

ASP 2055 is a high alloyed PM-HSS grade for high demanding cutting and cold work applications in which high performance and good grindability are important.

STANDARDS

> Not yet standardised

DELIVERY HARDNESS

- > Soft annealed max. 320 HB
- > Cold drawn max. 340 HB
- > Cold rolled max. 340 HB

CHEMICAL COMPOSITION

Safety datasheet available

C	Cr	Mo	W	Co	V	Nb
1.69	4.0	4.6	6.3	9.0	3.2	2.1

APPLICATIONS

- > Hobs
- > Shaper cutter
- > Broaches
- > End mills
- > Taps
- > Cold work
- > Others

FORM SUPPLIED

- > Peeled bars
- > Drawn & ground bars

HEAT TREATMENT

- > Soft annealing in a protective atmosphere at 850-900°C for 3 hours, followed by slow cooling 10°C per hour down to 700°C, then air cooling.
- > Stress-relieving at 600°C to 700°C for approximately 2 hours, slow cooling down to 500°C.
- > Hardening in a protective atmosphere with pre-heating in 2 steps at 450-500°C and 850-900°C and austenitising at a temperature suitable for chosen working hardness.
- > Tempering at 560°C three times for at least 1 hour each time. Cooling to room temperature (25°C) between tempering

PROCESSING

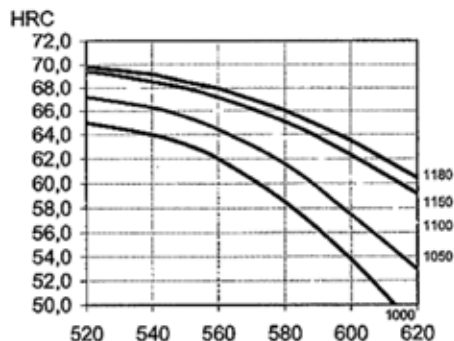
ASP 2055 can be worked as follows:

- > machining (grinding, turning, milling)
- > polishing
- > plastic forming
- > electrical discharge machining
- > welding (special procedure including preheating and filler materials of base material composition)

GRINDING

ASP 2055 is 2-3 times more easy to grind than ASP 2052. Grinding should be done with 20-100 % higher feed'rate or cutting depth. Same or harder graded grindin wheel.

GUIDELINES FOR HARDENING



Tempering temperature in °C

Hardness after hardening, quenching and tempering 3 x 1 hour

SURFACE TREATMENT

The steel grade is a good substrate material for PVD and CVD coating. If nitriding is requested, a small zone of 2-15 µm is recommended. The steel grade can also be steam-tempered if so desired.

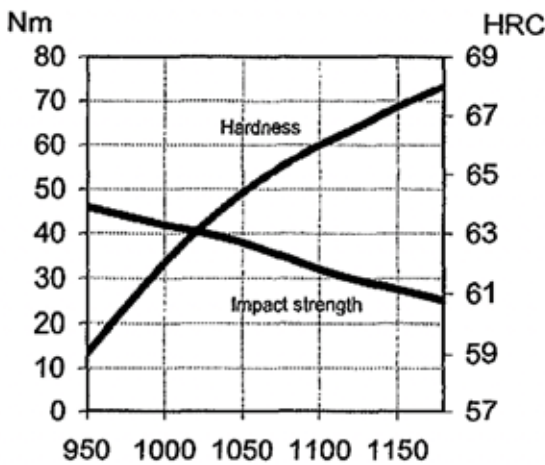


PROPERTIES

PHYSICAL PROPERTIES

Temperature	20°C	400°C	600°C
Density g/cm³	8	7.9	7.9
Modulus of elasticity kN/mm²	240	214	192
Thermal expansion ratio per °C	-	11.8x10 ⁻⁶	12.3x10 ⁻⁶
Thermal conductivity W/m°C	24	28	27
Specific heat J/kg °C	420	510	600

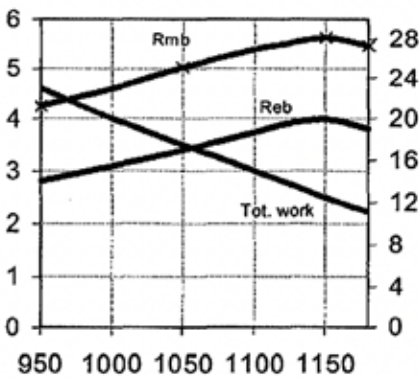
IMPACT TOUGHNESS



Hardening temperature in °C

Tempering 2 x 1 hour at 560° C
Unnotched test piece 7 x 10 x 55 mm

4-POINT BEND STRENGTH

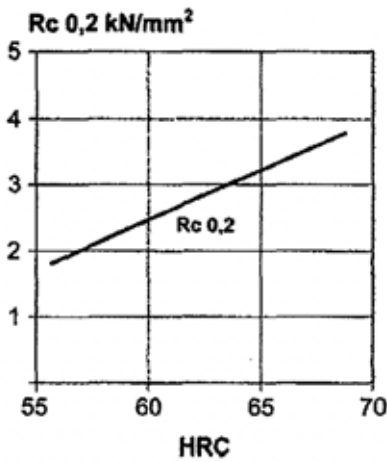


Hardening temperature in °C

Tempering 2 x 1 hour at 560°C
Dimension of test piece Ø 4.7 mm

Rmb = Ultimate bend strength in kN/mm²
Reb = Bend yield strength in kN/mm²
Tot. work = Total work in Nm

COMPRESSION YIELD STRESS



Test piece: hourglass with 10 mm Ø waist



COMPARATIVE PROPERTIES

