Lincore® T&D

Hardfacing cored wire

Classification

DIN 8555-83 : MF4-GF-60-S

General description

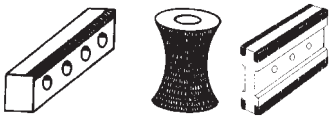
Lincore T&D is a self shielded, open arc, flux cored tubular electrode that produces a H12 type airhardening tool steel deposit. The arc characteristics are excellent producing minimal spatter and good slag removal. Although, Lincore T&D is primarily designed for the open arc operation, it may be used with a neutral flux for conditions requiring spatter elimination and removal of arc glare.

Application

Lincore T&D produces a crack-free wear resistant tool steel deposit with a hardness range of 48- 55HRc. The hardness can be further increased to between 55-65HRc after tempering. It is particularly suitable for applications involving severe metal to metal wear coupled with elevated temperatures (up to 540°C). Ideally suited to the build up of worn steel dies, cutting tools or the application of wear resistant surfaces to carbon and low alloy steels.

Typical applications include:

Punch and forging dies
Shear blades
Trimmers
Cutting tools



FCAW

Mechanical properties, all weld metal

	Typical hardness values
As welded	48 - 55 HRc
Tempered at 540°C	55 - 65 HRc

Welded on Mild Steel Plate (12mm)

Packaging, available sizes and indentification

Unit type	Net weight/unit (kg)	Diameter (mm) 1.6	2.8
Wire reel 22RR	10	X	
Wire reel 50C	22.68		X

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Additional information

A preheat and interpass temperature of 325°C, or higher (up to 540°C), are necessary to avoid cracking. It is important to ensure that an adequate “soak” is achieved prior to the welding operation. After welding, the component should be covered and slow cooled down to room temperature. Once cooled, the weldment should be post weld heat treated to temper the martensite and toughen the deposit. Tempering at 540°C normally produces the optimum combination of hardness and toughness.

The weld metal is not machinable by conventional methods although the deposit can be shaped by grinding.

Annealing at 850°C for several hours and slow cooling will reduce the hardness to approximately 30HRc. This deposit can be readily machined. Rehardening is achieved by heating to about 1200°C for several hours to dissolve all carbides and homogenise the steel, followed by air cooling and tempering.

Lincore T&D cannot be cut by the oxy-fuel processes. Plasma arc and air-carbon arc processes can be used to both cut and gouge the weld deposit. Preheat temperatures similar to those for welding may be necessary to prevent cracking along the cut edge.

Welding positions

ISO/ASME PA/1G

Current type

DC +

Chemical composition (w%) typical, all weld metal

C	Mn	Si	Cr	Mo	W	Al
0.65	1.5	0.8	7.0	1.4	1.6	1.8

Structure

In the as welded condition the microstructure consists mainly of martensite with some carbides.

After tempering the microstructure consists of tempered martensite with secondary carbides

Calculation Data

Diameter (mm)	Wire Feed Speed (m/min)	Current (Amps)	Arc Voltage (volts)	Deposition Rate(kg/h)
1.6	3.8 to 8.9	170 - 300	22 - 26	2.4 - 5.4
2.8	2.5 to 5.1	340 - 500	26 - 30	4.7 - 9.1

Complementary products

Complementary products include Wearshield® T&D