



## Analysis of Fresh Oil Sample

### ILMA-01 Test Package

*Determination of additive content, SAE Grade, minimal low-temperature requirements, and volatility.*

IOM ID	LABEL INFORMATION		Method	Function/Significance	API/ILSAC Specs	Results
	BRAND NAME	TEST REQUESTOR				
	ABC ENGINE OIL	ON TOP OIL CORP.				
	ABC20100931A					
	5W30					
	SM A3/B4					
	10/05/2010					
	IO1001					
ELEMENTAL ANALYSIS (Parts Per Million)						
	Aluminum (Al)					<b>3</b>
	Antimony (Sb)			Additive: Anti-Wear, Extreme Pressure		<b>1</b>
	Barium (Ba)			Additive: Anti-Wear, Extreme Pressure		<b>0</b>
	Boron (B)			Additive: Anti-Wear, Detergent		<b>9</b>
	Calcium (Ca)			Additive: Anti-Acid Corrosion		<b>2,514</b>
	Chromium (Cr)					<b>0</b>
	Copper (Cu)			Additive: Anti-Oxidation, Anti-Wear		<b>0</b>
	Iron (Fe)					<b>0</b>
	Lead (Pb)					<b>0</b>
	Magnesium (Mg)	ASTM D4951		Additive: Anti-Acid Corrosion		<b>7</b>
	Molybdenum (Mo)			Additive: Anti-Friction		<b>800</b>
	Nickel (Ni)					<b>0</b>
	Phosphorus (P)			Additive: Anti-Wear, Anti-Oxidation	Between 600-800 PPM *	<b>1,117</b>
	Silicon (Si)			Additive: Anti-Foam (less than 20 PPM)		<b>20</b>
	Silver (Ag)					<b>0</b>
	Sodium (Na)			Incidental with some additives		<b>34</b>
	Tin (Sn)					<b>0</b>
	Titanium (Ti)			Additive: Anti-Wear		<b>0</b>
	Zinc (Zn)			Additive: Anti-Wear, Extreme Pressure		<b>1,283</b>
OTHER MEASURES						
	Sulfur (%)	ASTM D5453	May add lubricity		<0.5 for 0W & 5W-30 <.0.6 for 10W30	<b>1.03</b>
	Kinematic Viscosity at 100°C (cSt)	ASTM D445	Ability to stay in grade at high temperature		See J300 SAE Grade Specification Chart Below	<b>10.63</b>
	Low Temp. Pumping Viscosity by MRV-TP1 (cP @-35°C)	ASTM D4684	Ability to lubricate after starting in cold conditions		Less than 60,000 centipoise	<b>10,700</b>
	MRV-TP1 Yield Stress if present (mg)				No yield stress	<b>0</b>
	Volatility by Noack (%)	ASTM D5800	Oil loss (volatility) during engine operation		15% maximum**	<b>7.66</b>

#### NOTES

\* Phosphorus limits per latest API service class for gasoline engines.

\*\* ACEA - Noack Volatility maximum is 13% for most sequences.

#### SAE J300 Viscosity Grade Specification Charts

Grade	CCS maximum		TP1 maximum	Grade	KV at 100°C		HTHS 150°C minimum
	minimum	maximum			minimum	maximum	
0W	6,200 cP @ -35		60,000 cP @ -40	20	5.6	<9.3	2.6
5W	6,600 cP @ -30		60,000 cP @ -35	30	9.3	<12.5	2.9
10W	7,000 cP @ -25		60,000 cP @ -30	40	12.5	<16.3	2.9 LD & 3.7 HD
15W	7,000 cP @ -20		60,000 cP @ -25	50	16.3	<21.9	3.7
2W0	9,500 cP @ -15		60,000 cP @ -20	60	21.9	<26.1	3.7
25W	13,000 cP @ -10		60,000 cP @ -15				

\*LD = Light Duty (0W40, 5W40 & 10W40)

\*\*HD = Heavy Duty (15W40, 20W40, 25W40 & 40)