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CALCIUM SULPHONATE MOV GREASES TECHNICAL NOTE SULFUR CONTENT

Background: For nuclear power plants stress corrosion cracking of fasteners can be an issue. To prevent this limits are normally put on the amount of specific heavy metals, halogens and sulphur that can be present in lubricants. The concern with sulphur is that in some forms it might directly or might be present in an unstable form that might contribute to corrosion. However, sulphur is present in most mineral oil based products to a level of 0.05 to 0.35% and while calcium sulphonate (CCS) greases do contain sulphur this is essentially locked up. The concern is "active" sulfur which should not be an issue with MOV Long Life. This is because sulfur/phosphorous EP additives are not used nor are other active sulfur bearing additives such as sulfurized olefins, fatty acids and triglycerides.

Applicability: No active sulphur additives or compounds are reportedly used in MOV Long Life. However, they are used with some gear oils and metalworking fluids as well as in some other EP greases and pastes. Such products should not be mixed with MOV Long Life greases. In addition, there is no need for active sulfur compounds because the calcium sulphonate complex greases do not require extra EP additives. Instead, they derive their excellent performance from the calcium thickener system. In addition, to achieve long service lives and the excellent thermal stability of these greases it is important that all the constituents be stable. Lastly, the base oil used in MOV Long Life is a severely hydrotreated product that by nature of this refining step is a very clean oil.

Confirmation: The copper corrosion performance of grease and hence active sulfur, is commonly measured using ASTM D4048-91 "Detection of Copper Corrosion from Lubricating Grease". While the test method does not specifically mention active sulfur, the companion test for oil is D130 and it does so. In this test Nebula EP2 had a result of 1b while MOV Long Life and MOV Plus had ratings of 1b and 1a respectively. These are also very good. As further evidence of the fact that MOV calcium sulphonate complex greases are not corrosive is the extremely good rust preventing characteristics measured in the salt fog test ASTM B117. MOV Long Life lasted more than 300 hours while a sample of Nebula EP failed after less than 95 hours.

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