



LKM S136 ESR

高纯度高镜面防锈塑料模具钢

Stainless Plastic Mould Steel with High Purity and Mirror Finish

- 高抛光性 High Polishability
- 高耐磨性 High Wear Resistance
- 高耐腐蚀性 High Corrosion Resistance

LKM S136 ESR 简介 Introduction

LKM S136 ESR 是属于龙记特殊钢系列中之防锈塑胶模具钢，其特点是高抛光、耐腐蚀及高耐磨性。与常规的德国 W.Nr 1.2083 标准相比，经过了ESR (电渣重熔)处理，材质更纯洁、夹杂物含量更低，具有更高的耐腐蚀性、更佳的抛光性、更小的热处理变形等优点。

LKM S136 ESR is a stainless plastic mould steel from the LKM Special Steel series, providing the characteristics of high polishability, good corrosion resistance and wear resistance. Thanks to the Electro-Slag Remelting (ESR) process. LKM 2083 ESR has higher purity and lower inclusion level than the ordinary W.Nr 1.2083, thus offering higher corrosion resistance, better polishability and less deformation during the heat treatment process and so on.

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

LKM S136 ESR

退火至约HB 250 Annealed to HB 250

参照标准

- Q AISI 420 改良型
- Q W.Nr 1.2083 改良型

Comparable Standard

- Q AISI 420 Modified
- Q W.Nr 1.2083 Modified

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

碳 C	硅 Si	铬 Cr	镍 Ni	锰 Mn	钒 V
0.36-0.45	0.90-1.20	13.00-14.00	0.15-0.30	0.40-0.70	0.25-0.35

应用

- ✓ 适合制作需要耐腐蚀性塑胶模具
- ✓ 添加玻纤塑胶模具
- ✓ 需要长期生产之塑胶模具
- ✓ 制作透明产品部件模具
- ✓ 制作医疗器械模具

Application

- ✓ Plastic injection mould with good corrosion resistance
- ✓ Moulding abrasive/filled materials
- ✓ Plastic injection mould with long production run
- ✓ Production of optical parts
- ✓ Moulding of medical components

物理性能 Physical Properties

温度 (°C) Temperature	20-100	20-200	20-300
热膨胀系数 [10 ⁻⁶ m/(m x K)] Coefficient of Thermal Expansion	11	11.3	11.6

温度 (°C) Temperature	20	200	300
热传导率 [W/(m x K)] Thermal Conductivity	21.0	23.0	25

高纯洁度

⚠ LKM S136 ESR 经过电渣重熔处理，使钢材杂质含量降低、偏析少、组织更致密。

High Purity

⚠ Through the Electro-Slag Remelting (ESR) process, LKM S136 ESR has lower inclusion level, less segregation and more homogeneous microstructure.

超声波检测

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

Ultrasonic Testing

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

焊接处理

- ✦ 焊前预热温度：200-250°C
- ✦ 采用专用焊枝
- ✦ 焊后热处理工序：
 - ▶ 如在退火态焊接，焊后在780°C去应力退火
 - ▶ 如在淬硬态焊接，焊后以低于先前回火温度20-30°C作去应力处理

Welding

- ✦ Preheating temperature: 200-250°C
- ✦ Welding rod
- ✦ Heat Treatment after Welding:
 - ▶ Annealed condition: Soft-anneal at 780°C
 - ▶ Hardened condition: Temper at 20-30°C below the last tempering temperature

表面处理

✦ 可以通过离子氮化、镀铬或PVD等表面处理提高模具表面的硬度，延长模具的使用寿命



Surface Treatment

✦ Suitable for plasma/ion nitriding processes, hard chromium plating and PVD coating to increase surface hardness and improve mould life.

高抛光性

✦ 以 LKM S136 ESR 拥有高纯洁度，可以抛光至镜面级 SPI A1

High Polishability

✦ With high purity, LKM S136 ESR could attain the mould finish to SPI A1.

建议抛光工艺次序 Recommended Polishing Process

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1	机械加工/放电加工 CNC Machining/EDMing	—
2	油石研磨 Rough Grinding by Oil Stone	120#-180#-240#-280#-320#
3	砂纸研磨 Fine Grinding by Sand Paper	320#-400#-500#-600#-800#-1000#-1200#-1500#-2000#-2500#-3000#
4	金刚石研磨膏研磨 Polishing by diamond Paste	7#-5#-3#-1#

高耐磨性

■ LKM S136 ESR可通过热处理提高硬度及耐磨性，建议使用硬度为 HRC46-52 (如模具尺寸增加或形状复杂，建议进一步降低硬度)

