

# LKM 2083 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

➤➤ 良好耐腐蚀性 Good Corrosion Resistance

## LKM 2083 ESR 简介 Introduction

LKM 2083 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、最佳的抛光性、更小的热处理变形等优点。

LKM 2083 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 2083 ESR

退火至约HB250 Annealed to HB250

### 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	锰 Mn	钒 V
0.38	1.0	13.5	0.5	适量

### 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 for PC. PMMA 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 <sup>-6</sup> 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 2083 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 2083 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（LKM牌号Z04-A08-XX）
- ✦ 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: LKM Z04-A08-XX
- ✦ 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.



## 良好抛光性

以 LKM 2083 ESR 拥有高纯洁度，可以抛光至镜面级 SPIA1

## Good Polishability

With high purity, LKM2083 ESR could attain the mould finish to SPIA1.

建议抛光工艺次序 Recommended Polishing Process

建议抛光工艺次序 Recommended Polishing Process		
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#

## 良好耐磨性

LKM 2083 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)

## Good Wear Resistance

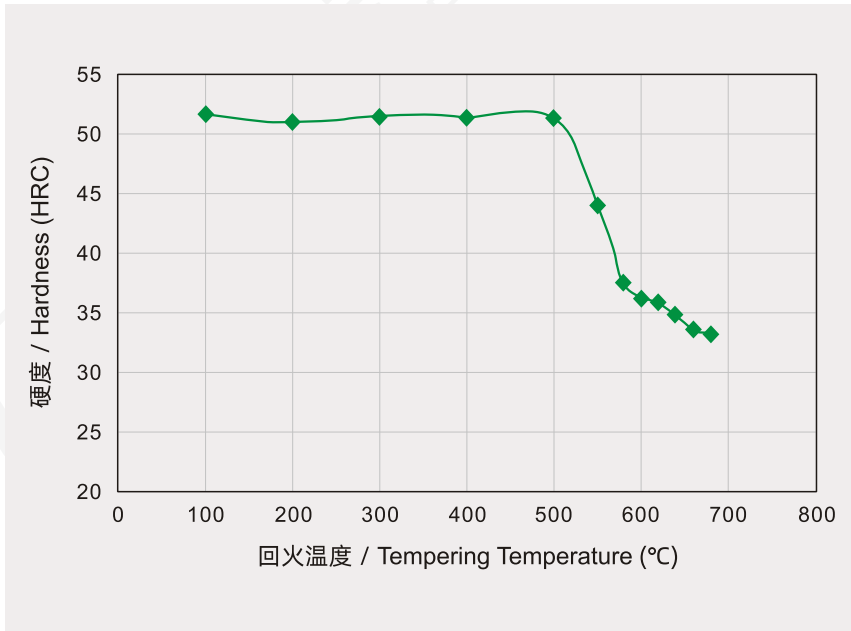
The recommended working hardness of LKM 2083 ESR is HRC46-52 through heat treatment, it is suggested to reduce the hardness of the mould with bigger size and/or complicated structure.

