

RV Fire Safety



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Driving

While on the road, a van RV could catch fire from a collision, fuel leak, blown tire, or electrical failure. The cause could be anything, but a fire in a moving RV is especially dangerous because you first have to keep control, stop the RV safely on the side of the road, and get out of danger.

The most common type of fire while driving is an engine fire.



Engine Fire

The most common cause of engine fires is a fluid or oil leak.

TIP: An indicator of a problem would be a rapid change in fuel levels or rapidly climbing engine temperature.

Let's revisit the Twilight Zone again for a minute. Imagine if you will: you are driving down the highway and you notice the acrid smell of burning rubber and plastic. You notice wisps of smoke coming out from under the hood, and the paint on the hood is beginning to blister.

WHAT TO DO?

- 1 – **REMAIN CALM**
- 2 – Signal and CAREFULLY pull over to the side of the road, away from people and buildings.
- 2 – Put it in park and set the emergency brake. – You definitely don't want your flaming RV rolling down the road.
- 3 – Turn off the engine. - Turning off the engine will stop the flow of fuel and other fluids (fuel pump, water pump, etc).
- 4 – Get everyone out of the vehicle, including any pets, and grab the fire extinguisher on your way out.
- 5 – Call 911 – make sure your phone's GPS location function is turned on so responders can find you on a highway.
- 6 – Ensure that everyone is at least 150 feet away from the vehicle and that no one is standing on the roadside.
- 7 – Do not return to the RV to retrieve any belongings. That's why you have insurance.
(You did make the latest insurance payment, didn't you?)

Error on the side of caution when deciding if you want to attempt to put out an engine fire. There will be **toxic fumes** coming from the fire. Understandably, you have a lot of gear in the van and don't want to just stand there and watch it go up in flames.

– Pop the hood release lever.

- The hood may be very hot.
- **DO NOT OPEN THE HOOD ALL THE WAY**
(Opening the hood all the way will give the fire an influx of oxygen, and a small fire can grow out of control rapidly.)
- From as safe distance, blast the fire extinguisher through the hood gap or from underneath.
After you have blasted the fire through the gap, slowly and carefully lift the hood up.

The majority of engine fires are Class B – flammable liquids.

Fluid	Flash Point (°F)	Auto-Ignition Temperature (°F)	Boiling Point (°F)
Gasoline	-40	850	100 – 400
Diesel	120	450	300 – 575
Ethanol E85	-55 -55	495	N/A
Engine Oil	400	600	680
Transmission Gear Oil	400	730	700
Brake Fluid	300	550	450
Power Steering Fluid	350	N/A	N/A
Engine Coolant (Ethylene Glycol)	230- 270	750	350-390
Windshield Wiper Fluid	90	850	N/A

ASTM D 92-05a for the flash and flame point of representative automotive fluids

CRASH – If your RV is involved in a crash, unlock the doors. You may not be able to open them, but that will assist rescuers in getting the doors open. Get your seatbelt off.

ESCAPE TOOLS – If the vehicle’s doors are jammed, a recommended safety tool is a Life Hammer. It contains a sharp blade to cut seatbelts and a steel-pointed hammer for shattering side windows.

FUEL - Diesel engine fuel rail pressures are in the range of 4,500 psi. You can imagine that at this pressure, a pinhole in the diesel fuel rail will likely spray diesel fuel all over the engine compartment and onto the hot exhaust manifold. This has been a major source of fires in Class A diesel pushers, and many owners have installed engine compartment automatic fire suppression systems.

OIL CAP - An unusual number of engine fires have been caused by something as simple as a missing oil filler cap. Crankcase pressure can cause oil spatter to be blown out of the oil filler and onto the hot exhaust manifold, igniting a fire.

TIP: After an oil change or other service, double check that all caps have been replaced and are tight.

TRANSMISSION FLUID leak can also cause flammable fluid to be sprayed on the undercarriage and onto the hot exhaust system causing a fire. The exhaust catalytic converter on a vehicle has a normal operating temperature range up to 1,600 degrees.

OIL COOLER hoses on a diesel engine running at 3,300 rpm can have an oil pressures between 40-70 psi. Any leaks in the hoses can spray oil all over, run the engine oil system dry, and cause the engine to overheat.

TIP: If the engine oil light comes on while driving, safely pull off the road and turn off the engine. Do not attempt to drive to the next exit, next turnoff, or final destination. The oil light is a STOP NOW and investigate. Is there a black puddle under the engine?

The engine should not be low on oil because you checked the level in the pre-trip check list... right???

Coolant - As the engine temperature gets up to normal, the cooling system pressure rises to 20 psi. Any coolant leaks can spray onto the hot engine and manifold, causing a fire. But wait, I thought the radiator was full of water and a little antifreeze? Well, that antifreeze is ethylene glycol and propylene glycol. On a hot surface, the water will boil away and all that remains is glycol, which has a flash point temperature of 232 degrees F.



