

Report of the Month

This Cummins ISX 15 engine has a lot of metal in the oil.

Is it bad enough to take action?

To learn more about where the elements are coming from, [click here](#).

ELEMENTS IN PARTS PER MILLION	MI/HR on Oil	30,775	UNIT / LOCATION AVERAGES	27,414	24,720	25,373	UNIVERSAL AVERAGES
	MI/HR on Unit	806,080		775,305	722,725	698,005	
	Sample Date	6/8/2019		4/3/2019	10/29/2018	10/3/2018	
	Make Up Oil Added	0 qts		0 qts	0 qts	0 qts	
ALUMINUM	4	2	3	2	2	3	
CHROMIUM	1	1	1	1	1	1	
IRON	172	47	14	8	9	16	
COPPER	44	13	5	0	1	2	
LEAD	88	44	12	1	3	3	
TIN	17	5	1	0	0	0	
MOLYBDENUM	4	4	2	5	5	40	
NICKEL	1	0	0	0	0	0	
MANGANESE	4	1	0	0	0	0	
SILVER	0	0	0	0	0	0	
TITANIUM	1	0	0	0	0	2	
POTASSIUM	11	11	12	12	11	6	
BORON	24	69	71	100	56	76	
SILICON	5	5	7	4	5	6	
SODIUM	10	6	5	6	6	6	
CALCIUM	2196	2263	2280	2421	2460	1835	
MAGNESIUM	47	32	14	29	27	462	
PHOSPHORUS	979	1015	1012	1091	1102	1011	
ZINC	1228	1201	1193	1218	1313	1172	
BARIUM	0	0	0	0	0	0	

Values
Should Be*

PROPERTIES	SUS Viscosity @ 210°	74.4	69-79	72.9	76.8	74.6
	cSt Viscosity @ 100°C	14.11	12.7-15.5	13.71	14.71	14.14
Flashpoint in °F	440	>415	415	440	440	
Fuel %	<0.5	<2.0	TR	<0.5	<0.5	
Antifreeze %	0.0	0.0	0.0	0.0	0.0	
Water %	0.0	0.0	0.0	0.0	0.0	
Insolubles %	0.2	<0.6	0.3	0.3	0.3	
TBN						
TAN						
ISO Code						

Yes, this engine is headed for serious trouble. The two 2018 samples had normal wear - actually better than average for most ISX diesels. But the April sample started showing higher lead and minor copper wear. In the span of two months that developed into a full-on bearing problem. In June the bearings had worn through the lead babbitt layer and were into the bronze layer underneath (see copper and tin). There's no significant contamination in the oil that would be causing it, but we suggested taking a close look at what's going on to avoid a spun bearing.