

LKM S7M

高性能高韧性高耐磨模具钢

High Performance Mould Steel with High Toughness and Wear Resistance

- 高韧性 High Toughness
- 高耐磨性 High Wear Resistance
- 中小型注塑模具 Small to Medium Size of Plastic Injection Mould

LKM S7M 简介 Introduction

LKM S7M 是参照美国 AISI S7 标准开发的高性能模具钢。LKM S7M 具有良好的韧性、淬硬性、高温强度、耐磨性和抛光性。工作硬度可达 56-58 HRC，视乎模具设计、尺寸和要求而定。适用于生产周期长、添加了树脂、玻璃纤维或碳纤维含量30%以上的注塑模具。它也适用于压缩成形模具、热冲压模具和铝合金挤压模具。

LKM S7M is a high performance mould steel developed by LKM, with reference to the US AISI standard S7. LKM S7M possesses of good toughness, quenchability, high temperature strength, wear resistance and polishability. The working hardness can be up to 56-58 HRC, depending on the mould design, size and requirement. It is suitable for plastic mould with long production run, with 30% or more of resin, glass fiber and carbon fiber. It is also suitable for compression mould, hot stamping mould and aluminium alloy extrusion die.

供货状态(原材表面硬度) Delivered Hardness From Steel Mill (Measured at Surface)

LKM S7M

退火至约 HB229 Annealed to HB229

参照标准

Q AISI S7 改良型

Comparable Standard

Q AISI S7 Modified

化学成分(%) Chemical Composition(Percentage by Mass)

碳 C	硅 Si	铬 Cr	锰 Mn	钼 Mo	钒 V
0.5	0.1	5.0	0.5	2.3	0.6

特性

- ✓ 经过ESR重熔精炼处理，钢质纯洁度高，显微组织均匀细小
- ✓ 优良的抗磨损性
- ✓ 良好的韧性与塑性
- ✓ 优良的淬透性
- ✓ 良好的高温强度，抗回火软化性良好
- ✓ 良好的表面处理特性（氮化及PVD）
- ✓ 优良的镜面抛光性和蚀纹性

Characteristics

- ✓ High purity, homogeneous microstructure thanks to ESR process
- ✓ Good wear resistance
- ✓ Good toughness and ductility
- ✓ Good quenchability
- ✓ Good resistance to tempering back and hot strength
- ✓ Good for surface treatment(Nitriding/PVD)
- ✓ Good polishability and texturability

应用

- ✓ 适用于长期生产的添加30%或以上玻璃纤维、碳纤维等增强塑料的注塑模具
- ✓ 热固性塑胶压实模
- ✓ 热冲压模
- ✓ 铝合金挤压模

Application

- ✓ Suitable for plastic mould with long production run for resin with reinforced additives such as glass fiber and carbon fiber
- ✓ Compression mould for thermosetting plastics
- ✓ Hot stamping die
- ✓ Aluminum alloy extrusion die

物理性能 Physical Properties

淬火回至 56-58 HRC 之数值 Quenched/Tempered to 56-58 HRC

温度 (°C) Temperature	20	200	400
热膨胀系数 [10 ⁻⁶ m/(m x K)] Coefficient of Thermal Expansion	—	11.5	12.3

温度 (°C) Temperature	20	200	400
热传导率 [W/ (m x K)] Thermal Conductivity	—	25	28

纯度 Purity

A (硫化物类) Sulfide Type	B (氧化铝类) Alumian Type	C (硅酸盐类) Silicate Type	D (球状氧化物类) Globular Oxide Type
≤ 0.5	≤ 1.0	≤ 1.0	≤ 1.0

