

LNPT™ COMPOUNDS WEAR AND FRICTION SOLUTIONS AUTOMOTIVE UNDER-THE-HOOD (UTH)

Current engineering demands in automotive power train applications emphasize reliability, efficiency, and light-weighting, but not with disregard of system cost. The application of thermoplastic solutions in gears, bearings, bushings and other moving parts is a recognized opportunity to provide high performance solutions that in the end save money.



HIGH TEMPERATURE DEMANDS

Applications like transmission seal rings, throttle body gears and other UTH actuators must operate at high temperatures, often under high loads and speeds, while exposed to automotive fluids. The expectation of reliability and safety put significant demands on the performance and life of these parts.

INTERNALLY LUBRICATED COMPOUNDS

The addition of an internal lubricant to a thermoplastic material can help improve the wear resistance and reduce the coefficient of friction in plastic parts. Traditional lubricants like PTFE and PTFE/Si blends are common. The use of high temperature thermoplastic resins like PEEK, PPS and PPA can give performance at UTH temperatures.

AUTOMOTIVE UTH GRADES

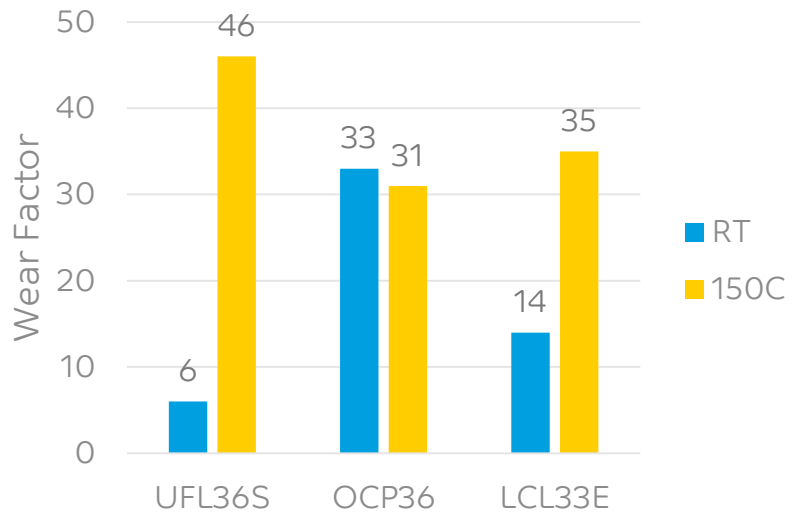
Grade	Description	Features	Potential Applications
LUBRICOMP™ LCL33E	PEEK, 15% carbon fiber, 15% PTFE	FM: 14.7 GPa, HDT: >240C, low wear and COF, chemical resistance	Seal rings and thrust washers
LUBRICOMP OCP36	PPS, 30% carbon fiber, 15% PTFE/Si	FM: 33.9 GPa, HDT: 266C, chemical resistance, excellent wear/bearing performance,	Bearings, bushings, thrust washers, gears
LUBRICOMP UFL36S	PPA, 30% glass fiber, 15% PTFE	FM: 11.2 GPa, HDT: 255C, low wear and COF, balance cost/performance	Electronic throttle body gears and actuators
LUBRILLOY™ UX98388	Alloy lubricated PPA	Good wear and low COF vs. steel and aluminum	Belt tensioner components

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MEASURING PERFORMANCE

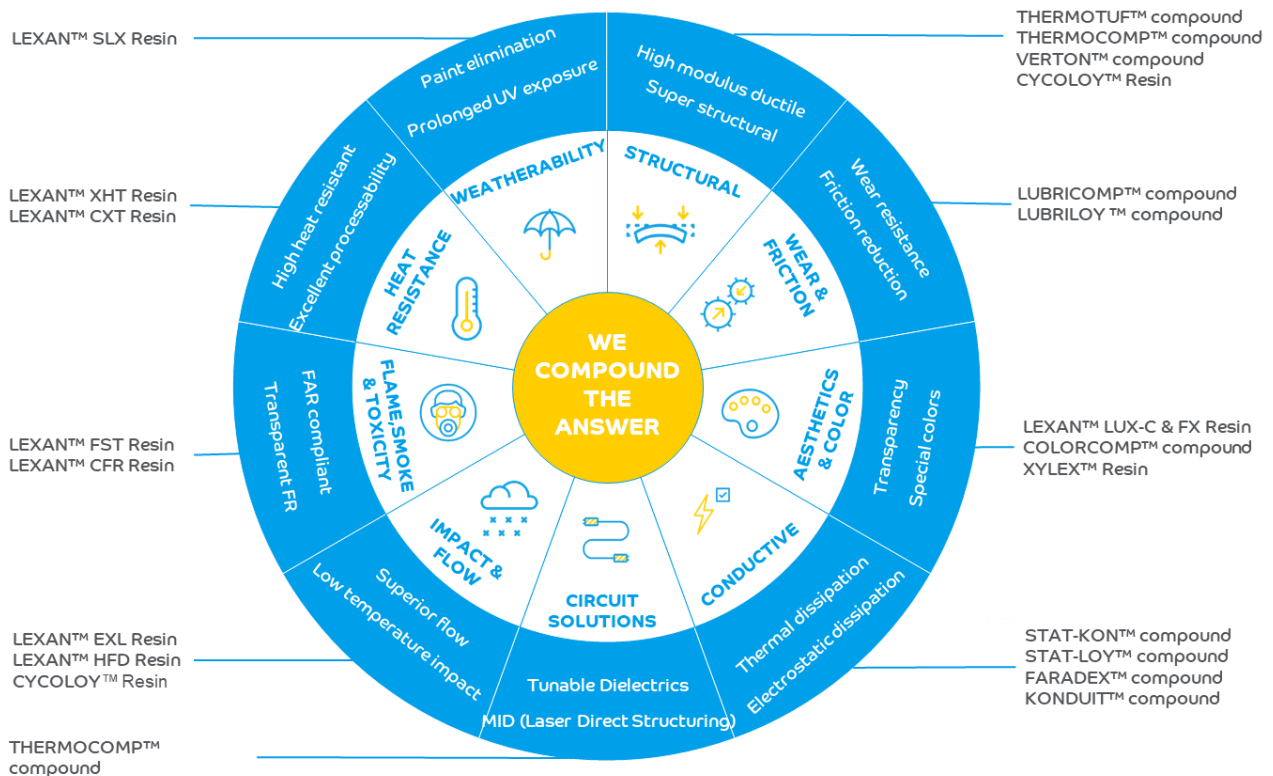
Standard wear and friction test like thrust washer wear (ASTM D3702) can be used to compare the performance of candidate materials. Testing can be done at elevated temperatures or high PV conditions to better simulate the conditions seen in applications. The wear and friction labs at LNP can leverage multiple characterization tools to aid in application development efforts.

THRUST WASHER WEAR TEST



ASTM3702-mod. @ RT, 50 fpm, 40psi
* Wear factor [10^{-10} .in³ .min/ft.lb.hr]

LNP™ COMPOUNDS & LEXAN™ COPOLYMERS SOLUTIONS



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