

HIGH SPEED CORRODER PRETEST XXXXX Half-moon Outdoor lamp.



Product description from the manufacturer: Half-moon outdoor lamp in galvanized Steel.

Guarantee: The XXXXX Outdoor lamps in copper and galvanized steel are guaranteed for up to 15 years. This guarantee applies to extensive corrosion in the form of holes in the metal caused by rust. The guarantee is subject to presentation of receipt. There is no guarantee on the components which have been damaged by wear and tear or mistreatment of the lamps.

Short conclusion: After 10 days' exposure to "Highly Accelerated Corrosion Testing" (HACT), the galvanized surface shows significant corrosion. The electrical terminal is damaged to an extent where it is no longer possible to unscrew the screws. The mate protection plastic, covering the bulb broke of as a result of expanding screws.



Synopsis

In order to demonstrate the effect of the new HIGH SPEED CORRODER, we have conducted a series of HACT (Highly Accelerated Corrosion Test) in the HSC 512 on “everyday products” commercial available and used in many households.

This report contains the data and results for a tested XXXXX Outdoor lamp, model YYYYY, sold with 15 years’ warranty in most DIY centers. The subject was exposed to HACT for 10 days in the HSC 512 chamber.

Apparatus and test conditions

HSC 512 is running the standard 6 hours’ cycles were each cycle consistent consist of:

1. 5 minutes’ salt spray in a 5% salt brine.
2. 1-hour dehumidification.
3. 4 hours and 55 minutes’ humidification.

Temperature through all cycles is maintained at +70 °C and the test space is kept at a very high air circulation, except for the spray process. After the spray, the humidity is lowered as much as possible. This is done by the low temperature of the water mirror and insures deep dehumidification process, typical <35%rH. In the last step of the cycle, humidity is being held at 95% or above for the humidification cycle, while the temperature is +70°C.

The process is monitored by a PLC and the humidity and temperature data in the HSC chamber is logged for documentation purpose.

Method

In our test, we placed the brand new XXXXX Outdoor lamp in the HSC chamber. It was positioned as the mounting instructions describes. The HACT was running for 10 days, equal to 40 cycles. After the 10 days of cycling though salt spray, dehumidification and humidification. We took the lamp out, and analysed the damages.

Conclusion

After 10 days’ exposure to a "Highly Accelerated Corrosion Test", the Galvanized surface shows significant corrosion and rust. The electrical terminal is damaged to an extend where it is no longer possible to undo the screws. The mate protection plastic, covering the bulb, broke of due to the screws holding the plastic became bloated from a substantial amount of red rust and thereby the screws expanded in size.

The HSC chamber managed to do significant damages to subject. Even this test does not conclude any “real life” expectancy, these results could be used to improve the finale product. The value lies in the ability to compare the results from several runs of identical tests in which the subject has been improved between each HACT. In this case, the data could be used to determine the quality of the galvanization and coating and perhaps select in-between different alternatives.

Furthermore, the HACT method gives the producer a fast and reliable method to maintain product quality, as any deviant from the product benchmark would show itself in days instead of waiting for potential customer and end-user complaints.

Detailed photos of the damage created by the HACT process:

