



Steel Grade: ASTM P4 UNS T51604									
CHEMICAL COMPOSITION									
C(%)	Si(%)	Mn(%)	P(%) ≤	S(%)②	Cr(%)	Mo(%)	V(%)	W(%)	Other①
≤0.12	0.10~0.40	0.20~0.60	0.03	0.03	4.00~5.25	0.40~1.00	—	—	—
HARDNESS AND HEAT TREATMENT									
Hardness HBS After Annealing	Hardness HBS After Cold Drawing	Preheating Temperature /°C	Quenching/ °C Salt-bath Furnace	Quenching/°C Atmosphere Furnace	Holding Time/min	Quenching Medium	Tempering/°C	Hardness ≥ HRC After Tempering	
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Remark:

- ①, Residual elements content: Ni + Cu ≤ 0.75%.
- ②, A,D,H series to improve machinability, sulfur content can be increased to ω(S)0.06%~0.15%.
- ③, Increase the H13 sulfur, the upper limit of manganese content can reach ω(Mn)1.00%.
- ④, It also have Al which is ω(Al)1.05%~1.25%.
- ⑤, P20 and P21 usually to pre hardened state supplies.
- ⑥, After tempering hardness L2 refers to the hardness of ω(C)0.45%~0.55%.
- ⑦, It standard is ASTM A681-1999.

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