CPS Technologies

AlMax™

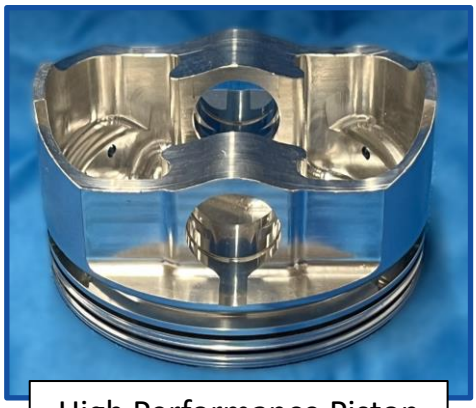
AlMax™ is a novel **patented composite** consisting of randomly oriented, discontinuous, ceramic fibers reinforcing a high-strength aluminum matrix. AlMax™ is ideal for **high temperature and high friction applications** such as bearing liners, races, and bushings, and is a drop-in replacement for specialty high performance alloys.

Performance

- High-strength (80 ksi UTS at room temperature), isotropic
- Retains 80% of strength at 400 °F, more than 3X traditional aluminum alloys
- Superior wear resistance compared to hardened steel at one-third the density (2.96 g/cm^3)
- Superior formability compared to other composites (machinable, weldable, and forgeable)
- 30% decreased CTE compared to 6061 Al

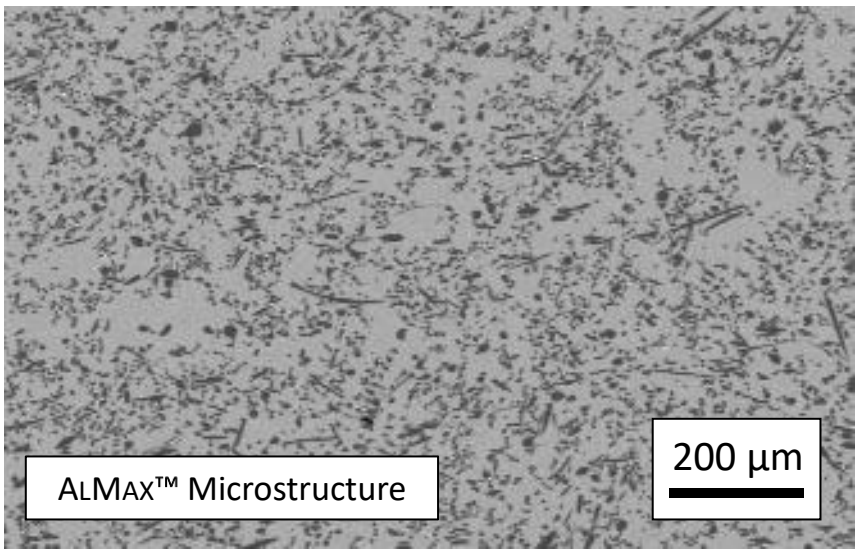
Available as cast billets or machined components

Military Vehicles	Commercial Markets
➢ Fixed-wing	➢ Aerospace
➢ Helicopters	➢ Motor sports
➢ Tilt rotor	➢ Heavy trucks
➢ UAVs	➢ Turbomachinery
➢ Combat vehicles	➢ Oilfield Drilling



