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DATA SHEET **E-53**

METHARD 750TS

Product description

MMA electrode with basic metal powder type flux made on carbon steel core wire. Electrode coating is designed to give sound porosity-free deposits coupled with smooth operation. Recovery is about 120% with respect to core wire, 65% with respect to whole electrode.

Specifications

AWS A5.13 EFe5-B
DIN 8555 E4-UM-60-ST
BS EN 14700 E Fe4

ASME IX Qualification

QW432 F-No 71

Materials to be welded

Various tool steels.

Used for surfacing mild or low alloy steel blanks.

Applications

This electrode gives a Mo alloyed high speed tool steel deposit with hot hardness (up to 600°C), good toughness and crack resistance (similar to AISI M1).

Used for the reclamation, repair and modification of high speed cutting and machining tools in either the as-welded, tempered or rehardened condition. New tools can be manufactured by overlaying mild or alloyed steel blanks, annealing to facilitate machining, quenching and tempering to required hardness.

Applications include **cutting** and **piercing tools**, **dies** and **drills**, **punches** and **knives**, **ingot tongs** etc.

Microstructure

In the as-welded condition the microstructure consists of partially tempered martensite with carbides and some retained austenite, which is reduced if double tempered.

Welding guidelines

It is possible to weld without preheat provided the electrodes are properly dried but preheats on the range 100-200°C will be necessary in thick or complex sections and when welding hardenable steels.

For machining the weld metal can be annealed (800°C + furnace cool) otherwise grinding is necessary. Rehardening is carried out by preheating slowly to 800°C then raising to 1200°C for 5 minutes followed by air or oil quenching (brittle condition); final temper can then be carried out to achieve required hardness.

As-welded properties can be improved by tempering or double tempering. During heat treatment precautions should be taken against decarburisation.

Composition (weld metal wt %)

	C	Mn	Si	S	P	Cr	Mo	W	V
min	0.5	--	--	--	--	3.0	5.0	1.0	0.8
max	0.9	0.6	0.8	0.03	0.03	5.0	9.5	2.5	1.3
typ	0.6	0.5	0.4	0.01	0.02	4	8	1.7	1.1

All-weld mechanical properties

Typical hardness:

	HRC	HV
As welded	62	750
Annealed (800°C + FC)	<25	<270
Tempered (550°C/2 + AC)	60-65	700-850

Parameters

DC +ve or AC (OCV: 60V min)

ø mm	2.5	3.2	4.0
min A	70	90	130
max A	115	155	210

Packaging data

ø mm	2.5	3.2	4.0
length mm	350	380	380
kg/carton	11.7	12.6	13.2
pieces/carton	420	246	177

Storage

3 hermetically sealed ring-pull metal tins per carton, with unlimited shelf life. Direct use from tin is satisfactory.
For electrodes that have been exposed:
Redry 200–300°C/1-2h to restore to as-packed condition. Maximum 400° C, 3 cycles, 10h total.
Storage: Recommended ambient storage conditions for opened tins (using plastic lid): < 60% RH, > 18°C.

Fume data

Fume composition, wt % typical:

Fe	Mn	Cr	Mo	V	F	OES (mg/m^3)
20	6	2	2	0.5	20	2.5