NUMBER: 24317
POWDER COATING: DS 742
HEAT TRANSFER FILM: --
colour variation (ΔE): **0,11**
residual gloss: **98%**

Unexposed area
(reference)

Exposed
area



LAB. ID NUMBER: 24323
POWDER COATING: DS 742
HEAT TRANSFER FILM: 2531/01L
colour variation (ΔE): **0,29**
residual gloss: **97%**

Technical Remarks

Excellent residual gloss and very low colour variation (ΔE), after 1011 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

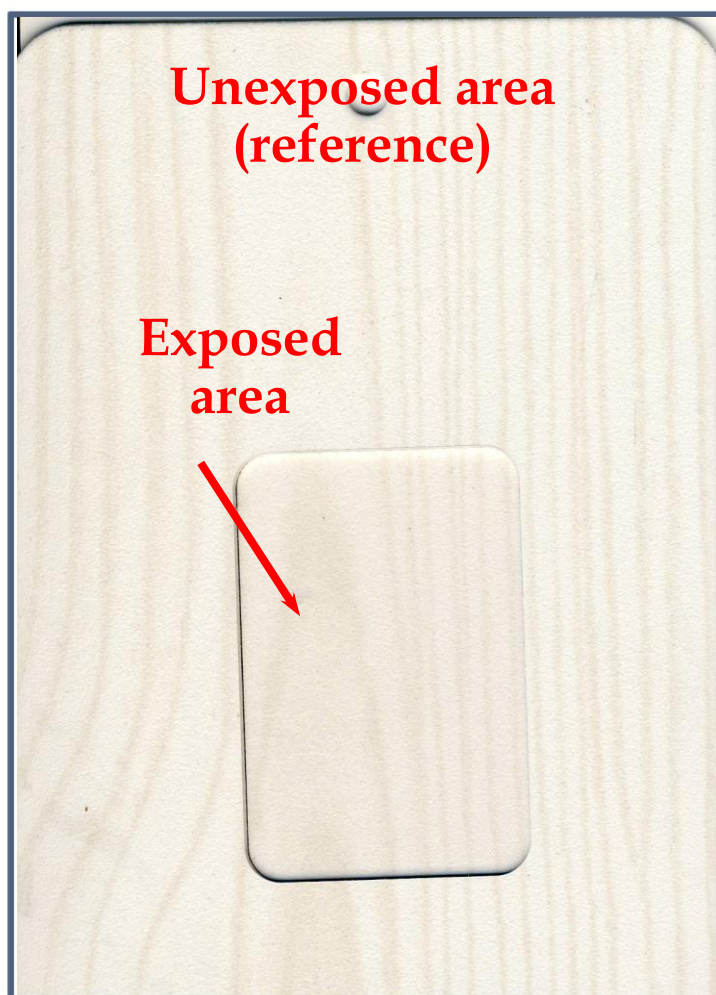
No. 361



Device:
Solra 3000RH



Total duration:
1272h



LAB. ID NUMBER: 29118
POWDER COATING: DS 791
HEAT TRANSFER FILM: 1304/02
Colour variation(ΔE): **0,98**
residual gloss: **93%**

Technical Remarks

Excellent residual gloss and very low colour variation (ΔE), after 1272 hours on decorated sample.

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

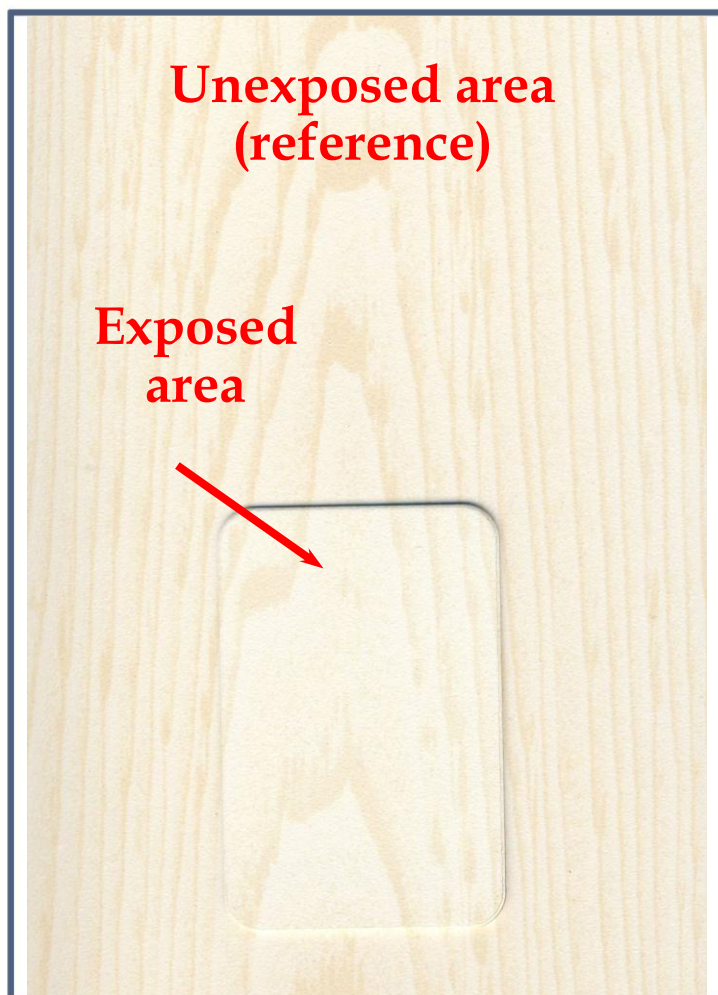
No. 273



Device:
QSun 3000



Total duration:
988h



LAB. ID NUMBER: 24009
POWDER COATING: DS 791
HEAT TRANSFER FILM: 2531/03
colour variation (ΔE): 1,16
residual gloss: 90%

Technical Remarks

Excellent residual gloss and very low colour variation (ΔE), after 988 hours on decorated sample.

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. 288



Device:
QSun 3000



Total duration:
950h

Unexposed area
(reference)

Exposed
area



Unexposed area
(reference)

Exposed
area



LAB. ID NUMBER: 24201
POWDER COATING: DS 772
HEAT TRANSFER FILM: --
colour variation (ΔE): 0,3
residual gloss: 92%

LAB. ID NUMBER: 24195
POWDER COATING: DS 772
HEAT TRANSFER FILM: 2531/02
colour variation (ΔE): 0,37
residual gloss: 90%

Technical Remarks

Excellent residual gloss and very low colour variation (ΔE), after 950 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.