High Performance Piston

AlMax™ Ring and Billet Stock



AlMax™ Microstructure

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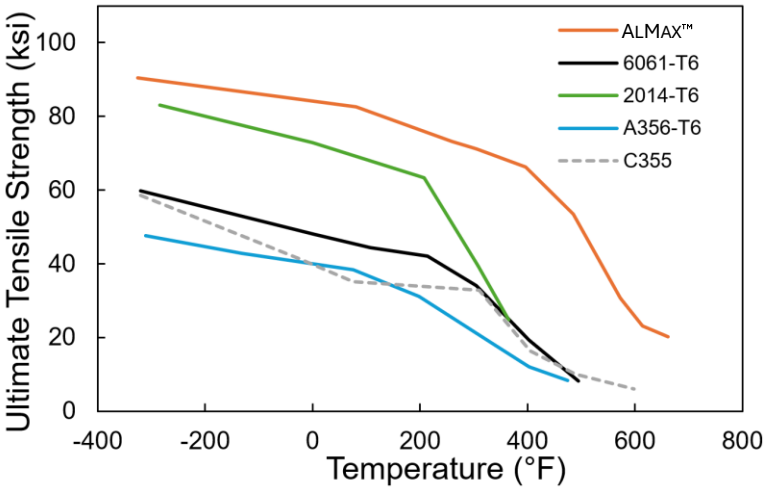
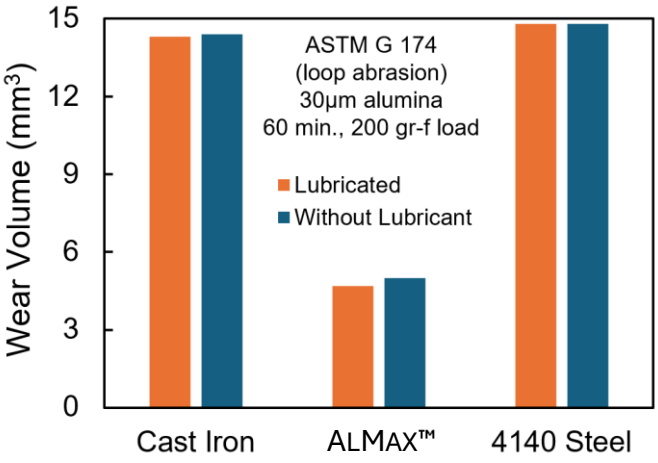
CPS Technologies

CPS is actively expanding ALMAX™ applications, improving performance and extending manufacturability. Properties and additional products are summarized below.

ALMAX™

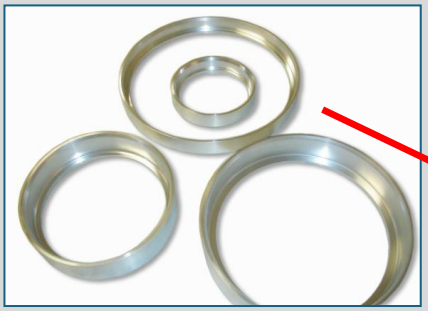
PERFORMANCE DATA

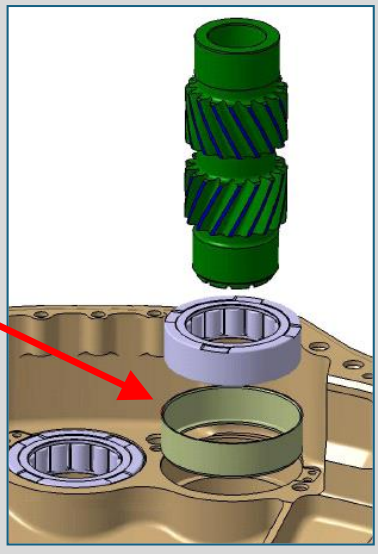




Property	Test Temperature, °F					
	70	100	200	300	400	500
FTU, ksi	77.0	75.5	72.3	65.1	62.0	40.0
FTY, ksi	64.0	64.1	63.7	59.3	50.9	35.0
FCY (1%), ksi	67.4	67.1	63.6	56.5	45.8	30.0
Flex Strength (1%), ksi	55.8	--	--	--	--	--
Tensile Modulus, Msi	13.5	13.2	13.2	12.9	12.1	10.9
Comp. Modulus, MSI	14.4	14.0	13.5	13.0	12.0	11.0
Elongation, %	1.8	2.0	>2.5	>2.5	>2.5	>2.5
K_{ic}, ksi $\sqrt{in}$	18.1	--	--	--	--	--
CTE, ppm/°F	9.4	9.4	9.4	9.4	9.4	9.4
K, W/m-K	91.6	92.9	97.4	101.8	106.3	110.7

ALMAX™ Bearing Liners





ALMAX™ Cast-in-Place Inserts