

LKM2343

高韧性热作钢

High Toughness Hot Work Steel

▶▶ 良好韧性 Good Toughness

▶▶ 良好耐热疲劳性 Good Thermal Fatigue Resistance



LKM2343 简介 Introduction

LKM2343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。产品经过龍記集團严格的品质检测系统，包括硬度测试、化学成分分析、超声波探伤检测、金相分析等多项基本检测指标，检测合格才能入库。该钢种具有优秀的韧性和延展性、较高的抗热疲劳性和耐磨性，可以用于一般之压铸模具、形状复杂、韧性要求较高之长寿命塑胶硬模。

LKM2343 is a hot work tool steel with high toughness from the LKM special steel series; it is developed with reference to the German standard W.Nr 1.2343. LKM2343 is subject to the strict LKM's internal IQC procedures including hardness test, chemical composition analysis, ultrasonic test and metallographical analysis. This material exhibits good toughness, high ductility, good heat checking resistance and wear resistance; it can be used for die casting die as well as plastic injection mould for long production run with complicated mould design or high toughness requirement.

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

LKM2343

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

参照标准

- Q AISI H11
- Q W.Nr 1.2343

Comparable Standard

- Q AISI H11
- Q W.Nr 1.2343

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

- ✓ 注塑模具
- ✓ 压铸模具
- ✓ 挤压模具

Application

- ✓ Plastic injection mould
- ✓ Die casting die
- ✓ Extrusion die

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 [$10^{-6}\text{m}/(\text{m} \times \text{K})$] 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 |

纯度 Purity

| A (硫化物类) Sulfide Type | B (氧化铝类) Alumina Type | C (硅酸盐类) Silicate Type | D (球状氧化物类) Globular Oxide Type |
|--------------------------|--------------------------|---------------------------|-----------------------------------|
| ≤1.5 | ≤2.0 | ≤2.0 | ≤2.0 |

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.

