









### **Material Data Sheet**

## Universal Flux Submerged Arc welding Flux

Specification

Description

Application

AWS A5 17-89 EM 13K

A fully basic agglomerated all mineral non-alloying flux for submerged arc welding.

Excellent hot slag release, especially suitable for continuous welding operations.

Composition	<u>SiO<sub>2</sub> + TiO<sub>2</sub></u>	<u>CaO + MgO</u>	<u>Al<sub>2</sub>O<sub>3</sub>+ MnO</u>	<u>CaF<sub>2</sub></u>
Composition	20	38	17	19



Universal flux is non-alloying and suitable for use with ferrous based submerged arc welding wires containing up to 50% alloy content.

Universal flux is suitable for single and multi-pass welding using single or twin wire technique. Welding currents up to 1200A may be used with either DCEP or DCEN polarity. Universal flux has superior slag release properies which are maintained at elevated temperatures.

Physical Data	Density :1.2 kg/dm <sup>3</sup> .	Basicity Index: 3	Schweisspulver Flux De Soldadura	Universal Submerged Arc Welding Flux
Packaging	Universal Flux is 25Kg delive	ered in plastic bags	<u>Weldclad</u>	S
			Schweisspulver Flux De Soldadura	Universal Submerged Arc Welding Flux
	Welding produces fumes ar your health.	nd gases which can be dangerous to		
Health and	Arc rays can injure eyes an Electric shock can kill.	d burn skin.	Weldclad	
Safety	It is important to take suitab follow safe working practice	ble precautions when welding and es.	12	
	These should be based on 237 and 239	Welding Manufacturers leaflets 236,	Schweisspulver Flux De Soldadura	Universal Submerged Arc Welding Flux

The information contained in this document is typical of the product described but is not guaranteed. Specification may change without notice Doc. No. DS021 Doc. Name: U flux std data sheet Issue: 1 Issue date: 1/6/2010 page 1 of 1

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### **Material Data Sheet**

## WLDC 1

A flux cored submerged-arc welding consumable for multi-layer surfacing. To be used with Weldclad UNIVERSAL Flux

Nom	inal All	Weld Cor	npositi	on, wt%.
С	Mn	Si	Cr	Мо
0.2	1.5	0.65	4.5	0.5

#### Microstructure

Martensitic matrix





#### Welding Parameters: for guidance only

Roll Ø mm	Ø mm	Pre heat °C	Polarity	Wire Feed Speed Inches / min	Amps A	Volts V	Travel Speed mm/min	Stick Out mm.	Bead Width mm	Overlap (mm)
≤150	2.4	250	DCEP	110	300	29	300	35	12 (stringer)	50%
>150	2.4	250	DCEP	130	350	29	300	35	12 (stringer)	50%
≤150	2.4	250	DCEP	160	400	29	150	35	40 (oscillated)	10
>150	2*2.4	250	DCEP	117	550	29	150	35	60 (oscillated)	10
>150	3.2	250	DCEP	75	375	30	300	35	12 (stringer)	50%
>150	3.2	250	DCEP	110	500	29	150	35	60 (oscillated)	10
						0.000	E EET /			

#### UNIVERSAL Flux:

AWS A5.17-89 EM13K

Composition	////	Density	Basicity	Consumption				
<u>SiO<sub>2</sub> + TiO<sub>2</sub></u> <u>CaO +</u> 20 38	MgO <u>Al<sub>2</sub>O<sub>3</sub>+ MnO</u> <u>CaF<sub>2</sub></u> 17 19	1.2Kg/dm²	3	0.6-0.9kg /kg weld				
Availability		Health	and Sa	fety				
2.4 mm Ø	25kg spool. 250kg pay-off pack.	Welding position	produces fun	nes and gases which can	be dangerous to your			
3.2 mm Ø	25kg spool. 300kg pay-off pack	important	- nearth. Arc rays can injure eyes and burn skin. Electric shock can kill, it is important to take suitable precautions when welding and follow safe					
UNIVERSAL Flux	25Kg plastic sacks	Associatio	n leaflets 23	se should be based on the 6, 237 and 239.	weiding Manufacturers			
The in	formation contained in this docun Specifica	nent is typical c tion may chang	of the produce without no	et described but is not gua otice	iranteed.			
Doc. No. DS022	Doc. Name: WLDC 1 std data sheet	t Iss	sue: 1	Issue date: 1/6/2010	page 1 of 1			
Tel: +44(0) 1252 51 Fax: +44 (0) 1252 5	7766 15833			RE Emai WABLES	I: info@corewire.com ww.corewire.com			
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### **Material Data Sheet**

