



W 1.2767

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Material properties

Nickel alloyed steel for through hardening, with moderate machinability; very high resistance against bending and high compressive strength; very high toughness and good through hardenability.

1.2767 is particularly suitable for high polishing with mirror finish and its thermal treatment is easier to handle compared to W1.2343.

For which applications

High-performance cavity plates and inserts for the processing of plastics with high surface requirements (mirror finish);

Stamping, forming, bending dies for particularly high pressure and bending stresses.

Technical tip

To avoid unwanted warping during plastic injection, the tempering temperature after hardening must exceed the operating temperature by 50 °C.

Example.:

Operation at 200 °C

Tempering at 250 °C = 52 HRC

PROPERTIES

STANDARD

- > Afnor 45 NCD 16
- > Euronorm 45NiCrMo16
- > Werkstoff W1.2767
- > AISI ~6F7

CHEMICAL ANALYSIS (TYPICAL; IN WEIGHT%)

Typical analysis is in accordance with international standards

C	Si	Mn	Ni	Cr	Mo
0.45	0.25	0.40	4.0	1.35	0.25

Typical values

PHYSICAL PROPERTIES

2767 grade is delivered annealed with a hardness <260HB.
Typical physical properties are given in the table below

Thermal conductivity W.m-1.K-1	Thermal expansion Coefficient (10-6.K-1)				
	20°C	20-100°C	20-200°C	20-300°C	20-400°C
32.9	11.5	12.3	12.8	13.1	

PLATE PROCESSING

2767 grade is delivered in a soft annealed condition for easier machining. When machining is completed, it can be hardened with a heat treatment procedure including soft annealing, hardening and double tempering. Heat treatment should be done under vacuum or under gas protection to avoid surface oxidation and decarburization. Surface and core temperature (Ts/Tc) should be controlled by thermocouples.

HEAT TREATMENT

Soft annealing:

600 to 650 °C for about 2 to 5 hours
slow controlled cooling of 10 to 20 °C per hour to about 600 °C
further cooling in air, max. 260 HB

Hardening:

840 to 870 °C
Quenching in oil/hot bath/air
Obtainable hardness: 53–58 HRC

Tempering:

A tempering should be performed on 2767 immediately after quenching at a temperature depending on required hardness (see tempering curve below). The tempering temperature should be hold 2 hours minimum or 1 hour / 20mm of thickness.
Slow heating to tempering temperature immediately after hardening.
Tempering twice is recommended.

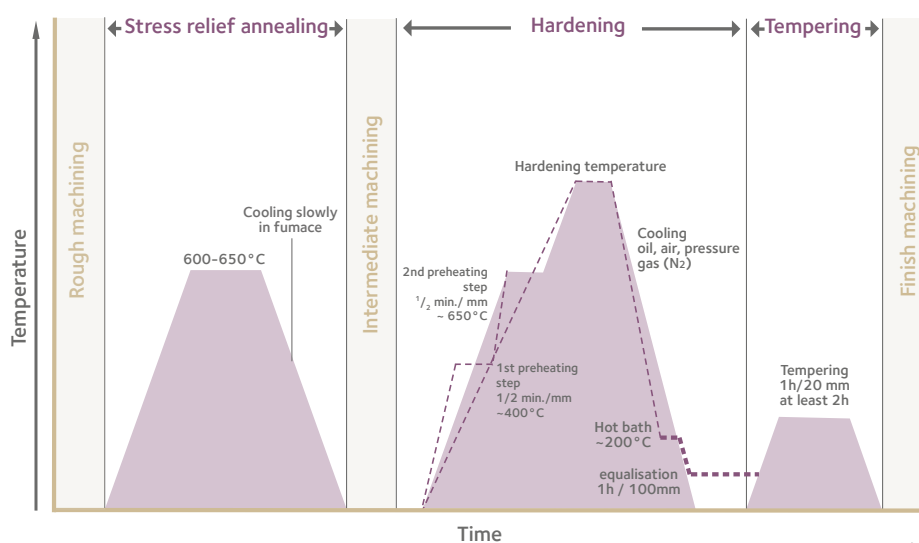
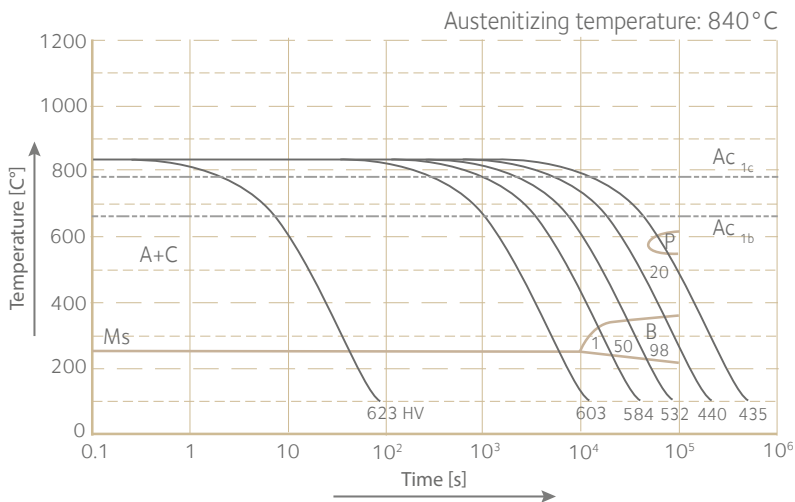
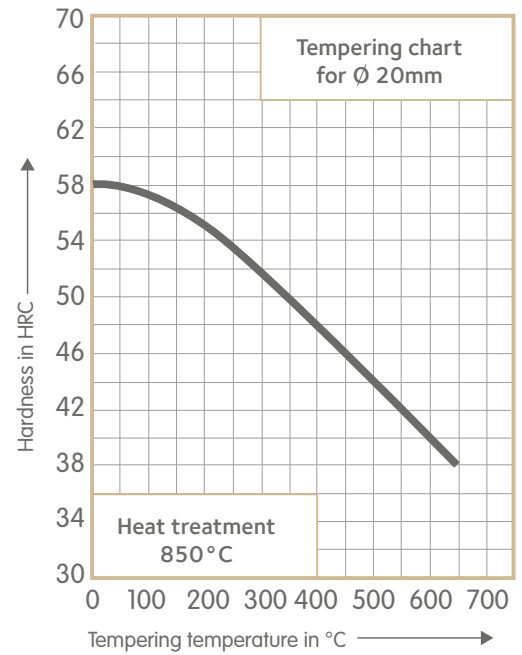


PLATE PROCESSING

Continuous cooling transformation Diagram (CCT)



Tempering curve



SURFACE TREATMENT

2767 can be hard chromed to increase its resistance to wear and corrosion. It is usually not nitrided.

DIMENSIONAL PROGRAM

Thickness	Width
15 - 350 mm	1000 - 3000 mm
150 - 900 mm	1000 - 2000 mm

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Technical data and information are to the best of our knowledge at the time of printing. However, they may be subject to some slight variations due to our ongoing research programme on steels. Therefore, we suggest that information be verified at time of enquiry or order. Furthermore, in service, real conditions are specific for each application. The data presented here are only for the purpose of description, and considered as guarantees when written formal approval has been delivered by our company. Further information may be obtained from the address opposite.