

AX-FD-DW307

Standard

EN ISO 17633-A	T 18 8 Mn R M21 3
EN ISO 17633-B	TS Z307-F M21 0
AWS A5.22	E307T0-G

Application

Flux-cored electrode with filling containing rutile primarily for vertical and horizontal welding positions. The flux-cored electrode represents excellent welding characteristics, self-releasing slag, extremely low spattering and seam oxidation, finely rippled weld bead with good flank wetting and evenly secure penetration.

Welding characteristics

Characteristics of the weld metal: capable of work hardening, very good cavitation resistance, crack-proof, thermal shock resistant, scale-resistant up to 850°C, insensitive to brittling above 500°C, tough at sub-zero down to -100°C. Operating temperatures up to 650°C.

Typical weld metal composition in %

C	Si	Mn	Cr	Ni	P	S
0.07	0.6	6.4	19.2	8.1	0.02	0.008

Important base materials

The AX-FD-DW307 is suitable for high strength, unalloyed and alloyed structural, tempering and armour steels with and to each other; unalloyed and alloyed boiler or structural steels with high-alloyed

Cr and Cr-Ni steels; heat-resistant steels up to 850°C; austenitic manganese steels with each other and with other steels; sheet and tubular steels tough at sub-zero in combination with tough at sub-zero austenitic materials.

Material properties

Shielding gas	MAG	Mechanical properties of the weld metal according to EN ISO 15792-1
Heat treatment	M21	
Test temperature	20°C	
0.2%-yield strength	[MPa]	>350
Tensile strength R_m	[MPa]	>500
Elongation $A_{(L=5d_0)}$ %	[%]	>30
Impact strength A_v	[J]	60

Applicable shielding gases (EN ISO 14175)

MAG: M21 (argon + 15- 25% CO₂), C1 (100%CO₂)

Approvals

(Request current scope if required)

Product forms (others available on request)

Spool	Ø mm	1.2				
15 kg						

Welding position/ polarity

MAG	PA; PB; PC	
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Standard		
DIN EN 14700	T Fe9	
DIN 8555	MF 7-GF-250-KNP	
AWS A 5.21	ERCFeMnCr	

Properties
 Austenitic high manganese and high chromium alloyed flux-cored electrode for welding manganese steels. The weld metal is rustproof, anti-magnetic and has high toughness. This electrode is to be preferred for use on parts exposed to very high pressures and high impact load. Likewise for applying to unalloyed and low-alloyed steels exposed to high impacts and pressures. Strain hardenable up to approx. 48 HRC.
 Because of the risk of brittling, manganese steels must be welded as cold as possible, the interpass temperature should not exceed 250°C, if necessary the welding is to be cooled.

Application areas
 Wear resistant overlays to rails, crushing hammers, crusher jaws, beating arms, baffles, bucket teeth, rotary furnace collars, rollers, blast furnace bells as well as overlays on Mn steels and interpass layers before hardfacings.]

Composition of the weld metal (typical data in %)							
Fe	C	Si	Mn	Cr	Ni	Mo	V
Basis	0.4	0.4	16.0	14.0	1.2	0.5	0.2

Material properties		
Shielding gas	MAG	Mechanical properties of the weld metal as per DIN EN 32525-4
Heat treatment	M12	
Test temperature	20°C	
Hardness	[HB]	230
Hardness after work hardening	[HRC]	48

Applicable shielding gases (EN ISO 14175)
 MAG: M12, M13

Approvals
 (Request current scope if required)

Product forms (others available on request)							
Spools / drum	Ø mm	1.2	1.6	2.0	2.4	2.8	

Welding position/ polarity	
MAG	PA; PB



AX-FD-250

Standard

EN 14700	T Fe1
DIN 8555	MF 1-GF-300-P
AWS A 5.21	ERCFE-1

Area of application

The AX-FD-250 quality is suitable for hardfacing welding on components that are primarily exposed to rolling and sliding wear and are stressed by impact and shock such as running wheels, rope pulleys, wheel rims, slideways and crane wheels. The martensitic weld metal can be easily worked with tungsten carbide tools

Special hints

Smooth, stable arc, does not tend to spray, low smoke development, finely rippled, non-porous seam aspect. Metal recovery is approx. 86 % Preheating min. 150 °C depending on thickness of component and base material.

Composition of the weld metal (typical data in %)

Fe	C	Si	Mn	Cr	Mo		
Basis	0.1	0.5	2.0	2.5	0.3		

Material properties

Shielding gas	MAG	Mechanical properties of the weld metal as per DIN EN 32525-4 280-320
Heat treatment	M21	
Test temperature	20°C	
Hardness	[HB]	

Applicable shielding gases (EN ISO 14175)

MAG: Mixed gases e.g. M21


Approvals

(Request current scope if required)

Product forms (others available on request)

Spool	Ø mm	1.2	1.6	2.0	2.4		

Welding position/ polarity

MAG	PA; PB			
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Standard

EN 14700	T Fe1
DIN 8555	MF1-GF-40-P
AWS A 5.21	ERCFe-2

Area of application

The AX-FD-400 quality is suitable for overlay on components subject to high pressure load in combination with rolling wear and impact and shock, such as running wheels, bucket chains, rope pulleys, wheel rims, slideways, chain and crane wheels. With increased C-content in the base material a buffer layer with AX-FD-DW307 is recommended.

