


















ESTERS FOR ENGINE OILS

Engine oils formulations of today require higher performance for the lower viscosity grades needed to provide improved fuel economy. Also, the engine oil must maintain integrity over longer drain intervals. To support these ever-increasing demands in the engine oil market, Teknor Apex offers carefully selected esters that are designed to have a high VI, low viscosity, low volatility, low cold crank viscosity. At the same time, these esters maintain their inherent nature to provide seal swell, cleanliness, and additive solubility. TruVis A130, D2020, and P3020 are your high-performance esters for the severe engine conditions of today.

Property	TruVis P-3020	TruVis A-130	TruVis D-2020
 Visc. cSt @ 40°C	19.8	27.3	14.1
 Visc. cSt @ 100°C	4.3	5.3	3.7
 Viscosity Index - Typical	137	153	160
 Pour Point, °C (max)	≤ -45	≤ -54	≤ -50
 Flash Point, COC, °C (min)	≥ 232	≥ 220	≥ 230
 Sediment, insoluble contamination, mg/L (max)	≤ 3.5	≤ 3.0	≤ 3.5
 NOACK Volatility D-5800 - % Typical	2.67	6.81	8.83
 Hydrolytic Stability D-2619 mg KOH / gm - Typical	+0.09	+0.00	+0.19
 Color, Pt/Co (max)	≤ 300	≤ 100	≤ 50
 Moisture, ppm (max)	≤ 350	≤ 350	≤ 500
 Acid Value, mg KOH / gm (max)	≤ 0.05	≤ 0.05	≤ 0.05
 Spec. Grav. @20°C - Typical	0.945	0.915	0.914
 Purity, Ester Content, % (min)	≥ 99.0	≥ 99.0	≥ 99.0
 Appearance, Clear/FSM	Pass	Pass	Pass

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Performance Properties	TruVis P-3020	TruVis A-130	TruVis D-2020
 Cold Crank Simulator, @ °C, cSt	1235 @ -30°C	900 @ -30°C5.3	685 @ -35°C
 Corrosiveness of Diesel Oil 135oC*			
Copper, ppm (20 ppm max)	8	8	8
Copper Rating (3 max)	1b	1b	1b
Lead, ppm (120 max)	18	21	18
Tin, ppm (1 max)	< 1	< 1	< 1
 Elastomer Compatibility 70°C / 168 hours, Volume change / Weight change			
NBR	36.1/28.0	30.6/22.3	46.6/34.6
Polyacrylate	15.7/10.5	11.6/7.5	16.3/10.3
Chloroprene	61.9/40.5	67.4/43.8	87.8/55.4
FKM	2.1/0.9	2.3/0.9	2.7/1.2

* Base oil treated with 5% ester

** Base Oil: Commercially available fully synthetic HDDEO SAE 5W-40

The information contained herein was obtained on samples produced in the laboratory. It is provided for informational purposes only, and is not intended to constitute a final specification. Teknor Apex welcomes an opportunity to discuss your specific requirements regarding sales specifications.

www.TruVisEsters.com



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