## 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)

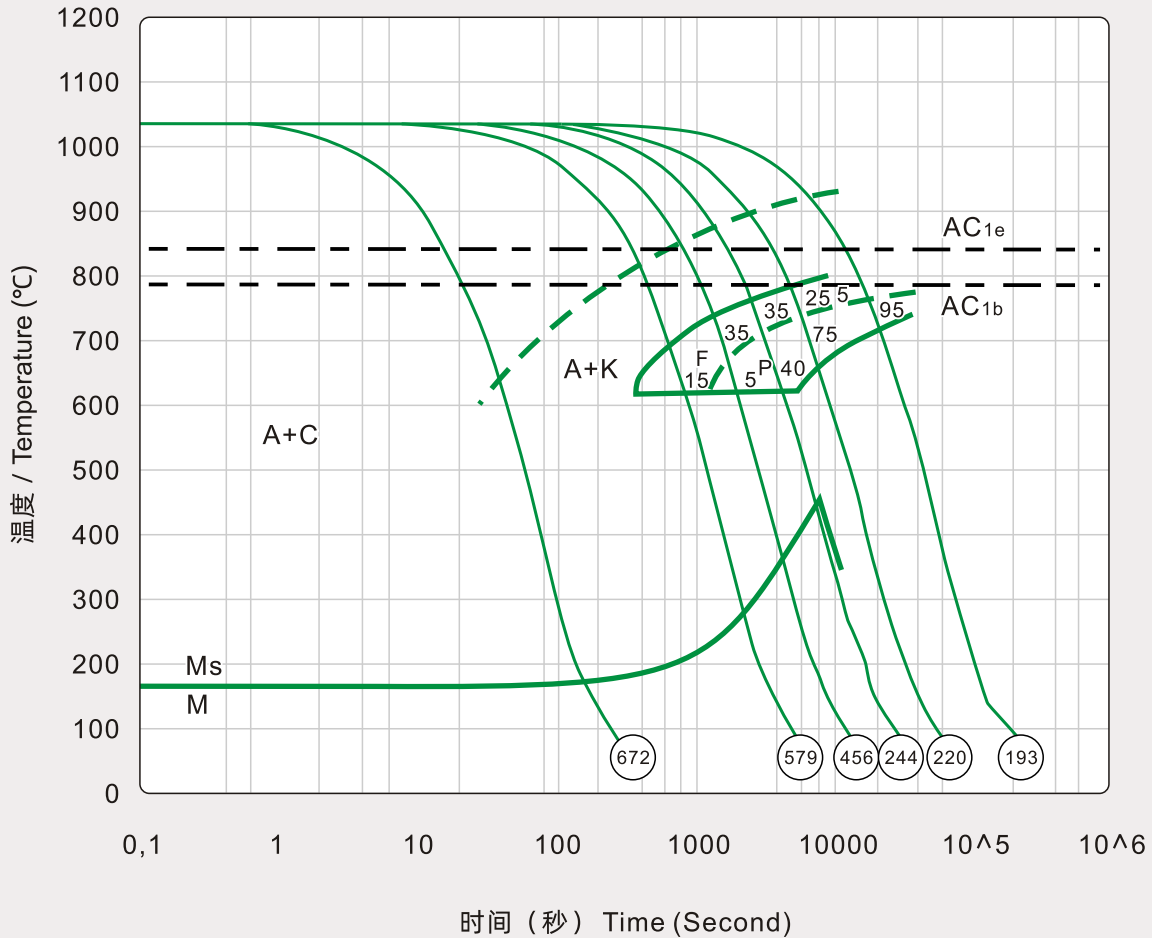
Tempering Curve (Sample dimension: Ø25x50mm; Quenched at 1020°C by Oil)



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



**集团总公司 (HEAD OFFICE)**

**龙记五金有限公司**

**LUNG KEE METAL LTD**

中国香港新界沙田安群街一号京瑞广场15楼A室  
Unit A, 15/F, Kings Wing Plaza 2, 1 On Kwan Street,  
Sha Tin, New Territories, Hong Kong, China  
电话 Tel : (852) 2342 2248 传真 Fax : (852) 2341 8544

**河源龙记金属制品有限公司**

**HEYUAN LUNG KEE METAL PRODUCTS CO LTD**

中国广东省河源市高新技术开发区龙记大道  
Long Ji Da Dao, Hi-tech Development Zone, Heyuan,  
Guangdong Province, China  
电话 Tel : (86) 0762-3210 502 传真 Fax : (86) 0762-3210 501

**杭州龙记金属制品有限公司**

**HANGZHOU LUNG KEE METAL PRODUCTS CO LTD**

中国浙江省杭州市萧山区杭州江东工业园区江东三路7711号  
7711 Jiangdong 3rd Road, Hangzhou Jiangdong Industrial Park,  
Xiaoshan District, Hangzhou, Zhejiang Province, China  
电话 Tel : (86) 0571-8213 3283 传真 Fax : (86) 0571-8213 3280

网址 : [WWW.LKM.COM.CN](http://WWW.LKM.COM.CN)

电邮 : [LKMSALES@LKM.COM.HK](mailto:LKMSALES@LKM.COM.HK)