DEF - There is a bit of **good news** under the hood. There is one fluid in the engine compartment you don't have to worry about: DEF is non-hazardous, non-toxic, and NON-FLAMMABLE.

Turbochargers – Under a heavy load like climbing a steep grade or towing, the turbocharger can overheat and become a source of an engine fire. Turbochargers can spin at 150,000 RPM, so oil is also needed for lubrication and cooling of the bearings. Another reason to monitor oil levels.

Electrical fire – With many RVs now adding a second alternator to act as a generator, the risk of an alternator fire has now doubled. If you have a fuse that keeps blowing, it may be more serious than just a problem with those cheap Walmart fuses.

Exploding cars are mostly in the movies, however there are a few things that could explode in a fire: Gas shocks can explode from intense heat, and tires can explode. If the fire is near the fuel tank or the propane tank, you definitely want to stay well away.

Synthetic materials can produce toxic gases that can be harmful and even deadly when they burn.

Preparations

Before leaving on your camping trip, perform the following steps:

- 1 - Check that engine hoses are firm and intact.
- 2 - Tighten any loose hose clamps.
- 3 - Check for leaks.

Fluid colors - The following fluid colors indicate different kinds of engine fluids:

Amber: gasoline or diesel.

Light yellow: fresh brake fluid.

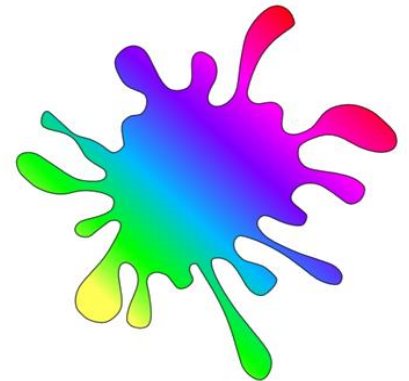
Transparent: water or power steering fluid.

Red: power steering fluid, coolant, or automatic transmission fluid.

Light brown: oil or lubricant.

Blue: window washer fluid.

Green: radiator coolant.



Rolling Down the Road

Tires – Nobody wants to have a blowout while driving down the highway in their RV. At the very least, having to pull over and call for help or, if possible, swap out the spare tire is an inconvenient hassle. On the other hand, RV tire blowouts can be dangerous and potentially cause your RV to drive off the road in the worst-case scenario.

A tire blowout when driving can create a very dangerous situation if the steel belt or tire tread were to flail around in the wheel well, rupturing the brake lines and propane fuel lines. Old tires that have been idle for months can have increased tread failure. Low tire pressure or overloading can cause a tire to overheat, causing a tire failure.

Avoiding a tire blowout:

- Check the tire tread wear. If you live in a hot area, you should replace your tires as soon as the tread begins to show indications of wear or if any other indicators of wear or damage appear.
- Check your tire pressure. The correct pressure should be on the driver's door jam.
- A TPMS (tire pressure monitoring system) can warn you of low tire pressure before it becomes an issue.

- If you are driving in very hot weather conditions, the risk of a tire blowout is increased. Pressure increases with heat.
- Don't overload your RV. (Well, try not to!) Overloading your RV puts too much weight on your tires, causing them to overheat and deteriorate the rubber.
- Keep the tires in good condition. (Consider replacing them at 7 years, no matter what the mileage is.)
- DO A FULL WALK AROUND YOUR RV BEFORE EVERY TRIP.
- Watch out for deep potholes and debris on the road!

BLOWOUT – If you do have a tire blowout, Stay Calm and keep both hands on the steering wheel. Do NOT hit the brakes. Get control of the vehicle, keep it going straight, and safely pull over and gradually slow down to a stop. Turn on the Safety Flashers and take a breath.

TIP: A laser temperature gun is a quick and simple way to check tire and hub temperatures at rest stops or other stops. You can also touch the tire with your hand and feel for differences.

- If a tire on a single axle (like the front wheels) is hot, it could indicate under inflation and increased friction in the walls of the tire.
- If one tire in a dually pair is hot, it may indicate the second tire is underinflated and the hot tire is heating up due to carrying the extra load from the low pressure tire.
- A hot hub could indicate a wheel bearing going bad or a brake pad dragging.

Dragging brakes or a stuck brake pad can generate enough heat to boil brake fluid in the wheel cylinder. This could cause brake failure and/or a wheel fire.

Propane - It is best to have the propane turned off at the tank. Driving with your propane on can add to the danger if you are involved in an accident. Some van propane tanks are mounted near the wheels. A blown tire near the tank can whip rubber and steel belts around, ripping out propane lines and brake lines.

Preventing Road Fire

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RV maintenance and inspection are central to preventing RV fires.

The following suggestion might help prevent RV fires:

Have your RV inspected annually, including the fuel system, electrical system, and exhaust systems.

Replace any malfunctioning parts.

Constrain any loose or dangling wires.

Check for any oil leaks or spilled oil when filling, and double check that the oil filler cap is on securely.

Check hose clamps, belts, and fuel lines.

