

## 卷取温度、冷轧压下量对低碳铝镇静钢 SPHC 力学性能及成形性的影响

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**摘要** 研究了低碳铝镇静钢 SPHC (C: 0.04%, Si: 0.03%, Mn: 0.14%, Al: 0.027%) 572 ~ 648 °C 卷取温度以及冷轧压下量 65% ~ 75% 对该钢 700 °C 退火性能的影响。结果表明, 在相同的冷轧压下量下, 随着卷取温度的增加, 强度基本呈现下降趋势, 伸长率相对有所上升,  $n$ 、 $r$  值基本呈下降趋势; 在相同的卷取温度下, 随着冷轧压下量的不断增加, 强度呈现下降趋势, 伸长率先升后降,  $n$ 、 $r$  值基本呈先升后降的趋势。热轧卷取温度 620 °C, 冷轧变形量 70% 时, 700 °C 退火 3 mm SPHC 钢板性能达到最佳, 即抗拉强度 286 MPa, 屈服强度 210 MPa, 伸长率 43%,  $n$  值 0.27,  $r$  值 1.52。

**关键词** SPHC 钢板 卷取温度 压下量 性能  $n$  值  $r$  值

## Effect of Coiling Temperature and Cold Rolling Reduction on Mechanical Properties and Formability of Low Carbon Al Killed Steel SPHC

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**Abstract** The effect of coil temperature 572 ~ 648 °C and cold rolling reduction 65% ~ 75% on properties of the low carbon aluminum killed steel SPHC (C: 0.04%, Si: 0.03%, Mn: 0.14%, Al: 0.027%) annealed property at 700 °C has been studied. The results show that at the same cold rolling reduction, with the increase of coiling temperature, the strength of steel basically presents a downward trend, the elongation relatively increases, and the  $n$  and  $r$  values basically show a downward trend; at the same coiling temperature, with the increase of cold rolling reduction, the strength basically presents a downward trend, the elongation first increases and then decreases, and the  $n$  and  $r$  values basically show first increases and then decreases downward trend. By comparison, the best performance of 3 mm SPHC steel plate annealed at 700 °C can be obtained by hot rolling coiling at 620 °C and cold rolling deformation 70%, that is tensile strength 286 MPa, yield strength 210 MPa, elongation 43%,  $n$ -value 0.27 and  $r$ -value 1.52.

**Material Index** SPHC Steel Plate, Coiling Temperature, Reduction, Performance,  $n$  Value,  $r$  Value