

RS Alloys Pistons



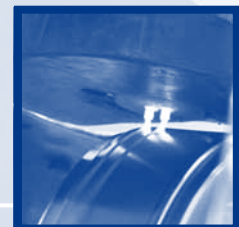
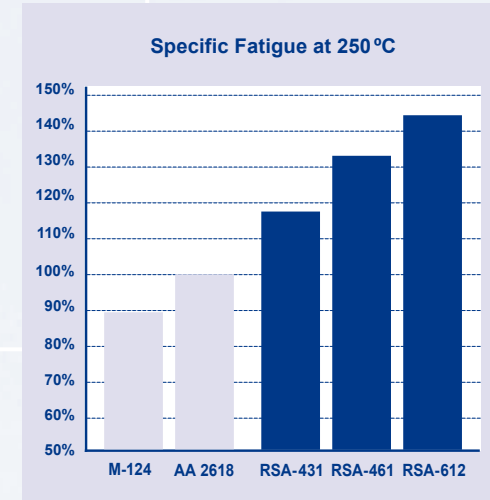
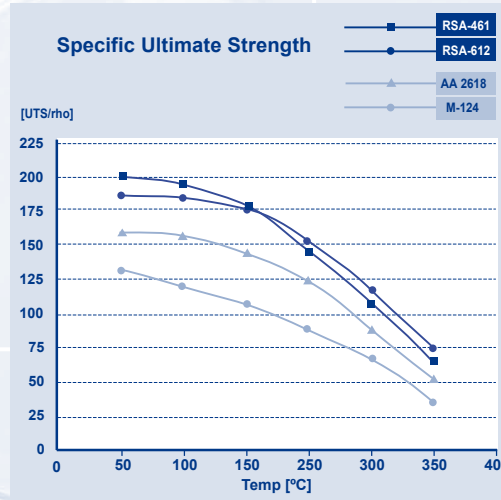
RSP Technology develops, produces and sells aluminium super alloys with high end properties. By using its own Meltspinning process, ultra fast cooling rates can be reached, converting more than 1 million degrees per second. As a result very fine nanostructured alloys with new functionalities are being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

Over 10 years RSP has been working in the high end racing industry as a materials supplier of pistons for F1, Nascar and GP racing. For this market RSP has developed a line of pistons alloys offering a well balanced compromise of properties.

RSP piston alloys offer a unique combinations of 2 main performance factors: High Fatigue and Low Density. RSP alloys are a guarantee for excellent shape stability, increased stiffness, wear resistance and low thermal expansion. Thermal conductivity and ductility are kept at a good level. RSP can also design and develop alloys according to specific customer requirements.

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 e 250°C [%] | 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 Cu2 Mg13,5 | 2,55 | 18,0 | 85 | 33 | 130 | 5,5 | 165 | 450 | 445 | 430 | 375 | 300 | 180 | 120 | 144% |
| RSA-431 | T6 | Al Si30 Cu1,5 Mg1,2 Fe0,4 Ni0,4 | 2,60 | 15,5 | 95 | 36 | 120 | 3,5 | 190 | 435 | 425 | 400 | 340 | 250 | 140 | 100 | 118% |
| RSA-462 | T6 | Al Si24 Cu1,8 Mg1,2 Fe0,4 Ni0,4 | 2,63 | 16,8 | 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 | 120 | 133% |
| 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