超声波检测

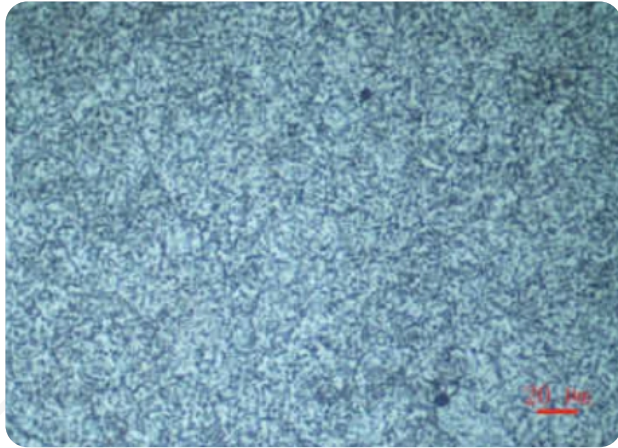
(☺) SEP 1921 - Test Group 3 , Class E/e

Ultrasonic Testing

(☺) SEP 1921 - Test Group 3 , Class E/e

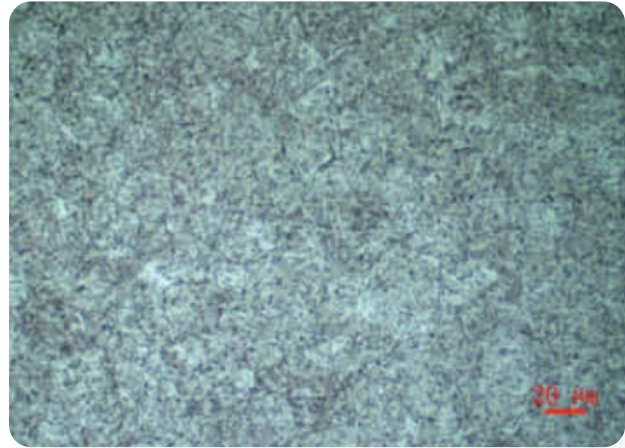


金相组织



退火态组织：均匀的球粒状珠光体
Annealed Condition: Homogenous Spheroidal Pearlite

Microstructure



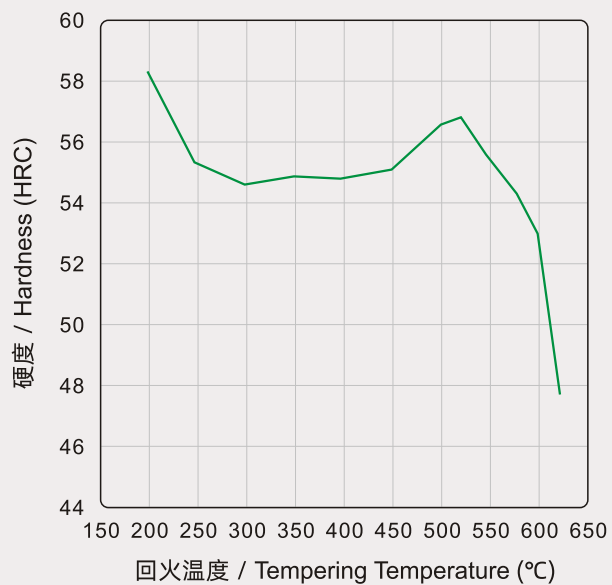
调质硬化态组织：回火索氏体+粒状碳化物
Hardened Condition: Tempered Sorbite+Granular Carbide

热处理工艺 Heat Treatment

软性退火 Annealing	淬硬 Quenching	回火 Tempering
850°C	1000 ~ 1025°C (建议1025°C) 1000 ~ 1025°C (1025°C recommended)	500 ~ 620°C

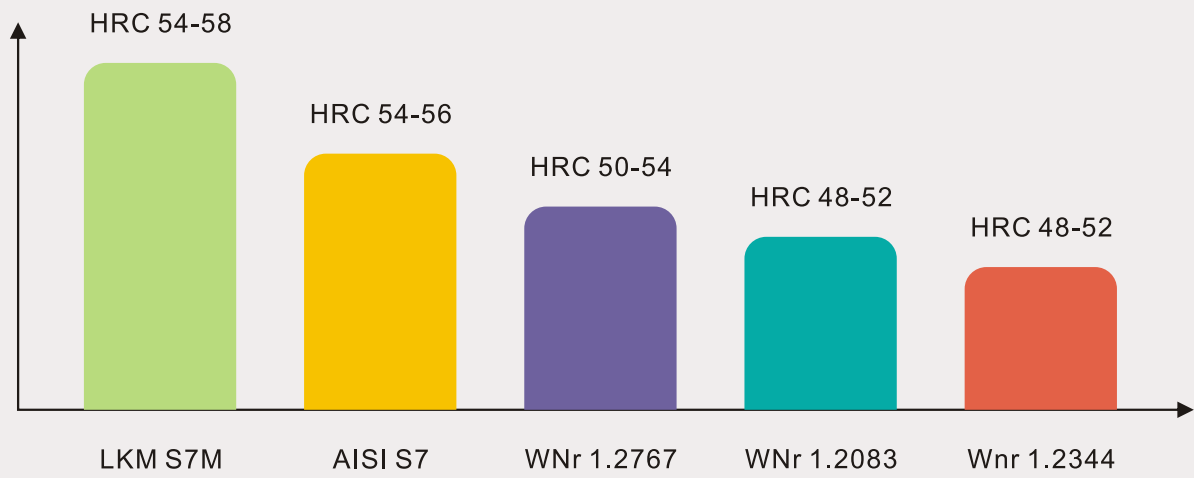
回火图 (试样尺寸: 25 × 30 × 50mm; 油淬温度: 1025°C)

