

Message #2338 FCOC Yahoo group - post Ted Bryan

I am going to paste a quote from Gooch on TheDieselStop.COM Forums: SCA Additive.

Quote:

Your question about molybdate is a good one. To someone who isn't familiar with the chemistry and history behind SCA's, it would seem odd that the Fleetguard DCA-4 system (molybdate-nitrite) can provide safe cavitation protection with zero molybdate present. So hang with me for a second...

The theory behind the Fleetguard DCA-4 system is that it uses molybdate "synergy" to enhance the effectiveness of the nitrite. This is primarily for the sole reason of allowing lower levels of nitrite to be used. Because some folks believe excessive amounts of nitrite could cause solder corrosion. And it can, but it takes huge amounts of nitrite to cause solder corrosion. You would have to be at levels around 7,000-10,000 ppm to do that, and even that would take time.

So understand that although Fleetguard's "synergy" theory does hold some merit chemically, Fleetguard basically just found another way to "skin the cat", so to speak. Also keep in mind that Cummins, Ford, and International are the DCA-4 users. Here's why: Fleetguard is one of the only DCA-4 producers. Cummins owns Fleetguard. And at the time Ford began recommending Fleetguard DCA-4, Ford held financial interest in Cummins. And at that same time, both International and Ford were working together on business ventures. So what's "good for the goose, was good for the gander" came into play. Cummins, Ford, and International all recommended Fleetguard's DCA-4...which was owned by themselves. That kind of business practice makes money for them. Most all other diesels required the more popular and widely used DCA-2, usually made by Penray. I guess you could say since Cummins, International, and Ford were selling so many engines, they found their own niche in the SCA market.

With the DCA-4, the more molybdate that is present, the less nitrite is needed. The less molybdate that is present, the more nitrite is needed. The problem with this is that molybdate alone is not an effective cavitation inhibitor. Nitrite is.

And under Fleetguard's theory, in once instance you could have almost no nitrite present, and a whole bunch of molybdate, to achieve safe protection. In another instance you could have no molybdate present and high levels of nitrite present, to achieve safe cavitation protection (exactly how the DCA-2 works). But I know the protection

level of the two is not the same, particularly concerning depletion rates.

While nitrite can be added to adjust the DCA-4 level, molybdate can't. So there is no way for an operator to balance the scale to optimize Fleetguard's "synergy". Some owners, in an attempt to balance the scale, will easily over-dose the cooling system with DCA-4. Additionally, the molybdate and nitrite will never deplete at linear rates with one another. So over time, one component will tend to accumulate.

In my opinion the DCA-2 nitrite-only SCA cuts through the bull. It provides the best chemical, for the best protection, the easiest way. No "synergy" to depend on. No balancing the scale. No need for 3-way strips. Less chance of overdosing. Consistent depletion. Simple. Effective.

There are some other chemical disadvantages with the DCA-4. It contains phosphates, which are known to form a "scale" when mixed with H₂O. Sometimes owners mistake this scale for casting sand. I believe, as well as other coolant professionals, that DCA-4 is more prone to exacerbate water pump failure due to those abrasives. And there are some chemical disadvantages to DCA-2 as well (borate), but the advantages far out-weigh any disadvantages there as far as I'm concerned. End Quote:

This is how I understand what Gooch had to say.

Fleetguard is one of the ONLY DCA-4 producers. Cummins owns Fleetguard. Cummins, Ford and International had economics ties to each other, therefore required their product, (DCA-4). Most other diesels required the more popular and widely used DCA-2, usually made by Penray.

DCA-2 = NITRITE for SCA
DCA-4 = NITRITE + MOLYBDATE for SCA

Fleet Charge 50/50 is a DCA-2 SCA coolant. Freightliner's Alliance Brand Coolant.

Fleetguard is a DCA-4 SCA coolant.

As I stated in a previous post, you can add DCA-2 Power Cool 3000 additives and NEVER increase the MOLYBDATE level on the Fleetguard 3-way test strips. And if you add enough DCA-2 additives trying to increase the MOLYBDATE, you will over dose the coolant.