SSS LTB Colour Code: Orange & Grey

AIR HARDENING TOOL STEEL

A6 AISI

1.2767 WERKSTOFF No

C	Si	Mn	Ni	Cr	Mo	P	S
0.47	0.20	0.36	4.0	1.30	0.18	0.013	0.003

Features and Uses

"LTB" die steel hardens in air at a low temperature and as a result distortion is kept to a minimum. It can be vacuum hardened, salt bath hardened and even pack hardened. This material superceded the well-known Sanbold 30 and"L.T.A.H." grades, the production of which has been discontinued. The hardening properties are almost identical to "L.T.A.H.", however, with the addition of Nickel and lower carbon content, "L.T.B." is tougher with a slightly lower maximum hardness of about
57/58 HRC.

"L.T.B." can also be hardened with a cutting torch flame for use as an emergency tool during a break down where maintaining production is critical. In this case, the whole of the tool is heated to a light red colour and allowed to cool in still air. In the case of large tools, the cutting edge only can be flame hardened. At a later stage the tool may be removed from service, thoroughly annealed and re-hardened by conventional methods such as salt bath or vacuum processes.

Applications include heavy forming dies, blanking dies, trimming dies, coining dies, notching dies, mandrels, retaining rings, rim rolls, bending tools, cold shears, plastic moulds, drive shafts and almost any application where extreme toughness coupled with wear resistance is desired.

This material is becoming increasingly popular in the plastic moulding industry due to its mirror polishability, stability during hardening and toughness.

LTB offers:

- Outstanding freedom from size change and distortion.
- Capacity to through harden up to 90 mm thick
- Toughness with good hardness and wear resistance
- Good machinability
- Good polishability

Working and Heat Treatment

Forging

Forge at 1050º / 1100ºC. Reheat slowly when temperature fall below 850° / 900°C Slow cooling is necessary after forging. Allow to cool down with furnace if possible, otherwise cover with dry lime or ashes.

Normalising

Normalising is not recommended for this steel.

Annealing

Pack anneal in a tube or other closed container with clean cast iron borings at 640°/ 650°C for at least 2 to 3 hours. Cool very slowly in the furnace. Brinell hardness after annealing will be approximately 255

Stress relieving

For applications where distortion must be at a minimum, we recommend stabilizing just before tools are finish machined in order to relieve machining strains. Heat to 620° / 650°C and allow to slow cool.

Hardening

Heat the steel to 840° / 870°C (upper limit for larger sizes). Soak for at least twenty minutes at the temperature.

Quenching

Air, air blast, oil or Marquench at 300º / 350°C. Hardness obtainable in salt or oil is higher than that of air or vacuum

Tempering

Immediately after hardening, re-heat, preferable in an air circulating tempering furnace, to the required tempering temperature and soak for one hour. Cool in air.

A suitable tempering temperature may be selected by reference to the Tempering Graph usually between 150° / 300 °C

Guide to Tempering Temperatures

TOOLS FOR LIGHT SHOCK APPLICATIONS when maximum wear resistance is required, e.g. moulding dies, thin sheet-punching dies. Temper 150° / 200°C. Hardness Rockwell C54-57.

MEDIUM DUTY APPLICATIONS slitting cutters, plate punching dies, master hobbing tools, trimming dies, cold extrusion dies. Temper 250° / 300°C. Hardness Rockwell C52-54.

MEDIUM TO HEAVY DUTY APPLICATIONS slitting cutters, shear blades, punching tools, forming tools, trimming dies, cold extrusion dies, and bolt cutters. Temper 300°-320°C. Hardness Rockwell C50-52.

HEAVY DUTY APPLICATIONS heavy sheer blades, flying shears, heavy plate punching tools, punching and forming tools. Temper 450°-500°C. Hardness Rockwell C42-45.