

NOBURST Information Bulletin

SUBJECT: *Not all AL/Aluminum Antifreeze is the Same*

It was brought to our attention that there are several radiant heating system antifreeze fluids which are specified for boilers containing aluminum components which are in contact with the fluid, that **do not meet the special needs of these systems.**

We have investigated these fluids and their specifications and found some of them do not meet the ASTM standards for heat transfer/ antifreeze fluids.

The differences in antifreezes that are used with various materials (metals and resin composites) are the inhibitor formulations. We found that some manufacturers of antifreeze fluid are using the same inhibitor (usually phosphate based) that is found in their standard antifreeze. You accomplish this by reducing the amount of inhibitor used in the AL product or by running the system at lower than optimum efficiency temperature.

Here are the problems that occur.

- If you drop the efficiency of the system, you have negated the primary reason for choosing a high efficiency boiler.
- If you cut back on the inhibitor amount, you will have premature antifreeze failure. The inhibitor does not have just a single function. There are two major inhibitor functions: inhibit corrosion and buffer the glycol. The inhibitor in antifreeze is depleted over time. This is primarily caused by water, oxygen, and heat. When the inhibitor fails, the propylene glycol (the antifreeze part of the solution) will go to an acidic state. This will cause the aluminum to corrode and fail.

AL/Aluminum Systems (How to Choose Quality Antifreeze)

- Send it to a certified Lab and have it tested against the ASTM standard. This is not very practical for the Distributor or Contractor. That is why we did this and have those test results on file.
- Does the manufacturer of the antifreeze have those test results available? (WE DO) If not, be wary of using their fluid.
- Take a look at the manufacturer's price sheet to see if the inhibitor for their standard product and the product for AL/Aluminum system are the same. Also, see if their test kit is the same. If either of these conditions is met, use caution and seek an antifreeze recommended by your boiler manufacturer.

Corrosion Effects of Fluids on Common Metals

(Weight Loss in Milligrams)

METAL	Plain Water	**Uninhibited Propylene Glycol	*Inhibited NOBURST - 100	NOBURST AL	ASTM D1384 Acceptable Max
Copper	2	4	2	2	10
Solder	99	1095	1	1	30
Brass	5	5	4	1	10
Steel	212	214	1	0	10
Cast Iron	450	1345	3	0	10
Aluminum	110	15	***2	0	30
Cast Aluminum @ Heat	n/a	n/a	2.5	0.175	1

*50% Solution in Deionized Water
 **30% Solution in Deionized Water
 *** Not at Boiler Temps