Special hints

Smooth, stable arc, does not tend to spray. Preheating 200-250°C depending on thickness of component and base material. The weld metal can still be machined with tungsten carbide tools.

Composition of the weld metal (typical data in %)

Fe	C	Si	Mn	Cr	Mo		
Basis	0.2	0.6	2.0	3.0	0.3		

Material properties

Shielding gas	MAG	Mechanical properties of the weld metal as per DIN EN 32525-4 38-42
Heat treatment	M21	
Test temperature	20°C	
Hardness	[HRC]	

Applicable shielding gases (EN ISO 14175)

MAG: Mixed gases e.g. M21

Approvals

(Request current scope if required)

Product forms (others available on request)

Spool	Ø mm	1.2	1.6	2.0	2.4		
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Welding position/ polarity

MAG	PA; PB			
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AX-FD-600

Standard

EN 14700 DIN 8555	T Fe 8 MF 6-GF-60-GP
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Properties

This C-, Mn-, Cr-, Mo-, V-alloyed flux-cored wire is suitable for tough and abrasion resistant overlays on wearing parts exposed to strong impact and moderate abrasion stress. The weld metal is heat resistant up to approx. 500°C. An increase in hardness is possible by hardening with subsequent tempering. Preheating is required depending on wall thickness and base material. With a hard to weld base a buffer layer should be applied with AX-FD-DW307.

Application areas

Shredder plants, carrying rollers, impact jaws, screw conveyors, roll crushers, paving breakers, crusher mills, bucket teeth and cold cutting tools.

Composition of the weld metal (typical data in %)

C	Si	Mn	V	Cr	Mo		
0.5	1.0	2.2	0.2	6.5	0.6		

Mechanical properties

Hardness weld metal: 52-57HRC

Applicable shielding gases (EN ISO 14175)

e.g. ArCO², mixed gas M21

Welding conditions and versions

Dimensions (in mm)	Voltage	Amperage
1.2	12-35V	50-320A
1.6	16-38V	60-420A

Approvals

(Request current scope if required)

Product forms (others available on request)

Spool	Ø mm	1.2	1.6	2.0	2.4		
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Welding position/ polarity

MAG	PA; PB			
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AX-FD-600-TIC/O



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Standard

EN 14700	T Fe8
DIN 8555	MF 6-GF-60-GP

Properties

C-, Cr-, Ti- and Mo-alloyed flux-cored electrode for hardfacings not susceptible to cracking on parts exposed to highly abrasive wear in combination with impact and shock load. The structure consists of a martensitic matrix with embedded extremely highly wear resistant chromium and titanium carbides. With a hard to weld base a buffer layer should be applied with AX-FD- DW307.

Application areas

Cement rollers, crushing rollers and crushing hammers, gravel pumps, screw conveyors, mixers, earth moving equipment.

Composition of the weld metal (typical data in %)

C	Si	Mn	Cr	Mo	Ti		
1.8	1.6	1.4	7.0	1.4	5.0		

Mechanical properties

Hardness weld metal: 56-58HRC

Welding conditions and versions

Dimensions (in mm)	Voltage	Amperage
1.2	20-34V	150-320A
1.6	22-36V	180-420A

OA = Open Arc (self-shielding/without shielding gas).

Approvals

(Request current scope if required)

Product forms (others available on request)

Spools / drum	Ø mm	1.2	1.6	2.4	2.8	3.2	

Welding position/ polarity

MAG	PA; PB			
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AX-FD-HC

Standard

EN 14700	T ZFe14
DIN 8555	MF 10-GF-60-GR
AWS A 5.21	ERCFeCr-A9

Properties

AX-FD-HC-OA is a self-shielding flux-cored wire which is highly C-, Cr-alloyed. It is suitable for overlay on parts exposed to heavy wear from mineral materials and heavy corrosion attacks. The weld metal is rustproof. Overlay should be carried out in 2-3 layers with maximum 8 mm thickness. The best results are obtained with two-layer welding. The weld metal should be stressed less for impact and shock. With sensitive base materials a ductile intermediate layer with e.g. AX-FD-DW307 or AX-FD-CrMn is recommended.

