

# LKM2343 ESR

## 高韧性高抛光性热作钢

High Toughness and High Polishability Hot Work Steel

- ▶▶▶ 高韧性 High Toughness
- ▶▶▶ 高纯洁度 High Purity
- ▶▶▶ 高耐热疲劳性 High Thermal Fatigue Resistance
- ▶▶▶ 优越的抛光性 Excellent Polishability



## LKM2343 ESR 简介 Introduction

LKM2343 ESR是属于龙记特殊钢系列中之高韧性热作模具钢，参照德国W.Nr 1.2343标准而开发。采用ESR（电渣重熔）冶炼技术及特殊锻打工艺，化学成分分布均匀、组织致密，具有优秀的韧性和延展性，及良好的抗热疲劳性，可用于压铸模具；LKM2343 ESR同时具有良好的抛光性，可以应用于形状复杂、韧性要求较高以及抛光要求较高之注塑模具如车灯模具。

LKM2343 ESR is a hot work tool steel with excellent toughness from the LKM special steel series; it is developed with reference to the German standard W.Nr 1.2343. Thanks to Electro-Slag Remelting (ESR) and specialised forging process, this material possesses homogeneous chemical composition and uniform structure and thus offers excellent toughness, high ductility, good heat checking resistance and high polishability. It can be used for die casting die as well as plastic injection mould (such as car lighting) with complicated mould design, high toughness and high surface finish requirement.

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

LKM2343 ESR

软性退火至  $\leq$  HB225 Soft Annealed to HB225 (max.)

### 参照标准

- Q AISI H11
- Q W.Nr 1.2343 ESR

### Comparable Standard

- Q AISI H11
- Q W.Nr 1.2343 ESR

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

碳 C	硅 Si	锰 Mn	铬 Cr	钼 Mo	钒 V
0.36	1.00	0.40	5.00	1.20	0.35

### 应用

- ✓ 压铸模具（模仁、镶块、分流锥等）
- ✓ 挤压模具（衬套、模仁、垫块等）
- ✓ 注塑模具（多骨位、形状复杂、添加玻璃纤维或有高光洁度要求之塑胶模具）

### Application

- ✓ Die casting die (e.g. dies inserts, sprue spreaders)
- ✓ Extrusion die (e.g. die-holders, cores, dummy blocks)
- ✓ Plastic injection mould with complicated geometry and high surface finish requirement

## 物理性能 Physical Properties

温度(°C) Temperature	20-100	20-200	20-300	20-400	20-500	20-600	20-700
热膨胀系数 [ $10^{-6}m/(m \times K)$ ] Coefficient of Thermal Expansion	11.8	12.4	12.6	12.7	12.8	12.9	12.9

温度(°C) Temperature	20	350	700
热传导率 [W/(m x K)] Thermal Conductivity	25.3	27.2	30.5

## 高纯洁度

LKM2343 ESR经过电渣重熔处理，使钢材杂质含量降低，化学成分分布更均匀，组织更致密。

## High Purity

Thanks to the ESR process, LKM2343 ESR possesses high purity, homogeneous chemical composition and uniform 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

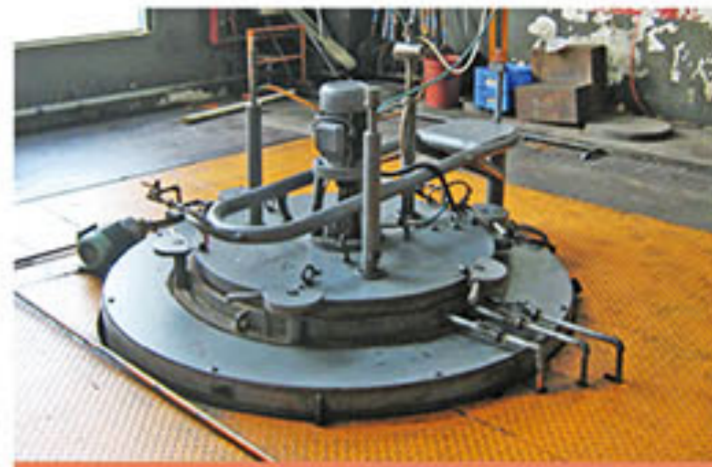
- 焊前需要预热处理,预热温度: 325°C
- 焊接使用专用焊枝 (LKM牌号Z04-H04-XX)
- 焊后热处理工序:
  - 如在退火态焊接,焊后在850°C去应力退火
  - 如在淬硬态焊接,焊后以低于先前回火温度20-30°C作去应力处理

## Welding

- Preheating temperature: 325°C
- Welding rod: LKM Z04-H04-XX
- Heat Treatment after Welding:
  - Annealed condition: Soft-anneal at 850°C
  - Hardened condition: Temper at 20-30°C below the last tempering temperature

## 表面处理

可以通过氮化、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 all nitriding processes, hard chromium plating and PVD coating to increase surface hardness and improve mould life.

