

Why does washer fluid rated to –25F still freeze up on my windshield when it’s nowhere near that cold outside? If there’s still a little frost on the windshield but not enough to pull out the scraper, I try to spray it off. It’ll start off fine and then turn into a hazy film of ice as I start driving. Washer fluid turns to ice sometimes while I’m driving and I’m trying to spray off muck or freezing rain. If it’s called antifreeze, it should never freeze?

When I dug the jug of winter washer fluid out of my trunk to read the ingredients, I was surprised to see this advice: “For best results, use on a warm windshield.”

I’d bought the good stuff, rated to -35 F, and it still freezes on the windshield seconds after I spray it and start wiping. Did I just get a lousy batch?

Unless your car’s defroster is on, your windshield isn’t always warm enough to keep a thin spray of washer fluid from freezing, experts say.

“Even the best windshield washer can form an ice haze on a cold windshield,” says a Canadian washer fluid manufacturer.

The site’s Q&A section says that the “wind chill effect” can mean that at highway speeds, your windshield can see temperatures as low as -50 F.

This gets confusing, because, the wind and speed won’t make your windshield any colder than the temperature of the wind just how fast it can loses heat or the temperature it experiences.

“Stick a container of washer fluid out your car window when it’s -15 F out, and the fluid in that container will still be -15 F.

Your windshield can get colder than the temperature outside, but only after you’ve sprayed on washer fluid.

Washer fluid is a mix of methyl alcohol, also known as methanol, and water. The alcohol keeps it from freezing (and bursting) in your car’s washer fluid reservoir and lines.

But once that wiper fluid is exposed to air on your windshield, the alcohol starts evaporating, leaving behind water. That remaining water is what freezes on your windshield.

And that evaporation can make your windshield, and the washer fluid, colder than it is outside, says Janet Elliott, University of Alberta chemical engineering professor and Canada Research Chair in Thermodynamics.

“When a liquid evaporates, a lot of energy is needed,” Elliott says. “This energy comes from the liquid, thereby cooling it down.”

Think of how your hands feel cool after you put on hand sanitizer, or how your hands feel cool when you dry them under a forced air dryer in a public washroom, Elliott says.

“If you wave your dry hands around in the air, your skin does not cool down colder than the room air,” she says. “However, if you put your wet hands into a forced air dryer, the flowing air speeds up the water evaporation and you can feel the noticeable cooling.”

As the methanol evaporates, the remaining washer fluid will now freeze at warmer temperatures. So washer fluid that’s rated to -35 F forms an icy haze. Rain or melting ice will also dilute the methanol in washer fluid with the same result.

The solution? The Alberta Motor Association recommends scraping off all ice and frost with a scraper instead of trying to melt it with washer fluid. And don’t start driving until your windshield and passenger compartment are fully heated, which means blasting the defroster.

“While use of washer fluid can assist with your windshield defrost, the clearing effect is only momentary,” says Don Szarko, AMA director of advocacy. “Even with the use of washer fluid, fog can form on the inside of your windshield until your engine warms and the engine defrost is able to clear your visibility.”

Most of us don’t give our vehicles enough time to warm up before we start driving in the winter, and we often don’t put on the defroster unless there’s fog or frost, says Patrick Brown-Harrison, instructor at SAIT Polytechnic in Calgary. Instead, we should be more worried about heating up the windshield and windows so we can see outside.

“Most drivers direct the heat for personal comfort,” Brown-Harrison says.

If you have automatic climate control, don’t count on it to know when your windshield is freezing up.

“They detect ambient temperature inside the cabin,” Brown-Harrison says. “Some will direct heat to the windshield for a short time and then switch to heating the cabin.”

Do some washer fluids with the same temperature ratings work better than others? It’s tough to tell – Consumer Reports rates wipers but not washer fluid.

There’s also apparently no miracle fluid (like pure alcohol) that’s affordable and won’t produce poisonous fumes.

“There was a concentrated product out on the market for a while that was high in methanol, but people turned it into a flammable toy,” says Brown-Harrison.

If you’re driving and need to use washer fluid to wipe off muck or rain, you should have the defroster on full heat and full fan to warm the windshield. If necessary, slow down or pull over so the washer fluid can do its job effectively.