

CHEMICAL PROPERTIES:

Brand	Mat.-No.	Short name	Reference analysis %						
			C	Si	Mn	Cr	Mo	V	Ni
GSF			0.28	0.30	0.70	2.80	0.60	0.40	1.00

TYPE OF STEEL AND CHARACTERISTICS:

GSF is an innovative high performance steel which stands for outstanding ductility, excellent heat resistance, very good through hardening capability, and high dimensional stability. GSF is supplied readily pre-tempered to working hardness 38 - 44 HRC, thus requires no additional heat treatment eliminating any additional costs and risk involved with external heat treatment. GSF shows a very good machinability and weldability. Due to the reduced C contents, the risk of cracking in the welding transition zone is limited. Due to this characteristics of high toughness and improved tempering resistance compared to 55NiCrMoV7 grades GSF is well suitable for dies, which are used under forging hammers or large scale dies in forging presses. The remelted version GSF ESR with a hardness of 38 - 44 HRC is well suitable for plastic processing moulds and allows a high polishing quality and very good texturing and etching due to excellent homogeneity, fine microstructure and high cleanliness.

APPLICATIONS:

Hammer forging dies in steel forming, specially for deep contours prone to cracking; Press dies where high toughness and good heat resistance is required / e.g. dies for medium sized or larger hydraulic presses; Calibration, deburring and trimming tools for forging presses; hammer and press saddles, hammer heads. Plastic moulds e.g. for household appliances with requirement of higher wear resistance, high surface conditions and ductility up to a thickness of 400 - 450 mm; Plastic moulds processing PP, PA6 (Nylon), ABS, PMMA; rubber moulds. Roughing rolls (Forging rolls); Piercers and piercing sleeves for production of seamless steel bottles; rolling mandrels and tapered rolls in the rolling technology sector machine Components, Die holders and Armoring with strengths up to 1450 MPa; shafts and Heavy-Duty machine Components with yield points of > 750 MPa

HEAT TREATMENT:

Recommended working hardness: 1350-1450 MPa/38-44 HRC, As a rule this material is delivered already heat treated

Hardness obtainable: approx. 51 HRC (60 mm dia; oil or polymer quenching)

Tempering:

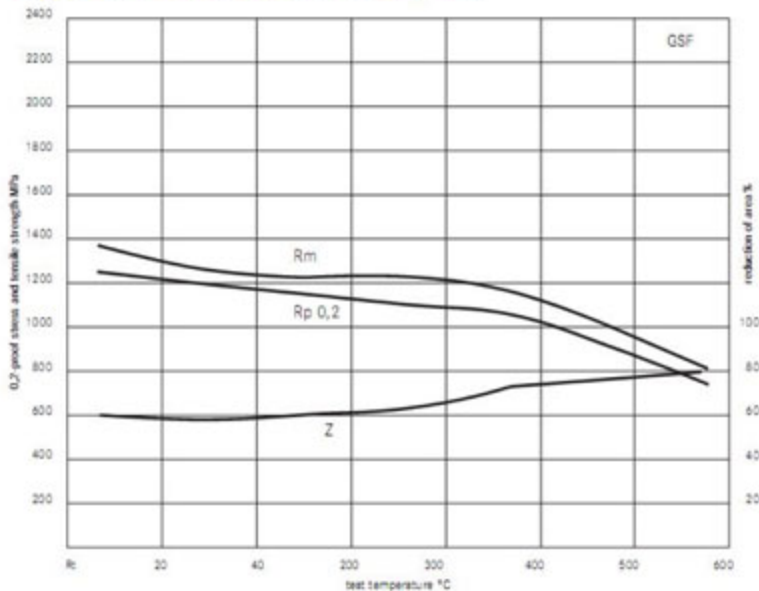
Temperature: 400 - 650°C. As per requirement; see diagram

Nitriding: possible

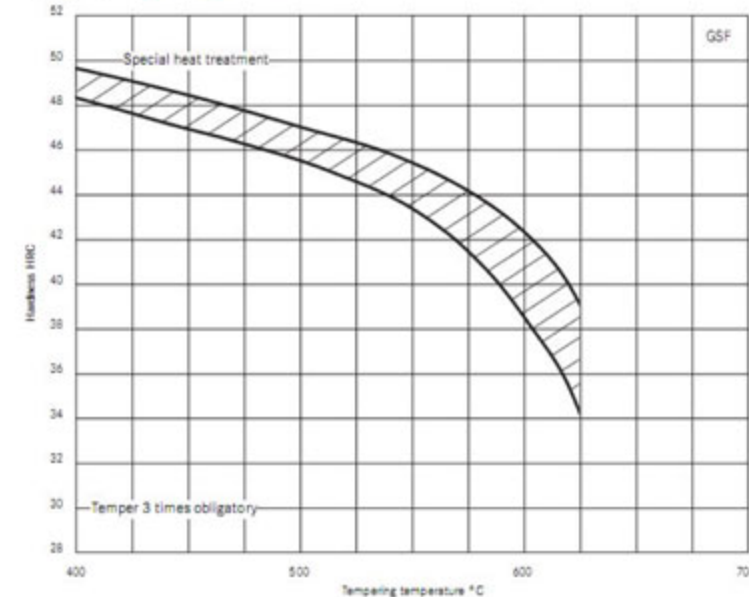
Preheating before use:

150 - 350° C is recommended.

High temperature strength diagram



Tempering diagram



TTT-Diagram

