



SODERFORS 1.2379 MOD

Properties

- High abrasion resistance
- High compressive strength
- High toughness
- High hardenability
- High tempering resistance
- High directional stability during heat treatment
- Nitriding
- Suitable for PVD surface treatment
- Property of secondary hardening

Comperable Standards

ISO / DIN	AISI	Delivered hardness
1.2379	D2	210 HB

Chemical Composition

C %	Mn %	Cr %	Mo %	V %	Si %
1.55	0.4	11.8	0.8	0.8	0.3

Mechanical Properties

Hardness (HRC)	Compressive Strength Rc0.2 (Mpa, N/mm ²)
62	2200
60	2150
55	1900
50	1650
0.40	4.25

Physical Properties

Temperature°C	20	200	400
Density (kg/m ³)	7700	7650	7600
Thermal Expansion Coefficient	-	12.3*10 ⁻⁶ 11.2*10 ⁻⁶	12*10 ⁻⁶
Thermal Conductivity (W/m°C)	20	21	23
Modulus of Elasticity (MPa)	210000	200000	180000
Specific Heat (3/kg°C)	460	-	-

Application Areas

It used for cutting metal sheets that is toughness required until 6 mm, piercing, grinding, deep drawing moulds; cold extrusion tools; aluminium and zinc tube making moulds; rolling; marking tools; as a blower - drilling medium for screw, bolt and rivet productions; pulley for gringing and profile tube production; wooden mills; abrasive plastic moulds and plastic cutting - crushing blades.

Surface Treatment

After high temperature tempering process, it is possible to increase the wear resistance, to improve the coating properties by applying nitriding process

Nitriding Temperature °C	Nitriding time (hour)	Depth (mm)
525	20	0.25
525	30	0.30

Welding

If selection of preheating temperature and welding electrode, preparation of weld are correct, the result will be good for this type of steel.

Welding Method	Welding Temperature	Welding Electrode	Depth (mm)
Shielded Metal Arc Welding (SMAW)	200 - 250°C	Inconel 625	380 HB
		UTPA 675	55 - 58 HRC
		Castolin 2 Castolin 6	56 - 60 HRC 59 - 61 HRC
Gas Tungsten Arc Welding (TIG)	200 - 250°C	Inconel 625	280 HB
		UTPA 73G2	55 - 56 HRC
		UPTA 675	55 - 58 HRC
		UPTA 696 Castolin 5	60 - 65 HRC 60 - 64 HRC

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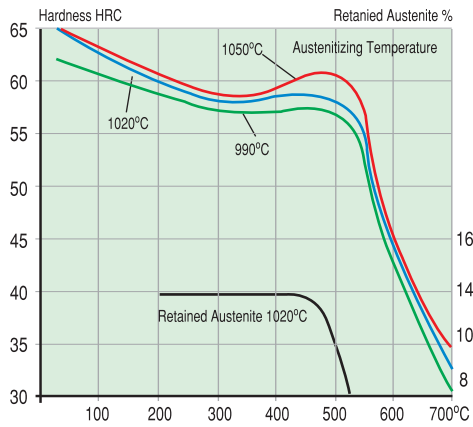
Heat Treatment

Process	Temperature	
Soft Annealing	850°C	
Stress Relieving	650°C	
Hardening		
Preheating	650 - 750°C	
Austenitizing	990 - 1050°C	
Austenitizing Temperature (°C)	Retention Time (dak.)	Hardness before Tempering (HRC)
990	60	63
1030	30	65

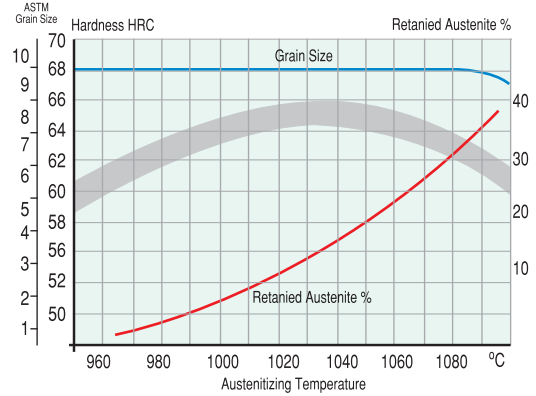
Hardening State
Oil (Only simple geometrical shaped moulds)
Cooling Rate (180 - 500°C/air)
Vacuum (high pressurized gas)
Pressurized air - gas

Tempering
The lowest tempering temperature: 180°C
The shortest tempering time : 2 hours
At least 2 tempering must be applied

Tempering Diagram



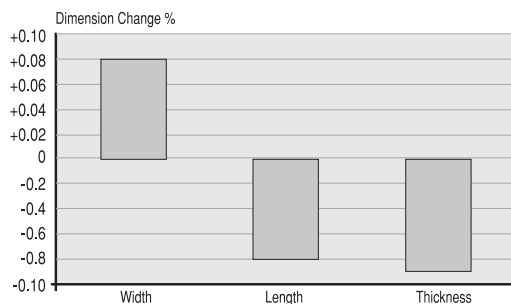
Austenitizing Temperature - Hardness Relationship



Dimension Changes

The dimension change of a sample is 80 x 80 x 80 mm and it is austenitized at 1020°C, hardened with 2 bar pressure during 30 minutes:

Dimension Change During Hardening



Dimension Change During Tempering

