

RS Alloys Pistons



RSP Technology develops, produces and sells aluminium super alloys with high end properties. By using its own Meltspinning process, ultra fast cooling rates can be reached, converting more than 1 million degrees per second. As a result very fine nanostructured alloys with new functionalities are being developed and produced.

Since 2001 RSP has been working in the high end racing world of pistons such as F1, Nascar and various GP areas.

Based on this experience RSP has developed a piston alloy line offering a well balanced compromise of properties.

Strategically the RSP piston alloys offer unique combinations of 2 main performance factors: high fatigue AND low density. Alloy composition and manufacturing details are a guarantee for excellent shape stability.

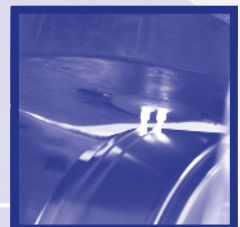
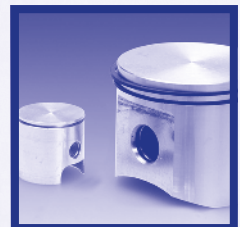
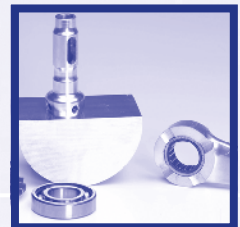
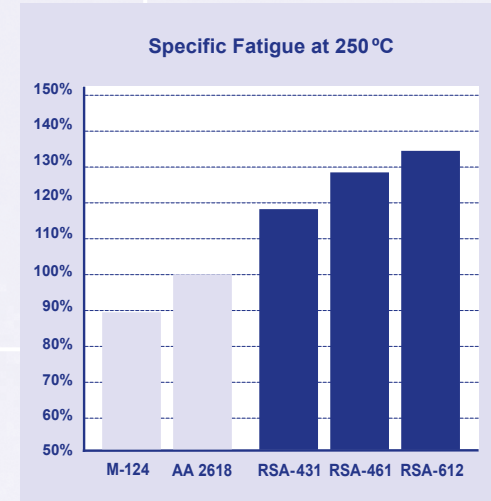
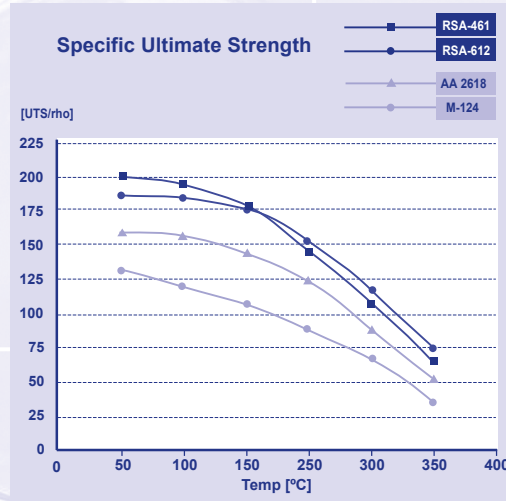
In addition 'secondary' properties such as increased stiffness, wear resistance and low thermal expansion offer overall advantages.

Thermal conductivity and ductility are kept at a good level. The resulting RSP piston alloy line includes different alloy 'characters' covering different design philosophies.

If this is not enough, RSP is always open for discussing customers' ideas and is able to tune properties according to specific requirements and develop alloys on demand.

In order to facilitate high end piston solutions, RSP has developed manufacturing processing including 1 or 2 step isothermal forging approach. Available diameters up to 125 mm.

Application areas include micro engines, race and heavy duty 2-stroke and 4-stroke engines, including diesel.



Alloy	Condition	Typical composition	Physical properties					Mechanical properties									
			Density ρ [gr/cm³]	Thermal Expansion α [10 ⁻⁵ /K]	Stiffness E-mod [Gpa]	Specific Stiffness [Gpa/(g/cc)]	Thermal Conductivity k [W/m.K]	Elongati on at 250°C e [%]	Hardness [HB]	Ultimate Tensile Strength UTS [Mpa] at Temp:					Fatigue S [Mpa] 250°C	Specific Fatigue 250°C	
										20°C	100°C	150°C	200°C	250°C			300°C
RSA-612	T6	Al Si7,5 Cu2 Mg13,5	2,52	20,8	85	34	130	5,5	170	440	440	425	380	265	140	110	134%
RSA-431	T6	Al Si30 Cu1,5 Mg1,2 Fe0,4 Ni0,4	2,60	15,5	95	36	120	3,5	190	410	410	400	350	260	150	100	118%
RSA-462	T6	Al Si24 Cu1,8 Mg1,2 Fe0,4 Ni0,4	2,63	16,7	90	34	130	5,0	185	470	460	410	345	250	135	100	117%
RSA-461	T6	Al Si21 Cu4 Mg1,2 Fe2,5 Ni1,5	2,76	17,1	90	33	120	4,5	210	550	525	480	400	300	175	115	128%
M-124	T6	Al Si12 Cu1 Mg1 Ni1	2,68	21,0	80	30	135	5,0	120	340	320	290	235	175	105	78	89%
AA 2618	T6	Al Cu2,3 Mg1,6 Fe1 Ni1	2,76	23,2	72	26	140	10,0	130	440	435	400	340	240	150	90	100%

Exposure time at temperature prior to tensile testing = 0,5 hours