



Spec No

KAI-S- 08



Date

14.06.2017



SPECIFICATIONS



Revision

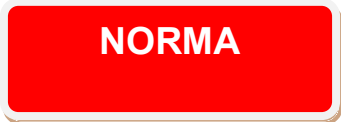
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Specification of D and H Product



CODIFICATION AWS : 6013
IS : ER 4222

CHARACTERISTICS AND APPLICATION :

A medium coated rutile type AC /DC all position electrode for welding mild steel structure ,rail coaches ,wagons , storage tank , ship metal work etc .

TYPICAL CHEMICAL COMPOSITION OF ALL WELD METAL:

Element	C	Mn	Si	S	P
Percent	0.08	0.44	0.22	0.020	0.020

TYPICAL MECHANICAL PROPERTIES OF ALL WELD METAL :

UTS (Mpa)	YS (Mpa)	Elongation (L= 4 d) %	CVN at 0 ⁰ C (Joules)
481	436	27	62

CURRENT AND PACKAING DATA

Size (mm) : 5 x 450 4 x 450 3.15 x 350 2.5 x 350
Dia and Length :

Current Range : 180 -220 140-180 100-140 60-90
(AMP)

Qty (Pcs./ Carton) : 65 100 150 260

Approval : BIS , ROSO , LRS , DNV, PDIL, EIL , ABS , BV, CIB , -MP

Controlled By :



Form No. : SYS-F-01 / 00 / 02.01.2017

Approved By :



Dinesh Agarwal

Prepared By



Rahul Yeola



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Specification of D and H Product



CODIFICATION AWS : 7018
IS : EB5426H₃JX

CHARACTERISTICS AND APPLICATION:

A heavy coated hydrogen,iron power type electrode ideally suited for producing tough and ductile welds of radiographic quality in boilers ,pressure vessels and heavy structures subjected to dynamic loading.The electrodes have metal recovery of about 115%.Some typical application include heavy structures subjected to dynamic loading and impact ,highly restrained joints ,coaches ,wagons , penstock ,boilers ,pressure vessels, earth moving machine..

TYPICAL CHEMICAL COMPOSITION OF ALL WELD METAL:

Element	C	Mn	Si	S	P
Percent	0.06	1.02	0.44	0.022	0.022

TYPICAL MECHANICAL PROPERTIES OF ALL WELD METAL :

UTS (Mpa)	YS (Mpa)	Elongation (L= 4 d) %	CVN at 0 ⁰ C (Joules)
530	460	28	65

CURRENT AND PACKAING DATA

Size (mm) : 6.3 x 450 5 x 450 4 x 450 3.15 x 450 2.5 x 350
Dia and Length :

Current Range (AMP) : 270-320 200-250 150-190 100-150 70-100

Qty (Pcs./ Carton) : 25 50 70 100 150

Approval : BIS , CIB(M.P.), LRS , ABS, BV, DNV, , EIL , IRS, PDIL,NPCIL

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Specification of D and H Product



MOLYTHERME

CODIFICATION AWS : 7018
IS : EB5426H₃JX

CHARACTERISTICS AND APPLICATION:

A low hydrogen iron power type electrode yielding a weld deposit containing 0.5 % Mo. Ideal for welding creep resistance C –Mo steels for service temperatures up to 525⁰C .Typical application include boilers , pressure vessels ,pipe and tube of similar composition.

TYPICAL CHEMICAL COMPOSITION OF ALL WELD METAL:

Element	C	Mn	Si	Mo	S	P
Percent	0.06	1.02	0.42	0.52	0.025	0.025

**TYPICAL MECHANICAL PROPERTIES OF ALL WELD METAL :
(PWHT:620⁰C FOR 1 HR)**

UTS (Mpa)	YS (Mpa)	Elongation (L= 4 d) %	CVN Impact strength at 27 ⁰ C (Joules)	Creep strength at 525 ⁰ C (1% offset in 10,000 hrs)Kg /mm ² 12.5
535	455	28	140	12.5

CURRENT AND PACKAING DATA DC (+)

Size (mm) : 6.3 x 450 5 x 450 4 x 450 3.15 x 450 2.5 x 350
Dia and Length :

Current Range : 270-340 170-240 140-170 90-120 70-90
(AMP)

Qty (Pcs./ Carton) : 25 35 55 75 125

Approval : CIB(M.P.), EIL , NPCIL

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Specification of D and H Product



CROMOTHERME -1

CODIFICATION AWS : 8018 – B2
IS : E55 B B2 2.6 Fe

CHARACTERISTICS AND APPLICATION:

Low hydrogen iron power type electrodes yielding a weld deposit containing 1.25% Cr- 0.5% Mo Excellent for welding creep resistance 0.5Cr-0.5 Mo 1 Cr – 0.5 Mo steels. The weld deposit has excellent creep resistance at service temperature to 550⁰ C

