



Technical Service Bulletin

SUBJECT: DEW CONDENSATION IN HEADLIGHTS AND TAILLIGHTS		No: TSB-22-54-003	
		DATE: APRIL 2022	
		MODEL: All Models	
CIRCULATE TO:	<input type="checkbox"/> GENERAL MANAGER	<input checked="" type="checkbox"/> PARTS MANAGER	<input checked="" type="checkbox"/> TECHNICIAN
<input checked="" type="checkbox"/> SERVICE ADVISOR	<input checked="" type="checkbox"/> SERVICE MANAGER	<input type="checkbox"/> WARRANTY PROCESSOR	<input checked="" type="checkbox"/> SALES MANAGER

PURPOSE

Some customers may report moisture or fogging inside headlights or taillights. This condition is typically caused by dew condensation, most often on rainy days or after car washing. The condensation normally dissipates within one hour after lights are turned on.

This TSB explains the difference between normal dew condensation, which is a natural phenomenon, and water penetration caused by improper sealing or a defective/broken part.

NOTE: Each reported case should be evaluated thoroughly before replacing a headlight or taillight. Only if normal condensation is ruled out, and the part is judged to be defective, should a headlight or taillight be replaced. Replacement of a **non-OEM exterior headlight or taillight** may result in claim inspection and debit.

It may be necessary to explain to the customer:

1. It may not be possible to prevent fogging of a headlight or taillight lens under certain conditions.
2. Dew condensation is generated by differences of temperature, or after vehicle has been exposed to water (such as rain or washing the car).
3. Humid weather may increase the condensation effect.
4. Condensation should dissipate within one hour after lights have been on.

AFFECTED VEHICLES

All U.S. Models

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PROCEDURE

If a customer expresses concern related to moisture inside a headlight or taillight, review all the information in this TSB to determine the cause. After reading the entire TSB, determine whether the light needs to be replaced.

- If the condensation dissipates after the light has been on for one hour, do NOT replace the light assembly. Explain to the customer that this is normal dew condensation.
- If the condition is judged to be water penetration, and the moisture remains in the light after one hour of the light being on, then the light assembly may need to be replaced.

Dew Condensation vs Water Penetration

The two main causes of a fogged headlight or taillight are dew condensation or water penetration.

Dew condensation is a natural phenomenon and is **not** a part failure. It typically dissipates within one hour after lights have been on.

In contrast, water penetration may be caused by a part defect such as improper sealing, where large water drops remain inside and do not dissipate after lights have been on for at least an hour. If water drops still remain inside the light after one hour, with lights being on, then water penetration can be suspected.

Explanation of Dew Condensation (as a natural phenomenon)

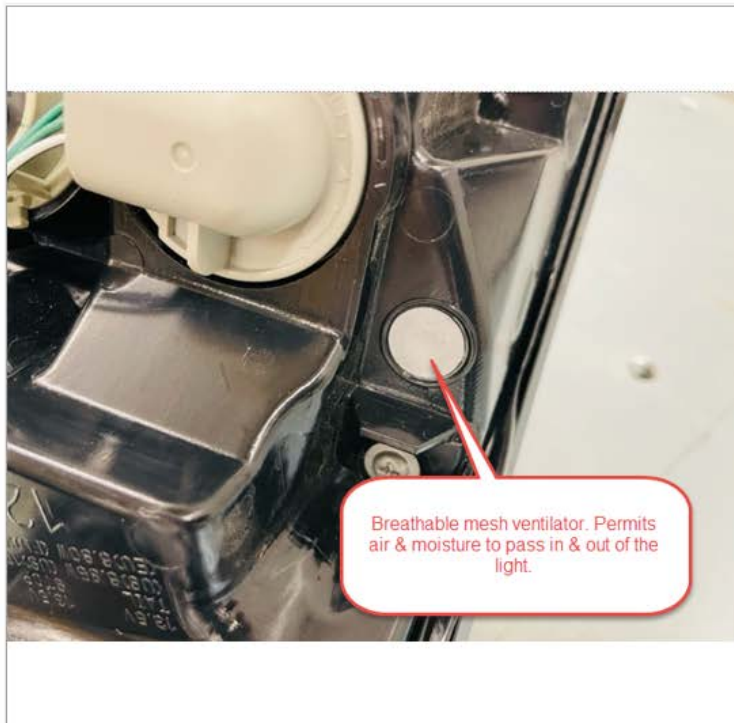
Dew condensation occurs as a natural phenomenon: the inside of a windshield becomes fogged when driving in rain, and house windows become fogged in winter.

Atmospheric air contains moisture even in fair weather. Higher temperature air can contain a large amount of moisture, but when the temperature drops, the amount of contained moisture decreases and the moisture that is left becomes dew condensation. This principle is demonstrated in a fogged car windshield or windows on a house. The window is heated by the warmer indoor air, which contains more moisture than the colder air outside. The window is cooled by the colder outside air, which causes the warmer air on the inside of the window to cool, and release moisture in the form of dew condensation.



Dew Condensation/Fogging of Headlights and Taillights

Headlights and taillights become fogged as part of a normal dew condensation process.



When the light is on, it generates heat, and air inside of the housing expands and contracts as the lights are turned on and off. The housing of headlights and taillights are designed with breathing holes that allow ambient air to flow into and out of the light housing. This design helps to prevent cracks and damage to the seal from pressure fluctuation.

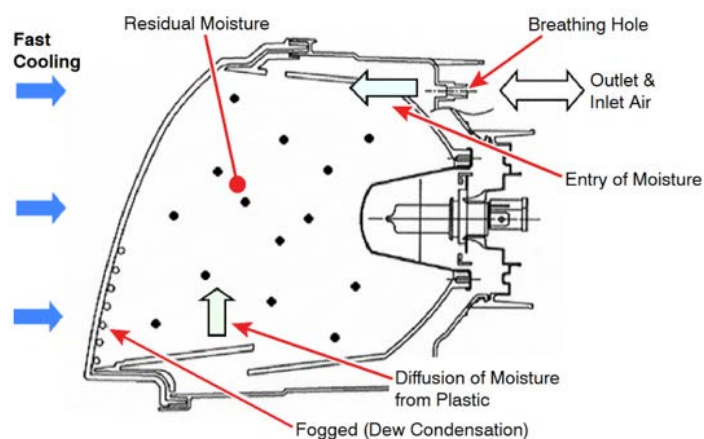
When air outside of the light unit is humid, the moisture enters the light housing through the breathing holes as the light is turned on and off.

While some of the suctioned moisture dissipates, some of it stays inside the unit. In addition, resin materials of the light itself release moisture into the light unit as temperature rises. This warmer residual moisture becomes dew condensation when it contacts a cooler lens (for example, a lens that has been cooled by rain or washing the vehicle).

Dew condensation most often occurs in the following conditions:

- Extreme temperature differences
- After washing the vehicle
- Driving in the rain
- Sunlight hitting the light in cold ambient temperatures (e.g., morning sun in winter)

Cross Section Diagram of Condensation in Headlight



WARRANTY INFORMATION

This bulletin is supplied as technical information only and is not an authorization to repair. If an affected vehicle is reported with the described condition, diagnose the condition, repair if necessary.