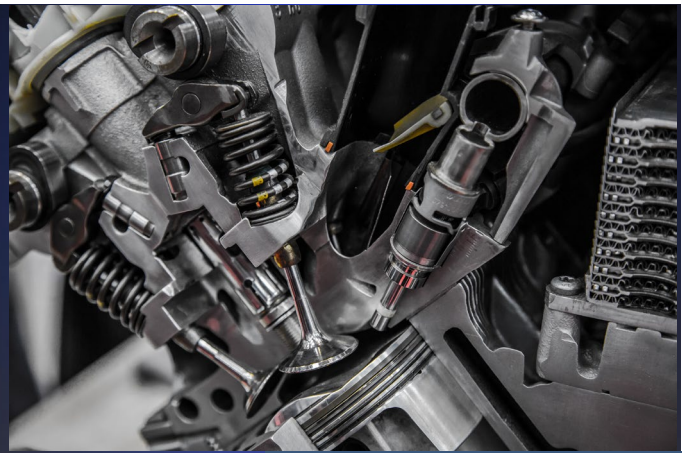


Alloy with high hydrogen embrittlement resistance

HRA™286, ACD™602 and ACD™627



FCV/H2ICE

Outline

Proterial, Ltd. proposes materials suitable for components of hydrogen fuel station and internal combustion engine parts in hydrogen environment.

Applications

Material lineup

Components	Grade
Hydrogen fuel station	HRA286
Internal combustion engine parts	ACD602 ACD627

Feature

HRA286 for hydrogen fuel station

- HRA286 is the alloy equivalent to Alloy A-286 (ASTM A453 Grade 660/ EN 1.4980/ JIS G 4311 SUH660), which has good strength-ductility balance in high pressure hydrogen gas.
- HRA286 achieves sufficiently high ductility compared to the lower limit of the standard value by our unique manufacturing process.

Mechanical properties of HRA286 at room temperature

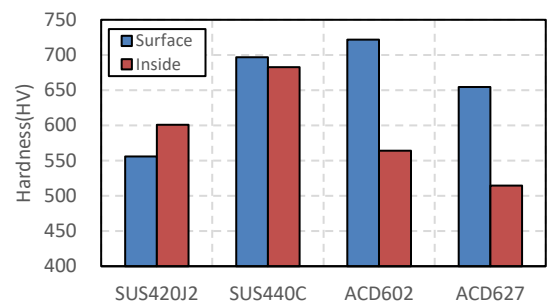
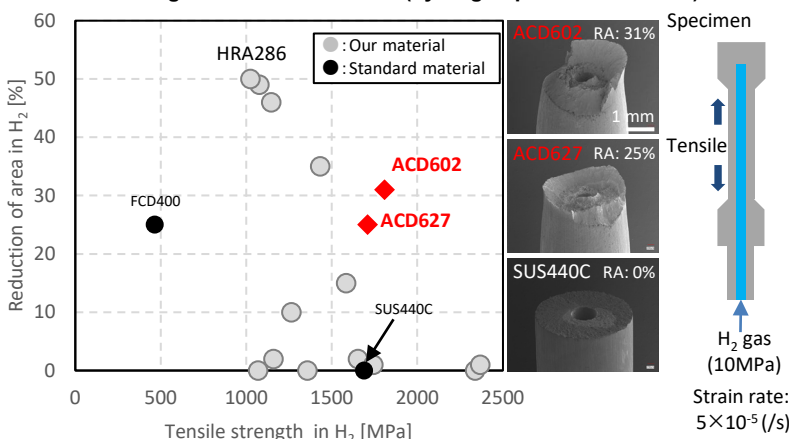
Standards / Grade	Mechanical properties			
	0.2% Yield stress (MPa)	Tensile strength (MPa)	Elongation (%)	Reduction of area (%)
YSS / HRA286	677	1037	30.4	49.5
ASTM / Grade 660	≥ 585	≥ 895	≥ 15	≥ 18
EN / 1.4980	≥ 600	900 - 1150	≥ 15	-
JIS / SUH660	≥ 590	≥ 900	≥ 15	≥ 18

ACD602 and ACD627 for internal combustion engine parts

- The developed steels ACD602 and ACD627 achieve both high tensile strength and good ductility in 10MPa of hydrogen gas.
- In particular, ACD602 exhibits high hydrogen resistance with 1800MPa of tensile strength and 31% of the reduction of area.

- The surface hardness is higher than SUS420J2.
- Corrosion resistance caused by salt spray is equivalent to SUS420J.
- Corrosion weight loss in 5% formic acid is about 1/20 of SUS420J.

Tensile strength and reduction area (hydrogen pressure : 10MPa)



Salt spray test results