## 良好抛光性

LKM2343 ESR经过电渣重熔处理，同时龍記集團严格的品质检测系统确保钢材品质稳定可靠。该钢种材质纯洁、组织分布均匀，抛光可达镜面级，可用于车灯等高镜面要求且形状复杂之塑胶模具生产。

## Good Polishability

All batches of LKM2343 ESR are subject to the strict LKM's internal IQC procedures to ensure the stable quality. Thanks to ESR process, LKM2343 ESR offers the level of mirror polishing, that can be used for plastic injection mould (such as car lighting) with complicated mould design, high toughness and surface finish requirement.

## 高耐磨性

LKM2343 ESR可以通过热处理加硬至HRC44-52，适用于添加玻纤GF，需要较高耐磨要求或长寿命要求之塑胶模具。

## High Wear Resistance

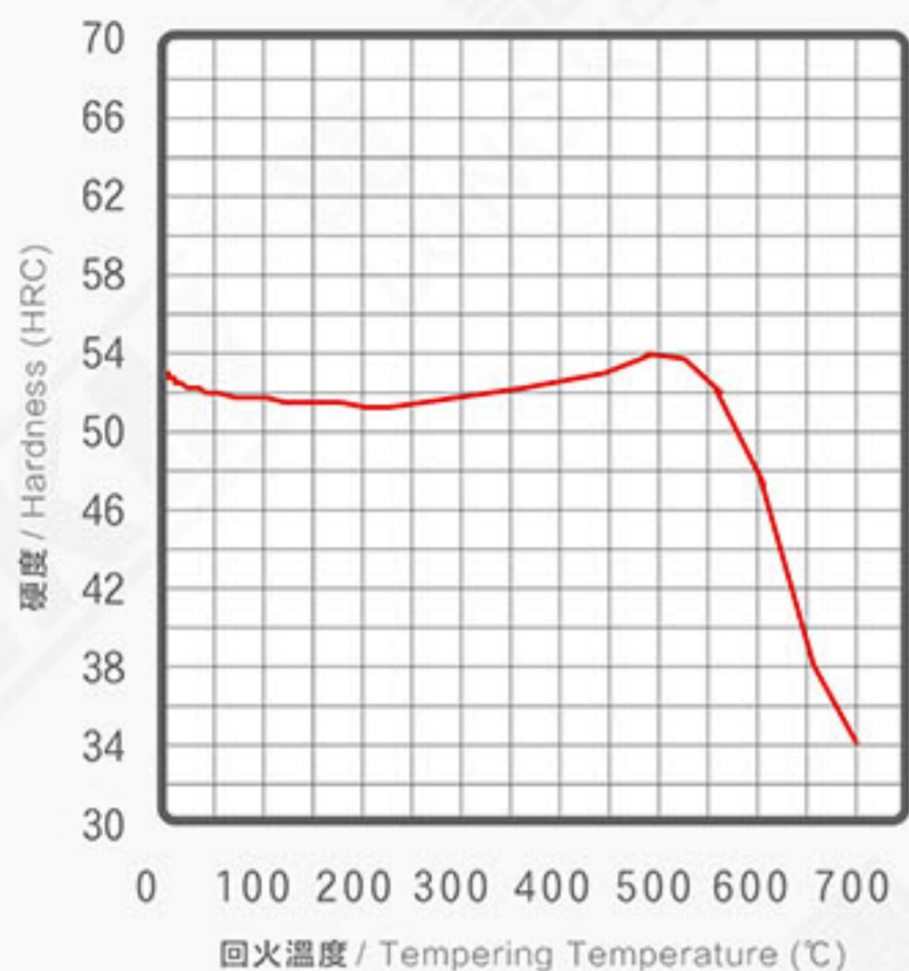
The recommended working hardness of LKM2343 ESR is HRC44-52 through heat treatment. It can be used as through-hardened plastic injection mould requiring high wear resistance and long production run for moulding abrasive/filled materials.

