

EN 10088-3 – 1.4057 - QT 800

A hardenable stainless steel

Typical analysis %	C 0,20	Cr 16	Ni 2
Norms	Steel grade		
EN 10088-3/95 QT 800	1.4057		
ASTM A276	(Type 431)		
Delivery condition	Quenched and tempered		

(Replaces SS 2321 -03)

EN 1.4057 is a hardenable stainless steel containing 16 % chrome and 2 % nickel. In the hardened and tempered condition it features :

- ⇒ high tensile strength
- ⇒ good corrosion resistance
- ⇒ magnetism

Mechanical properties

Values at room temperature in condition QT 800

Tensile strength Rm	N/mm ²	800 - 950
Proof strength Rp _{0.2}	N/mm ²	min 600
Elongation A ₅	%	min 14*
Impact energy KV	J/cm ²	min 20
Hardness	HB	ca 290

*/ > Ø 60 mm : 12%

Physical properties

Temperature	20° C	100° C	200° C	400° C
Density kg/dm ³	7,7			
Modulus of elasticity kN/mm ²	215	212	205	190
Mean coefficient of thermal expansion 10 ⁻⁶ x K ⁻¹ 20° K up	-	10	10,5	10,5
Thermal conductivity W/m x K	25			
Electrical resistivity Ohm mm ² /m	0,7			
Spec. thermal capa. J/kg X	460			

Scaling temperature in air approx. 850° C.

Corrosion resistance

EN 1.4057 has a good resistance in severe atmospherical conditions and, is resistive in seawater and strong oxidizing acids e.g. nitric acid.

Typical application areas:r:

- Shafting
- Spindles
- Pump parts
- Valve parts
- Piston rods
- Armatures
- Stirrers
- Nut
- Bolts

Heat treatment

Hardening

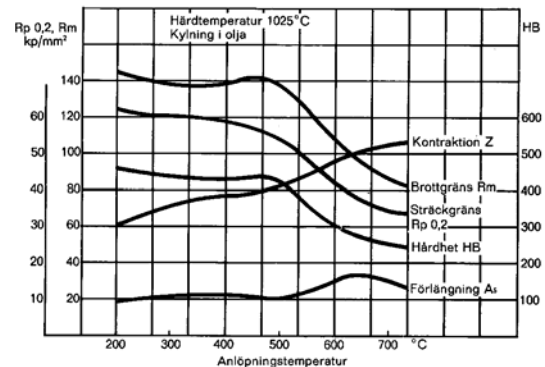
1050 - 950⁰ C. Holding time at hardening temperature 30 min. and subsequent cooling in oil or air.

Tempering

The temperature is chosen according to the below graph to reach required strength. Holding time 2 hours. Cooling in air.

(N.B. The graph represents a specific heat and should only be used as a guideline.)

QT 900 ~ 620°C, QT 800 ~ 660°C



Machining

Turning	Cemented carbide tools	
	Rough	Fine
ISO machining group	P20-P35	P10-P15
Cutting depth mm	2 - 5	0,5 - 2
Feed rate mm/r	0,3 - 0,6	0,05 - 0,3
Cutting speed m/min	110 - 140	140 - 200
	High speed steels	
Cutting depth mm	0,5 - 2	
Feed rate mm/r	0,05 - 0,2	
Cutting speed m/min	20 - 25	

Thread turning	Cemented carbide tools	
	Exterior	Interior
	90 - 100	65 - 80
	High speed steels	
	Exterior	Interior
	20 - 25	15 - 20

Drilling				
Drill diameter mm	5 - 10	10 - 20	20 - 30	30 - 40
Uncoated HSS				
Cutting speed m/min	12 - 15	12 - 15	12 - 15	12 - 15
Feed rate mm/r	0,1-0,2	0,2-0,3	0,3-0,35	0,35-0,4
Coated HSS				
Cutting speed m/min	14 - 20	14 - 20	14 - 20	14 - 20
Feed rate mm/r	0,1-0,2	0,2-0,3	0,3-0,35	0,35-0,4
Short range drill				
Cutting speed m/min			135-150	135-150
Feed rate mm/r			0,08-0,12	0,1-0,14

• Milling	• Tap threading
• Sawing	• Cutting off
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Welding

Alt 1.

- To arrive at an optimal welding result the steel should be austenitized at 980° C during approx. 10 minutes.
- Then cool to approx. 300 - 200° C.
- Start welding at that temperature..
- After welding cool to 50 - 60° C.
- Then temper according to the graph shown under – "Heat treatment".

Alt 2.

If heating to 980° C under circumstances is impossible welding should be performed as follows:

- Start welding at 300 - 200° C.
- Then cool to 50 - 60° C.
- Temper at temperature approx. 10° C **below** the one at which the material has been tempered previously.

Welding consumables should in both alternatives be similar to that of the parent material. If the material strength is of subordinate importance or if preheating under circumstances is impossible welding should be performed using austenitic consumables. After cooling , temper in accordance with Alt.2 –c) above.

Surface finish

EN 1.4057 is available with peeled surface.

Stock standard

Please refer to our stock standard leaflet.

Technical support

VALBRUNA NORDIC AB will be helpful in giving further advice and recommendations concerning choice of materials, cutting data, welding, heat treatment , etc.