

1. Standards

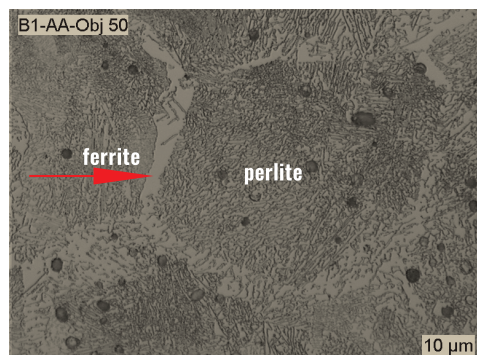
FN 08 0,6C. Special steel specific to metal injection moulding industry. Nearest standards are AFNOR XC48, DIN 1.1191 and ASTM 1045.

3. Composition

⁽¹⁾ Combustion analysis ⁽²⁾ Microprobe analysis

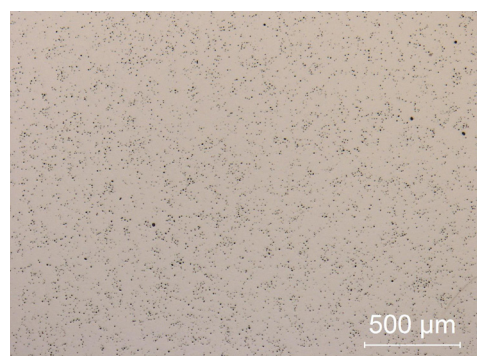
%	C ⁽¹⁾	0,40-0,65
%	Ni ⁽²⁾	7,5-8,5
%	Fe	Compl.

5. Microstructure and mechanical properties as sintered

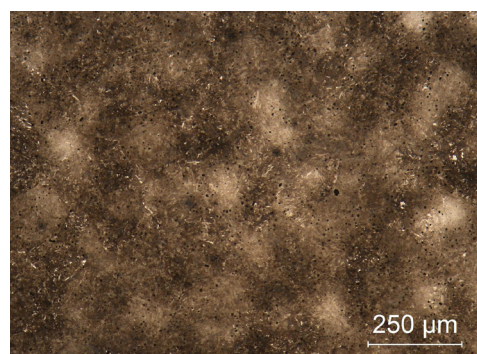


Optical micrograph after slow cooling and etching

6. Microstructure and mechanical properties after quench and annealing



Optical micrograph



Optical micrograph after fast cooling and etching

2. Description and use

Magnetic steel prepared from a master batch process based on iron carbonyl powder with a maximum grain size of 8 microns. This material can be used for mechanical applications (weapons, automotive, machinery parts, mechanical parts, locks etc...) due to its high strength and hardness after heat treatment. A good finish and surface definition can be obtained thanks to high density and small powder size. The amount of nickel allows a stable microstructure and increases hardness. This material is magnetic and sensitive to corrosion and can be blued or blackened.

4. Physical and chemical properties

minimum density : 7,5 Not resistant to corrosion

After sintering under nitrogen (N₂) and slow cooling (specific cycle) the microstructure exhibits perlitic areas with ferrite at the grain boundaries.

After natural or fast cooling (no oil quenching) martensite will appear from outside of the part (where cooling is faster) to inside of the part and in nickel rich areas (Nickel enhancing martensite formation)

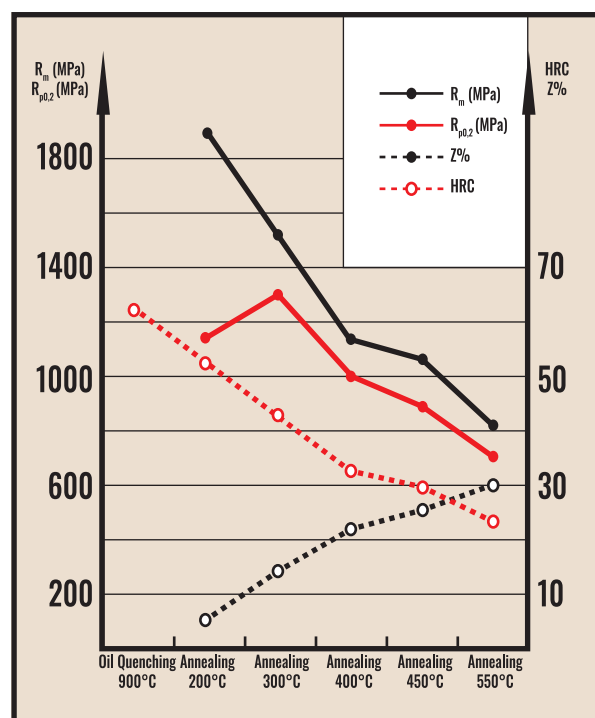
Porosities size max 6 µm.
Grain size G=4 (~ 88 µm)

FN 08 as sintered :
Traction
 $R_m > 700$ MPa
 $R_{p0,2} > 400$ MPa
 $A\% > 50$ %
Hardness as sintered :
Roughness :
150-280 Hv₁
Ra < 1 µm

FN 08 oil quenched and tempered :

Traction
 $R_m > 1250$ MPa
 $R_{p0,2} > 1100$ MPa
 $A\% > 3$ %

Hardness after quench :
up to 550Hv₁₀ (52 HRC)



Properties after quenching and annealing