

SAE J575 Humidity Test LEDr Evaluation



Humidity Test per SAE J575 (AUG2018)

Test Conditions & Evaluation (Section 4.11) + Requirement (Section 5.11)

4.11 Humidity Test

This test determines the ability of the lamp to resist the accumulation of moisture within the lamp that could cause either physical defects to the lamp materials that might affect lamp beam performance or that could persist to affect the photometric performance of the lamp.

4.11.1 Test Fixture

Mount sample on test fixture in vehicle orientation. All attachments to the lamp assembly are made behind the lens and are not within 5 cm laterally of a vent inlet or outlet.

4.11.2 Pre-Conditioning Lamps

Open lamp to environment by removing all access covers, replaceable light sources and sockets. Place lamps and components in oven at $80\text{ °C} \pm 2\text{ °C}$ for 2 hours to drive moisture out of lamp assembly before starting test. Reassemble lamp and start test within 10 minutes.

4.11.3 Environmental Conditions

The lamp assembly is oriented in design operating position, and is placed in a controlled environment at a temperature of $35\text{ °C} \pm 1\text{ °C}$ with a relative humidity of not less than 95%. All drain holes, breathing devices, and other openings are in their normal operating positions for all phases of the humidity test.

4.11.4 Lamp Operation

The lamp shall be subjected to a minimum of 48 hours of power cycling. In each cycle the highest wattage function in each cavity shall be energized as follows: Independent high and low beam cavities shall be cycled at 20 minutes low beam ON then 20 minutes OFF followed by 20 minutes high beam ON then 20 minutes OFF (Figure 7). Dual filament bulb headlamps are cycled as low beam only. If the lamp incorporates a turn signal, it shall flash at 90 flashes per minutes with a $75\% \pm 2\%$ current "on-time". All other functions are cycled synchronously with the high and low beam at 20 minutes ON/OFF.

4.11.5 Water Spray

Within 3 minutes after the completion of any power ON cycle, following the 48th hour, water spray will begin. Mount test lamp in water spray chamber in design intent position, approximately 450 mm from shower manifold. Spray entire lens surface with water, at a temperature of $21\text{ °C} \pm 2\text{ °C}$ at a flow rate of at least 10 L/min. Maintain spray on lens for 5 minutes.

4.11.6 Dry exterior lens surface with dry cloth after removing from water spray chamber.

4.11.7 Exposure to Ambient Conditions

The mounted assembly is removed from spray chamber and placed in chamber at $23\text{ °C} \pm 1\text{ °C}$ and $50\% \pm 5\%$ relative humidity for 1 hour.

4.11.8 Evaluation

Upon completion of the 1 hour exposure to ambient conditions in 4.10.7, the lamp shall be removed from the test chamber and immediately visually inspected for the presence of any moisture or condensation.

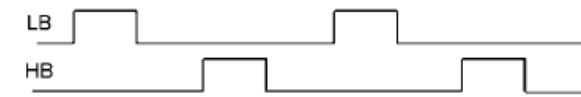
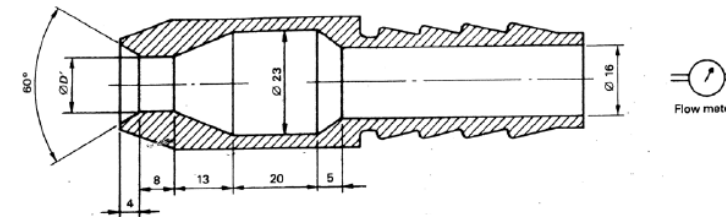


Figure 7 - Humidity test lamp operation



D' = 12,5 for the test of 14.2.6 (second characteristic numeral 6)

Figure 6 - Water spray nozzle dimensions

Requirement

5.11 Humidity

There shall be no visual evidence of moisture or condensation on active portions of reflectors and lens(es) on the interior of the device.

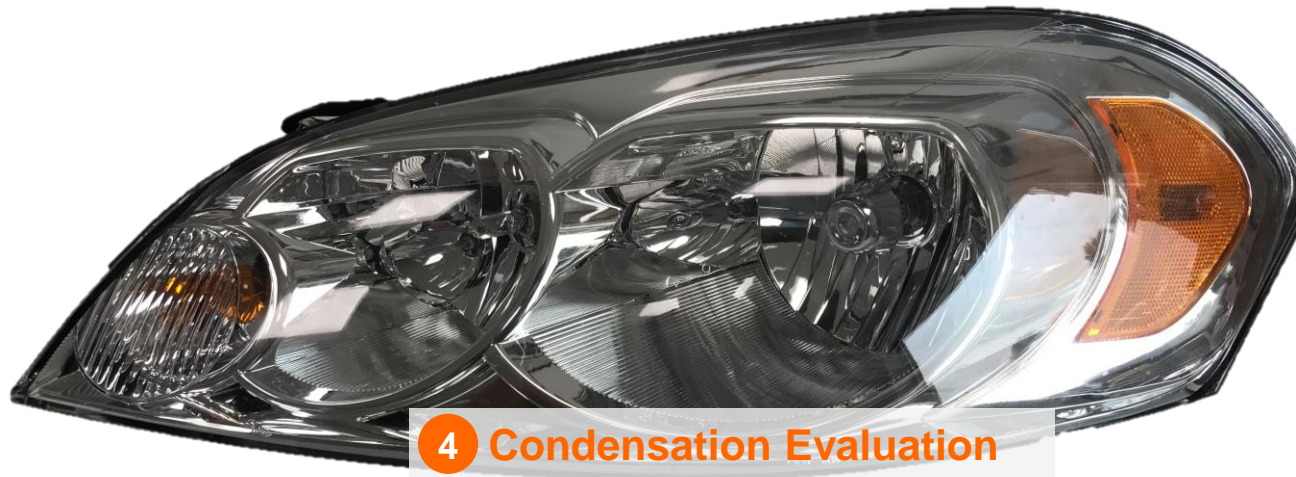
SAE J575 Humidity Test Headlamp Overview



Headlamp	
2006-2013 Chevrolet Impala	
Function	Light Source
Low Beam (Reflector Optics)	H11 LEDr
High Beam (Reflector Optics)	HB3 (9005)
Turn Signal	3157 NAK
Position Light	194



SAE J575 Humidity Test Test Overview / Results



Results*

- After completion of 48 hours power cycling at 35°C, 95% humidity and 5 minute water spray on lens no humidity or condensation was observed inside the headlamp
- TEST PASSED – No condensation

*Test was performed in the laboratory of OSRAM (Hillsboro, NH, USA) in September 2020

Thank you.