TYPICAL CHEMICAL COMPOSITION OF ALL WELD METAL:

Element	C	Mn	Si	Cr	Mo	S	P
Percent	0.06	0.80	0.44	1.35	0.55	0.025	0.025

TYPICAL MECHANICAL PROPERTIES OF ALL WELD METAL : (PWHT:690⁰C FOR 1 HR)

UTS (Mpa)	YS (Mpa)	Elongation (L= 4 d) %	CVN Impact strength at 27 ⁰ C (Joules)	Creep strength at 550 ⁰ C (1% offset in 10,000 hrs)12Kg /mm ²
594	515	25		

CURRENT AND PACKAING DATA DC (+)

Size (mm) : 6.3 x 450 5 x 450 4 x 350 3.15 x 350 2.5 x 350
Dia and Length :

Current Range : 250-300 180-240 140-180 100-130 70-100
(AMP)

Qty (Pcs./ Carton) : 25 35 55 75 125

Approval : CIB(M.P.), EIL , NPCIL

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Specification of D and H Product



CROMOTHERME -2

CODIFICATION AWS : 8018 – B3
IS : E63 B B3 2.6 Fe

CHARACTERISTICS AND APPLICATION:

An Iron Power low hydrogen electrode producing a weld deposit containing 2.25 Cr- 1 Mo which is oxidation resistance up to 575°C. Suitable for welding 2.25 Cr .1 Mo ,Cr-Mo - V steels as well as cast steels of similar composition.

TYPICAL CHEMICAL COMPOSITION OF ALL WELD METAL:

Element	C	Mn	Si	Cr	Mo	S	P
Percent	0.06	0.80	0.44	2.40	1.10	0.025	0.025

**TYPICAL MECHANICAL PROPERTIES OF ALL WELD METAL :
(PWHT:690°C FOR 1 HR)**

UTS (Mpa)	YS (Mpa)	Elongation (L= 4 d) %	CVN Impact strength at 27°C (Joules)	Creep strength at 550°C (1% offset in 10,000 hrs)at 550 °C -12 Kg/mm ² at 575°C-8.5 Kg/mm ²
644	554	22.0		

CURRENT AND PACKAING DATA DC (+)

Size (mm) : 6.3 x 450 5 x 450 4 x 350 3.15 x 350 2.5 x 350
Dia and Length :

Current Range : 260-320 180-240 140-180 100-130 70-100
(AMP)

Qty (Pcs./ Carton) : 25 35 55 75 125

Approval : PDIL, CIB(M.P.), NPCIL ,EIL

Controlled By :



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Specification of D and H Product



CROMOTHERME -2(RTE)

CODIFICATION AWS : 9018 – B3
IS : E63 B B3 2.6 Fe

CHARACTERISTICS AND APPLICATION:

Weld metal having strict control on S,P, As Sn & Sb will improve the sub zero impact property and resist temper embrittlement. Weld metal retains its mechanical properties after prolonged heat treatments. Ideal for welding steam generation equipment's and reactor vessels. The weld metal display excellent tensile strength and creep resistance. Specially applicable whenever temper embrittlement resistance is required.

TYPICAL CHEMICAL COMPOSITION OF ALL WELD METAL:

Element	C	Mn	Si	Cr	Mo	Sb	As	P	Sn	Al	V	Ni	Cu	Ti
Percent	0.06	0.05	0.2	2.4	1.10	0.001	0.0035	0.007	0.0035	0.002	0.01	0.10	0.02	0.002

TYPICAL MECHANICAL PROPERTIES OF ALL WELD METAL :

	YS (Mpa)	UTS (Mpa)	% El (L= 4 d)	CVN Impact (J) at minus 40 °C	Hardness (VPN)
SR at 690°C /1hr	550	640	22.0	-	-
SR at 690°C /6hr	455	560	24.0	90	180
SR at 690°C /40hrs	425	535	26.0	100	

DIFFUSIBLE HYDROGEN CONTENT : 4 ml/100 gms of weld metal (Max.)

X FACTOR (10 P + 5 Sb + 4Sn+ As) / 100 ≤12.0 (element in ppm)

J- FACTOR (% Si + % Mn) x (% P + % Sn) 10⁴ ≤125

PE : (C + Mn+ Mo + Cr /3 + Si/4 + 3.5 (10 P +5Sb+4 Sn+ As) < 3

STEP COOLING REQUIRMENT Cvr Tv 54 + 2.5 Δ Cvr Tv54SC < 10⁰ C

(Where CcrTr54 – Transition temperature at absorbed energy of 54 J of heat treated specimen.