Tempering Curve (Sample dimension: 25x30x50mm; Quenched at 1025°C by Oil)

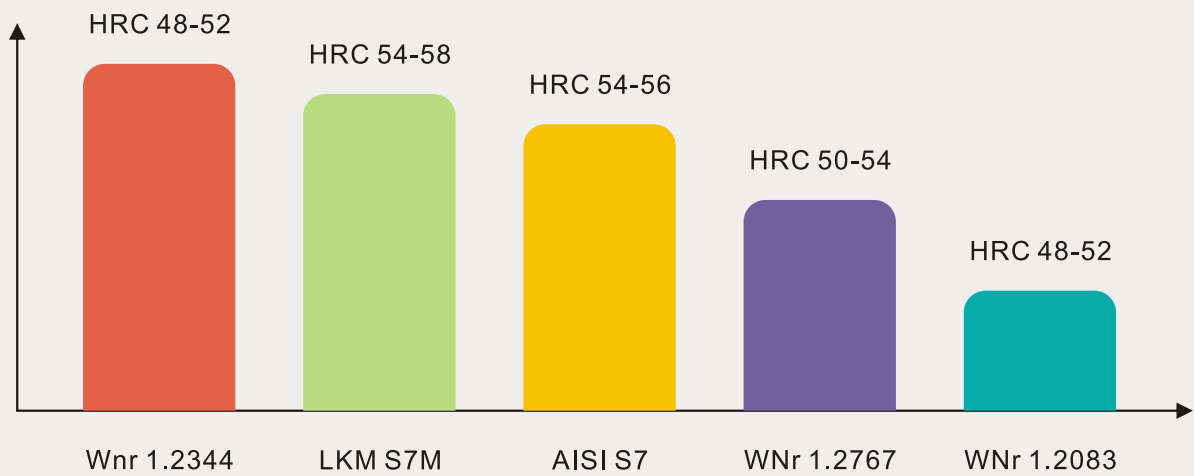


不同材料性能对比 Properties Comparison between different steels

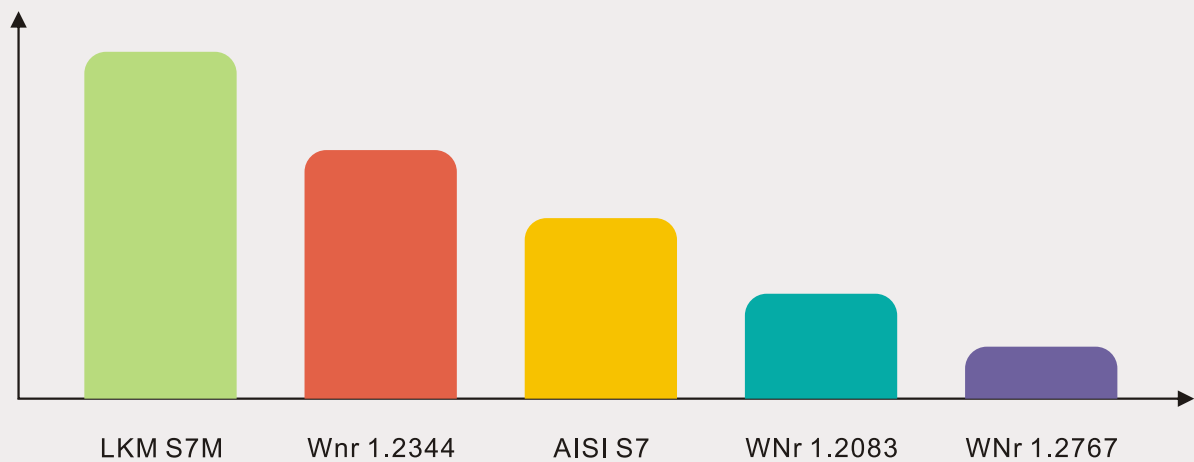
耐磨性 Wear Resistance



韧性 Toughness



抗回火软化性 Temper Resistance



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