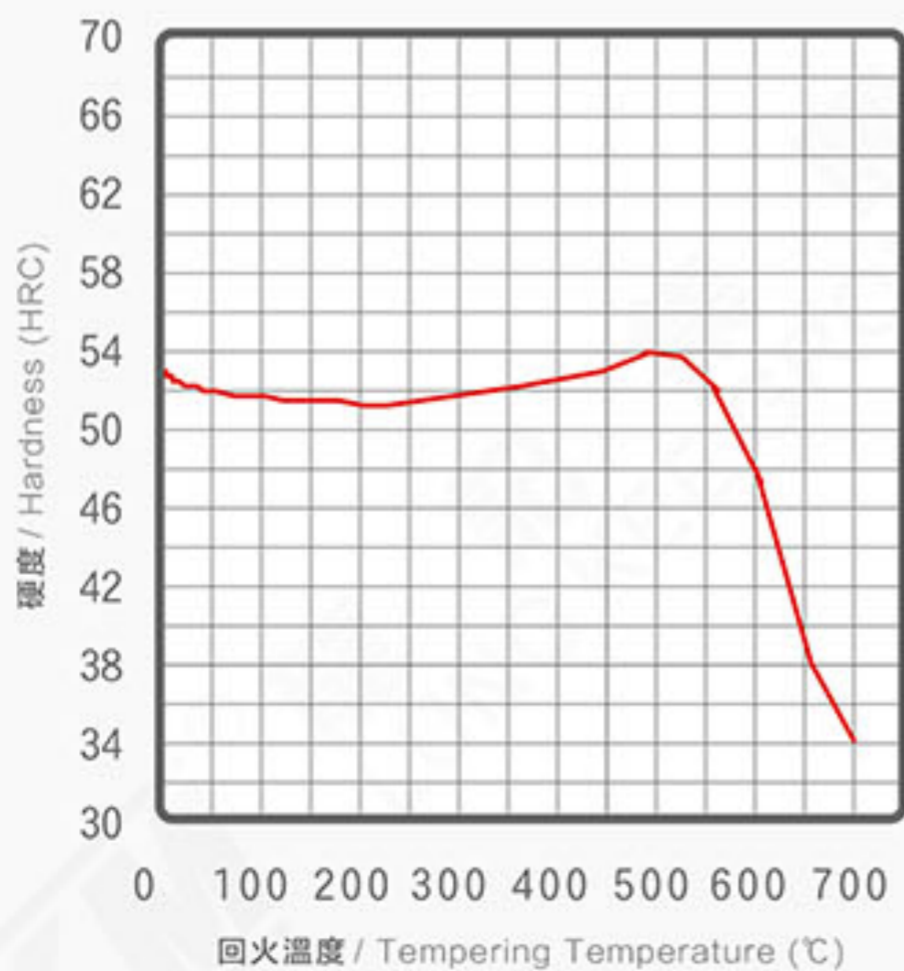


热处理工艺 Heat Treatment

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

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

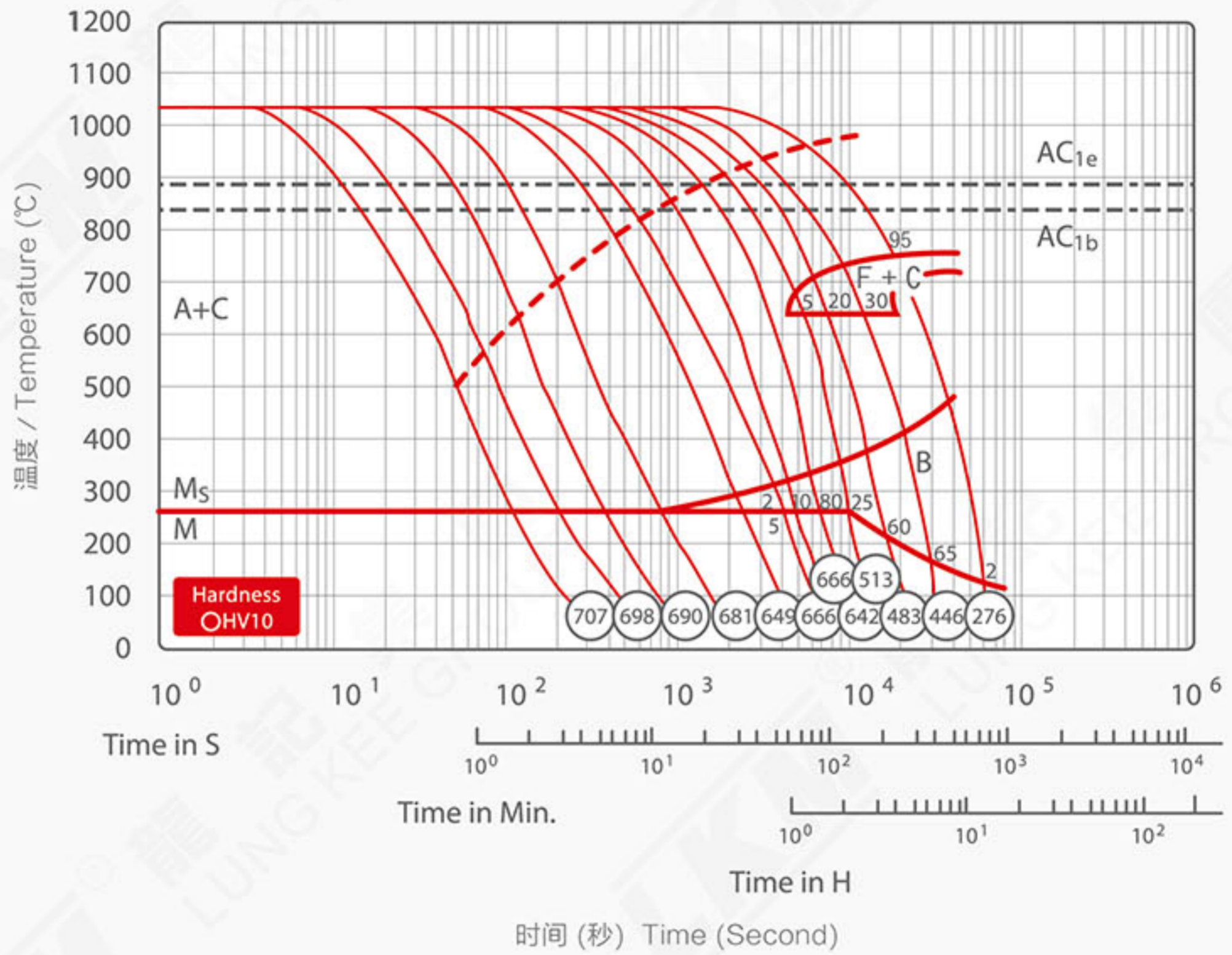
Tempering Curve (Sample dimension: $\varnothing 25 \times 50\text{mm}$; Quenched at 1020°C by Oil)



CCT图(连续冷却转变曲线图)

CCT Diagram (Continuous Cooling Transformation Diagram)

奥氏体化温度 : 1030°C Austenitizing Temperature: 1030°C



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