## WLDC 2

A flux cored submerged-arc welding consumable for multi-layer surfacing. To be used with Weldclad UNIVERSAL Flux

omir	nal All W	eld Compo	sition, wt%.	Temper Response: for guidance only
С	Mn	Si	Cr	45
0.12	1	0.6	12	40
Micro	structur	е		о ЭН 35
Martensit	ic matrix			ssau 30
				Harc





#### Welding Parameters: for guidance only

				Inches / min	A	V	mm/min	mm.	mm	(mm)
≤150	2.4	250	DCEP	110	300	29	300	35	12 (stringer)	50%
>150	2.4	250	DCEP	130	350	29	300	35	12 (stringer)	50%
≤150	2.4	250	DCEP	160	400	29	150	35	40 (oscillated)	10
>150	2*2.4	250	DCEP	117	550	29	150	35	60 (oscillated)	10
>150	3.2	250	DCEP	75	375	30	300	35	12 (stringer)	50%
>150	3.2	250	DCEP	110	500	29	150	35	60 (oscillated)	10

#### UNIVERSAL Flux:

AWS A5.17-89 EM13K

Composition	Density	Basicity	Consumption			
$\begin{array}{c c} \underline{SiO_2 + TiO_2} & \underline{CaO + MgO} & \underline{Al_2O_3 + MnO} & \underline{CaF_2} \\ \hline 20 & 38 & 17 & 19 \end{array}$	1.2Kg/dm <sup>2</sup>	3	0.6-0.9kg /kg weld			
Availability	Health	and Sa	fety			
2.4 mm Ø 25kg spool. 250kg pay-off pac	k. Welding p	roduces fun	nes and gases which ca	n be dangerous to your		
3.2 mm Ø 25kg spool. 300kg pay-off pac	k important	important to take suitable precautions when welding and follow safe				
UNIVERSAL Flux 25Kg plastic sacks	Associatio	n leaflets 23	se should be based on th 6, 237 and 239.	e weiding Manufacturers		
The information contained in this doce Specific	ument is typical o cation may change	f the produce without no	ct described but is not g otice	uaranteed.		
Doc. No. DS023 Doc. Name: WLDC 2 std data she	et Iss	ue: 1	Issue date: 1/6/2010	page 1 of 1		
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### **Material Data Sheet**

## WLDC 3

A flux cored submerged-arc welding consumable for multi-layer surfacing of continuous caster rolls. To be used with Weldclad UNIVERSAL Flux



400 425 450 475 500 525 550 575 600 625 650 Tempering Temperature, °C.

#### Welding Parameters: for guidance only

Roll Ø mm	Ø mm	Pre heat °C	Polarity	Wire Feed Speed Inches / min	Amps A	Volts V	Travel Speed mm/min	Stick Out mm.	Bead Width mm	Overlap (mm)
≤150	2.4	250	DCEP	110	300	29	300	35	12 (stringer)	50%
>150	2.4	250	DCEP	130	350	29	300	35	12 (stringer)	50%
≤150	2.4	250	DCEP	160	400	29	150	35	40 (oscillated)	10
>150	2*2.4	250	DCEP	117	550	29	150	35	60 (oscillated)	10
>150	3.2	250	DCEP	75	375	30	300	35	12 (stringer)	50%
>150	3.2	250	DCEP	110	500	29	150	35	60 (oscillated)	10

#### **UNIVERSAL Flux:**

AWS A5.17-89 EM13K

A fully basic, all mineral, non-alloying agglomerate flux for submerged arc welding. Excellent hot slag release, especially suitable for continuous welding operations. Universal Flux is suitable for single and multi-pass welding using single or twin wire technique. Welding currents up to 1200A may be used with either DCEP or DCEN polarity.

