

# ELECTROLYSIS

## Simply put:

It is an electric current flowing through a liquid, stripping metal molecules from one spot and depositing them in a different spot.

## The problem:

The process of electrolysis can discolor, eat holes in, and plug metal components.

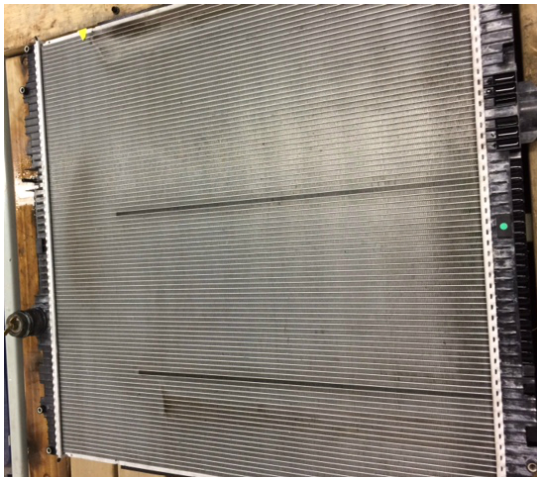
## Check points:

1. **Check the system for stray electrical current** using a multimeter.
2. **Check the starter for a corroded grounding cable.** A corroded cable on the starter will only introduce stray current while starting the vehicle. This won't show up on a multimeter test.
3. **Check coolant chemistry.** Improper coolant chemistry can accelerate electrolysis (as well as high flow erosion). High iron, salts, or copper contents can greatly increase corrosion. This can typically be remedied by flushing the system and filling with new coolant.

## Everything You Need to Know About this Costly Process

- Electrolysis is an electro chemical process where metal is dissolved from one place and deposited in another.
- Electrolysis is caused by excess electrical current flowing through the system's cooling fluid or metal in finding a path to an electrical ground.
- When a radiator is not properly grounded, the cooling system collects stray electricity and the coolant becomes an electrolyte.
- The stray electricity searches for a ground path and it will degrade or eat away the radiator in the process.
- This can be caused by loss of the ground connection or a frayed electrical wire from another device on the vehicle.

## Black lines on radiator core are a red flag to suspect Electrolysis



## Common Causes:

- To check for electrolysis, use a digital voltmeter set for 12 DC volts.
- Connect one lead of the meter to the negative post on the battery.
- When the engine is cold, remove the radiator cap
- Insert the other lead into the coolant in the radiator. Do not touch the metal parts of the radiator. Turn the ignition switch to the on position.
- Wait a few minutes for the reading to stabilize. A reading on the meter in an excess of .3 volts indicates that there is stray current.
- To check for sources, turn the ignition switch on and then turn various electrical devices on and off. When the meter's reading jumps and remains in excess of .3 volts, you found the bad ground device.

## Test for electrolysis:

- Heater and air conditioning fan and radiator cooling fans are the most common devices to check for inadequate ground.
- Corroded starter connections
- Owner installed auxiliary electrical accessories (lightbars, heaters, etc) that are not properly grounded
- Radiator ground strap is damaged or missing