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Global Steel Grade Encyclopedia



涵盖的行业或国家与地区类别



国材料与试验协会

GJB

国家军用标准



动力机械工程师协会

EU

前欧洲标准化

AISI

美国钢铁学会



德国工业标准

AMS

航空航天材料规范



国际标准

JASO

日本汽车标准组织

EN

欧洲标准

JB

中国机械行业标准

UNS

统一编号系统

UNI

意大利标准



美国机械工程师协会

SS

瑞典标准



国家标准



日本工业标准

ASP[®] APZ10

Powder metallurgy Stainless steel

CHEMICAL COMPOSITION

C	Cr	Mo	V	N
1.15	19.0	2.1	0.8	0.1

STANDARDS

- Not yet standardized

DELIVERY HARDNESS

- Typical soft annealed hardness is 280 HB

DESCRIPTION

ASP[®]APZ10 is a martensitic chromium PM grade designed for applications where high wear resistance and high corrosion resistance are needed.

APPLICATIONS

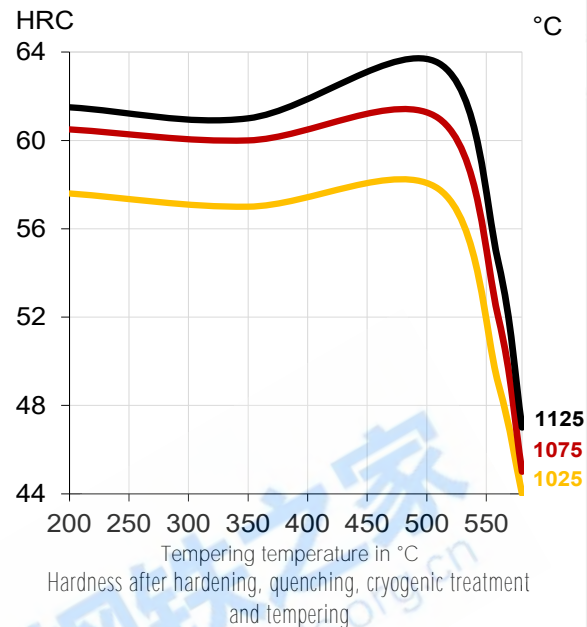
- Plastic moulding applications: (corrosive and abrasive plastics)
- Food-related applications
- Medical related applications
- Industrial knives

FORM SUPPLIED

- Round bars
- Flat & square bars

Available surface conditions: peeled, rough machined, hot rolled.

GUIDELINES FOR HARDENING



Application	Hardening	Tempering
Requiring maximum corrosion resistance	1075°C	180-210°C
Requiring maximum wear resistance	1125°C	500-525°C

HEAT TREATMENT

- Soft annealing in a protective atmosphere at 870-900°C for 3 hours, followed by slow cooling at 10°C/h down to 700°C, then air cooling.
- For applications requiring maximum corrosion resistance and where the temperature does not exceed 150°C, the following heat treatment is recommended:
 - * Austenitization: 1075°C.
 - * Cooling: oil or gas pressure depending on the section and shape of the parts.
 - * Cryogenic treatment: 2 hours at -80°C.
 - * Tempering: 2 hours at 180-210°C.
- For applications requiring high wear resistance or in which the temperature is likely to exceed 150°C in service or during surface coating operations, the following heat treatment is recommended:
 - * Austenitization: 1125°C.
 - * Cooling: oil or gas pressure depending on the section and shape of the parts.
 - * Cryogenic treatment: 2 hours at -80°C.
 - * Tempering: 2 hours at 500-525°C two times. Cooling to room temperature (25°C) between temperings.

This treatment provides a lower level of corrosion resistance than the first treatment.

ASP®APZ10 can be worked as follows:

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

GRINDING

During grinding, local heating of the surface, which may alter the temper, must be avoided. Grinding wheel manufacturers can provide advice on the choice of grinding wheels.

SURFACE TREATMENT

The steel grade is a good substrate material for PVD coating as long as the temperature during coating does not exceed the tempering temperature.

PROPERTIES

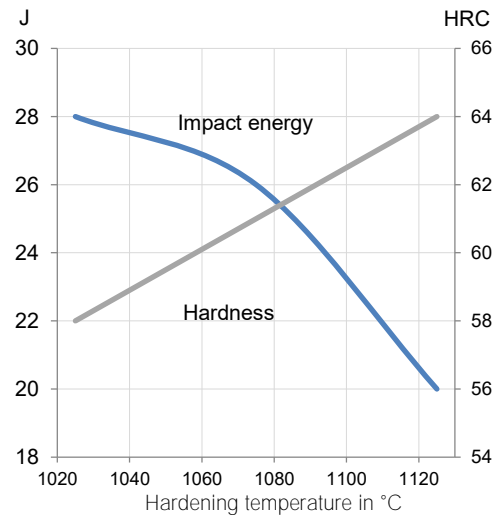
PHYSICAL PROPERTIES

	Temperature		
	20°C	400°C	600°C
Density g /cm ³ (1)	7.6	7.5	7.5
Thermal expansion ratio per °C (2)	-	12.2x10 ⁻⁶	12.9x10 ⁻⁶
Thermal conductivity W/m°C (2)	15	19	21
Specific heat J/kg °C (2)	450	590	700

(1)=Soft annealed

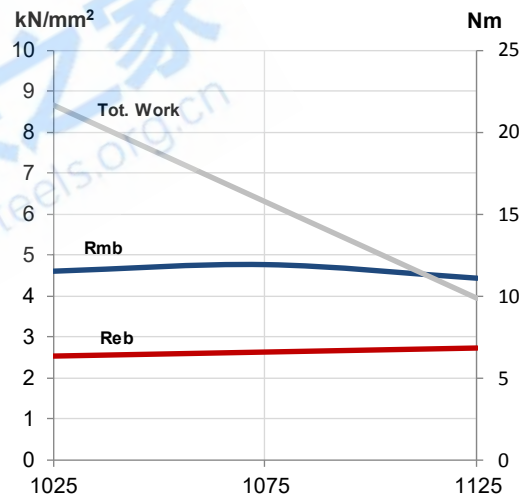
(2)=Hardened 1125°C and tempered 510°C, 2x2 hour

IMPACT TOUGHNESS



Original dimension Ø15 mm
Tempering 2 x 2 hour at 510° C
Unnotched test piece 7 x 10 x 55 mm

4-POINT BEND STRENGTH



Hardening Temperature in °C
Tempering 2 x 2 hour at 510°C
Dimension of test piece 4.7 x 65mm
Rmb = Ultimate bend strength in kN/mm²
Reb = Bend yield strength in kN/mm²
Tot. work = Total work in Nm

SAFETY DATA SHEET SDS: B

COMPARATIVE PROPERTIES