Application areas

Pumps, mixer blades, screw conveyors, stirring arms, concrete pump bushing blocks

Composition of the weld metal (typical data in %)

C	Si	Mn	Cr				
4.8	1.2	0.6	29.0				

Mechanical properties

Hardness weld metal: 55-59HRC

Welding conditions and versions

Dimensions (in mm)	Voltage	Amperage
1.2	20-25V	140-280A
1.4	22-27V	180-320A
1.6	24-28V	220-350A
2.0	26-30V	240-360A
2.4	27-30V	320-420A

AX-FD-HC-OA = Open Arc (self-shielding/without shielding gas)

AX-FD-FC-UP = (under powder (SAW = submerged arc welding)

Approvals

(Request current scope if required)

Product forms (others available on request)

Spool	Ø mm	1.2	1.6	2.0	2.4		

Welding position/ polarity

MAG	PA; PB				
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Standard		
DIN EN 14700	T ZFe15	
DIN 8555	MF 10-GF-60-GR	

Properties
 AX-FD-43OA is a high C-, Cr-, Nb-alloyed flux-cored electrode for overlays to parts exposed to very strong sanding wear at temperatures up to 480°C. The weld metal consists of ledeburitic structure with embedded very hard Cr and Nb carbides. The impact and shock load should be as low as possible. With sensitive base materials a ductile intermediate layer with e.g. AX-FD-DW307 or AX-FD-CrMn is recommended.

Application areas
 Mixer blades, cement- and concrete pumps, grinding rolls and wear plates, screw conveyors, chutes, coke- and coal crushers, worm presses and dredger parts.

Composition of the weld metal (typical data in %)

C	Si	Mn	Cr	Nb			
5.2	1.1	0.4	22.0	7.0			

Mechanical properties
 Hardness weld metal: 61-63HRC

Welding conditions and versions

Dimensions (in mm)	Voltage	Amperage
1.2	18-32V	140-320A
1.6	20-36V	160-420A

AX-FD-43-OA = Open Arc (self-shielding/without shielding gas)
 AX-FD-43-UP = (under powder (SAW = submerged arc welding))

Approvals
 (Request current scope if required)

Product forms (others available on request)

Spools / drum	Ø mm	1.2	1.6	2.0	2.4	2.8	

Welding position/ polarity

MAG	PA; PB			
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AX-FD-45

Standard

DIN EN 14700
DIN 8555

T Fe16
MF 10-GF-65-GRTZ

Properties

AX-FD-45-OA is a high C-, Cr-, Mo-,Nb-, W-, V-alloyed flux-core electrode for overlay on parts exposed to very strong sanding wear at temperatures up to 600°C. The weld metal consists of ledeburitic structure with embedded extremely hard Cr and Nb carbides. With sensitive base materials a ductile intermediate layer with e.g. AX-FD- DW307 or AX-FD-CrMn is recommended.

Application areas

Blast furnace bells in the impact area, furnace grates, spike crushers, sinter crushers, grate bars, coking plant sinter, hammer mills for cement and clinker crushing.

Composition of the weld metal (typical data in %)

C	Si	Mn	Cr	Mo	Nb	V	W
5.2	1.0	0.4	21.0	7.0	7.0	1.0	2.0

Mechanical properties

Hardness of weld metal: 63-65HRC at +20°C
Hardness of weld metal: approx. 45 HRC at 400°C

Welding conditions and versions

Dimensions (in mm)	Voltage	Amperage
1.6	20-26V	160-420A

AX-FD-45-OA = Open Arc (self-shielding/without shielding gas)
AX-FD-45-UP = (under powder (SAW = submerged arc welding)


Approvals

(Request current scope if required)

Product forms (others available on request)

Spools / drum	Ø mm	1.2	1.6	2.0	2.4	2.8

Welding position/ polarity

MAG	PA; PB			
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Standard

EN 14700
DIN 8555

T Fe3
MF 3-GF-50-ST

Properties

The AX-FD-WZ50 is a C-, Cr-, V- and W-alloyed flux-cored wire for overlay of hot working tools or for cladding the work surfaces of hot working tools of low-alloyed steels. Likewise suitable for components that at high temperature are subject to pressure, impact and abrasion. The weld metal can only be cut by machine to a limited extent otherwise must be worked by grinding.

Application areas

Hot cutting equipment, bottom dies, push rods, impact dies, forging dies, die casting dies, mandrels

Composition of the weld metal (typical data in %)

C	Si	Mn	Cr	V	W		
0.3	0.6	0.4	3.0	0.6	4.5		

Mechanical properties

Hardness of weld metal: 48 – 50 HRC

Welding conditions and versions

Dimensions (in mm)	Voltage	Amperage
1.6	20– 32 V	160 – 320 A
2.0	25– 36 V	220 – 360 A
2.4	25– 38 V	260 – 400 A
2.8	26– 40 V	280 – 450 A

AX-FD-WZ50- OA = Open Arc (self-shielding/without shielding gas)

AX-FD-WZ50-UP = (under powder (SAW = submerged arc welding)

Approvals

(Request current scope if required)

Product forms (others available on request)

Spools / drum	Ø mm	1.2	1.6	2.0	2.4	2.8	3.2	4.0

Welding position/ polarity

MAG

PA; PB