Δ Cvr Tv54SC :Shift in 54 J transition temperature due to step cooling)

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Specification of D and H Product



CURRENT AND PACKAING DATA DC (+)

Size (mm) : 6.3 x 450 5 x 450 4 x 350 3.15 x 350 2.5 x 350

Dia and Length :

Current Range : 250-300 200-250 140-180 100-130 70-100
(AMP)

Qty (Pcs./ Carton) : 25 35 55 75 100

Approval : PDIL, CIB(M.P.), NPCIL ,EIL

Controlled By :



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Prepared By



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Specification of D and H Product



CROMOTHERME -5

CODIFICATION AWS : 8018 – B6

CHARACTERISTICS AND APPLICATION:

low hydrogen ,iron power electrode producing a weld deposit containing 5Cr-0.5,Mo which has excellent creep resistance at elevated temperature up to 550⁰ C , Typical application include welding of 4-6% Cr. steels in oil refinery ,chemical plant equipment.

TYPICAL CHEMICAL COMPOSITION OF ALL WELD METAL:

Element	C	Mn	Si	Cr	Mo	S	P
Percent	0.06	0.90	0.40	5.20	0.50	0.020	0.020

**TYPICAL MECHANICAL PROPERTIES OF ALL WELD METAL :
(PWHT:740⁰C FOR 1 HR)**

UTS (Mpa)	YS (Mpa)	Elongation (L= 4 d) %	CVN Impact strength at 27 ⁰ C (Joules)	Creep strength at 550 ⁰ C (1% offset in 10,000 hrs) 7 Kg/mm ²
614	505	22.0	60	

CURRENT AND PACKAING DATA DC (+)

Size (mm) : 6.3 x 450 5 x 450 4 x 350 3.15 x 350 2.5 x 350
Dia and Length :

Current Range : 240-300 180-240 140-180 100-130 70-100
(AMP)

Qty (Pcs./ Carton) : 25 35 55 75 125

Approval : EIL

Controlled By :



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Dinesh Agarwal

Prepared By



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Specification of D and H Product



CROMOTHERME - 9

CODIFICATION AWS : 8018 – B8

CHARACTERISTICS AND APPLICATION:

A low hydrogen electrode yielding 9Cr -1 Mo deposit having excellent creep strength up to 600°C and resistance to oxidising atmospheres up to 700°C .Ideal for combating mineral oil attack at elevated temperatures. Application includes welding 7 to 10 Cr.1 Mo steels.

TYPICAL CHEMICAL COMPOSITION OF ALL WELD METAL:

Element	C	Mn	Si	Cr	Mo	S	P
Percent	0.06	0.60	0.40	9.0	0.90	0.020	0.020

**TYPICAL MECHANICAL PROPERTIES OF ALL WELD METAL :
(PWHT:740°C FOR 1 HR)**

UTS (Mpa)	YS (Mpa)	Elongation (L= 4 d) %	CVN Impact strength at 27°C (Joules)	Creep strength at 550°C (1% offset in 10,000 hrs) 6.5 Kg/mm ²
574	485	21.0	50	

CURRENT AND PACKAING DATA DC (+)

Size (mm) : 6.3 x 450 5 x 450 4 x 350 3.15 x 350 2.5 x 350
Dia and Length :

Current Range : 280-350 180-240 140-180 100-130 70-100
(AMP)

Qty (Pcs./ Carton) : 25 35 55 75 125

Approval : CIB - MP

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Specification of D and H Product



CROMOTHERME – 9(MOD)

CODIFICATION AWS : 9018 – B9

CHARACTERISTICS AND APPLICATION:

A low hydrogen iron powder electrode depositing 9Cr – 1 Mo weld metal modified with Aluminium, Niobium, vanadium and Nitrogen, designed to provide improved creep strength, toughness, fatigue life, oxidation, and corrosion resistance at elevated temperatures. Following are some of the steels that can be welded with this electrode .I) Plates : A : 387 GR 91 II) Pipes a:335 :P 91 III) Tubes : A213:T91

TYPICAL CHEMICAL COMPOSITION OF ALL WELD METAL:

Element	C	Mn	Si	P	S	Cr	Ni	Mo	V	Nb	N	Cu	AL
Percent	0.10	0.65	0.25	0.008	0.009	9.0	0.35	1.00	0.20	0.05	0.03	0.02	0.02

TYPICAL MECHANICAL PROPERTIES OF ALL WELD METAL : (PWHT:760°C FOR 1 HR)

UTS (Mpa)	YS (Mpa)	Elongation (L= 4 d) %	CVN Impact strength at 20 ⁰ C (Joules)	Hardness 220 HV
685	575	19.2	52	

CURRENT AND PACKAING DATA DC (+)

Size (mm) : 5 x 450 4 x 350 5x 350 2.5 x 350
Dia and Length :

Current Range : 160-220 130-160 90-120 60-90
(AMP)

Qty (Pcs./ Carton) : 35 55 75 100

Approval : CIB - MP

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Dinesh Agarwal

Prepared By



Rahul Yeola