High Wear Resistance

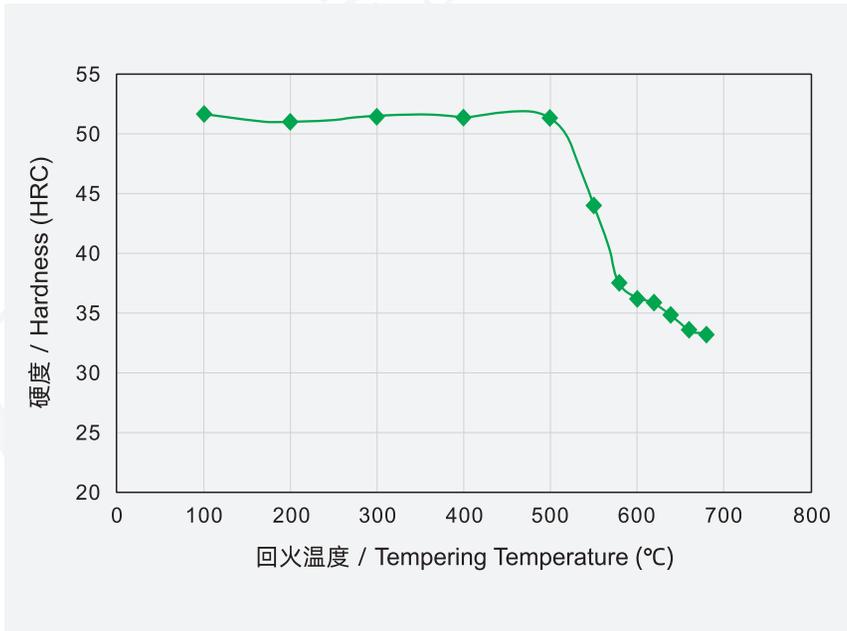
■ The recommended working hardness of LKM S136 ESR is HRC46-52 through heat treatment, it is suggested to reduce the hardness of the mould with bigger size and/or complicated structure.

热处理工艺 Heat Treatment

锻造 Forging	软性退火 Annealing	淬硬 Quenching	回火 Tempering
1050 ~ 1050°C	760 ~ 800°C	1000 ~ 1040°C	250 ~ 570°C

回火图 (试样尺寸: Ø25 × 50mm; 油淬温度: 1020°C)

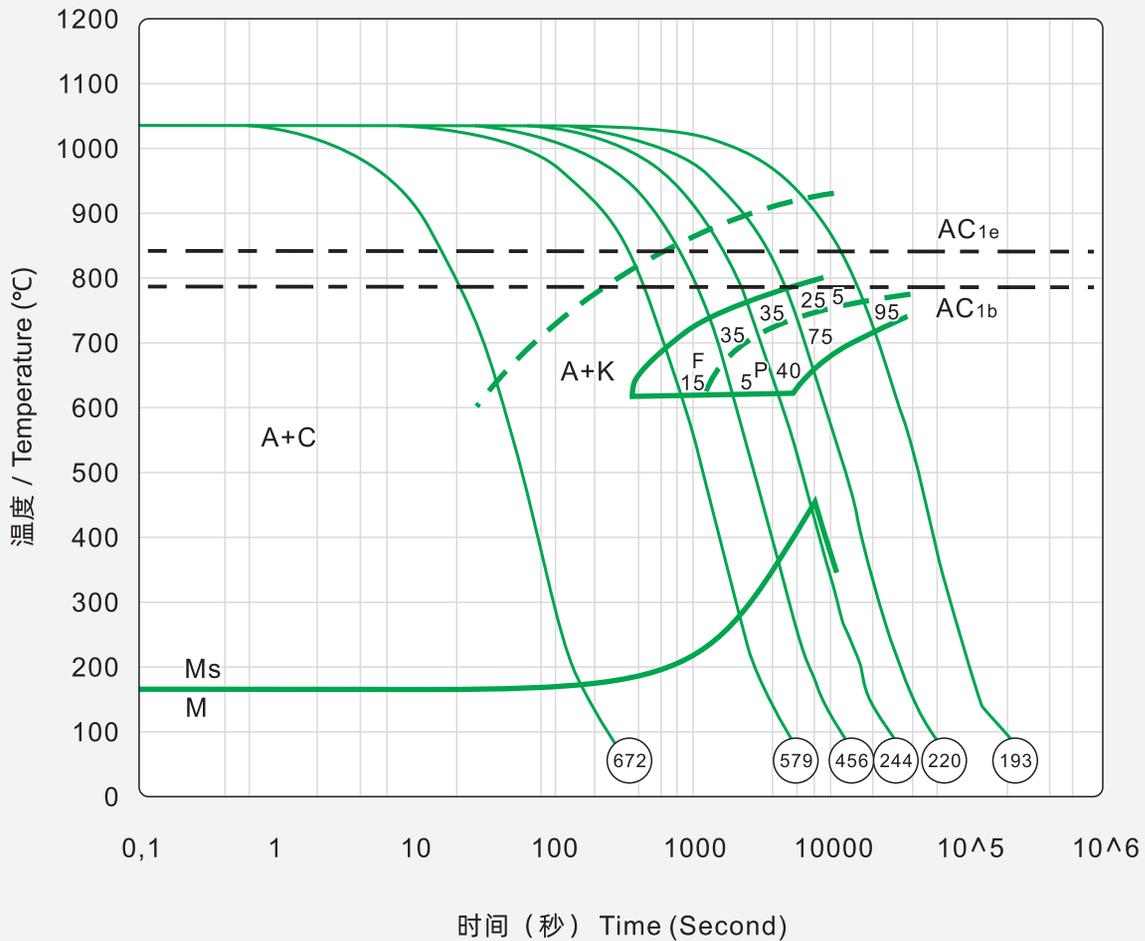
Tempering Curve (Sample dimension: Ø25x50mm; Quenched at 1020°C by Oil)



CCT图 (连续冷却转变曲线图)

CCT Diagram (Continuous Cooling Transformation Diagram)

奥氏体化温度: 1040°C Austenitizing Temperature: 1040°C



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