## 热处理工艺 Heat Treatment

锻造 Forging	软性退火 Annealing	淬硬 Quenching	回火 Tempering
1050-850℃	820-840℃	990-1030℃	530-680℃

回火图 (试样尺寸 :  $\varnothing 25 \times 50\text{mm}$ ; 油淬温度 :  $1020^\circ\text{C}$ )

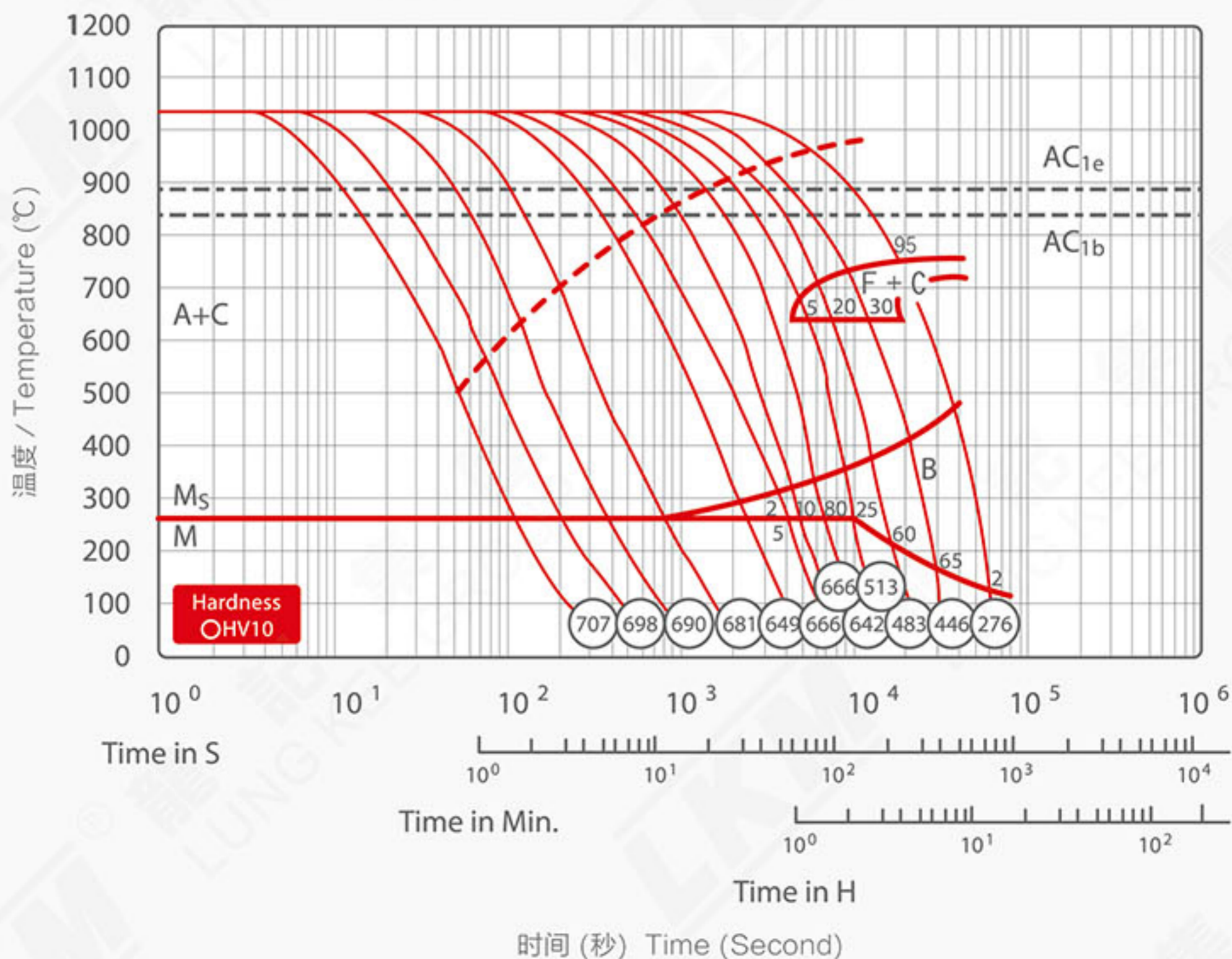
Tempering Curve (Sample dimension:  $\varnothing 25 \times 50\text{mm}$ ; Quenched at  $1020^\circ\text{C}$  by Oil)



CCT图(连续冷却转变曲线图)

CCT Diagram ( Continuous Cooling Transformation Diagram)

奥氏体化温度 :  $1030^\circ\text{C}$  Austenitizing Temperature:  $1030^\circ\text{C}$



## 集团总公司 (HEAD OFFICE)

### 龙记五金有限公司 LUNG KEE METAL LTD

香港新界沙田安群街1号京瑞广场2期15楼A室  
Unit A,15/F, Kings Wing Plaza 2, No.1 On Kwan Street,  
Sha Tin, New Territories, Hong Kong  
接单部 电话 Tel : (852) 2341 2321, 传真 Fax : (852) 2343 0990

### 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 3281 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)