Composition	Density	Basicity	Consumption
$\frac{\text{SiO}_2 + \text{TiO}_2}{20}  \frac{\text{CaO} + \text{MgO}}{38}  \frac{\text{Al}_2\text{O}_3 + \text{MnO}}{17}  \frac{\text{CaF}_2}{19}$	1.2Kg/dm <sup>2</sup>	3	0.6-0.9kg /kg weld

#### Availability

#### Health and Safety

2.4 mm Ø	25kg spool. 250kg pay-off pack.	Welding produces fumes and gases which can be dangerous to your
3.2 mm Ø	25kg spool. 300kg pay-off pack	important to take suitable preclations when welding and follow safe
UNIVERSAL Flux	25Kg plastic sacks	Association leaflets 236, 237 and 239.

#### The information contained in this document is typical of the product described but is not guaranteed.

Doc. No. DS024	Doc. Name: WLDC 3 std data sheet	Issue: 1	Issue date: 1/6/2010	page 1 of 1
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1.2 mm Ø

1.6 mm Ø

13kg reel.

13kg reel.

### **Material Data Sheet**

## WLDC 3MC

A metal cored welding consumable for gas-shielded multi-layer surfacing.



Welding produces fumes and gases which can be dangerous to your health. Arc rays can injure eyes and burn skin. Electric shock can kill. It is important to take suitable precautions when welding and follow safe working practices. These should be based on the Welding Manufacturers Association leaflets 236, 237 and 239.

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Doc. No. DS025	Doc. Name: WLDC 3MC std data sheet	Issue: 1	Issue date: 1/6/2010	page 1 of 1
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### **Material Data Sheet**

### WLDC 3M2H & WLDC 3M2L

Weldclad

Flux cored submerged-arc welding consumable for the surfacing of new continuous caster rolls in two layers. To be used with Weldclad UNIVERSAL Flux



#### Welding Parameters: for guidance only

Roll Ø Mm	Ø mm	Pre heat °C	Polarity	Wire Feed Speed Inches / min	Amps A	Volts V	Travel Speed mm/min	Stick Out mm.	Bead Width mm	Overlap (mm)
≤150	2.4	250	DCEP	160	400	28.5	150	35	40	10
>150	2*2.4	250	DCEP	117	550	28.5	150	35	60	10
>150	3.2	250	DCEP	110	500	28.5	150	35	60	10
					1.	11 1 1 1 1 1 1				

#### UNIVERSAL Flux: AWS A5.17-89 EM13K

-	Composition		Density	Basicity	Consumption			
	<u>SiO<sub>2</sub> + TiO<sub>2</sub></u> <u>CaC</u> 20 3	<u>D + MgO Al<sub>2</sub>O<sub>3</sub>+ MnO CaF<sub>2</sub></u> 38 17 19	1.2Kg/dm <sup>2</sup>	3	0.6-0.9kg /kg weld			
	Availability	,	Heal	th and Sa	fety			
-	2.4 mm Ø	25kg spool. 250kg pay-off pack.	Welding	g produces fur	mes and gases which ca	an be dangerous to your		
	3.2 mm Ø	25kg spool. 300kg pay-off pack	<ul> <li>Treatin. Arc rays can injure eyes and burn skin. Electric shock can kin. It is important to take suitable precautions when welding and follow safe</li> <li>working nectices. These should be based on the Welding Manufacturers</li> </ul>					
	UNIVERSAL Flux	c 25Kg plastic sacks	Associa	ation leaflets 23	6, 237 and 239.			
-	The	e information contained in this docur Specifica	nent is typica tion may cha	I of the produce of t	ct described but is not g otice	uaranteed.		
Doc	. No. DS026	Doc. Name: WLDC 3M2H/L std data	a sheet	Issue: 1	Issue date: 1/6/2010	0 page 1 of 1		
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	Registered	in England No. 1236964. Registered	office: Statio	n Road West,	Ash Vale, Aldershot, Har	nts, GU12 5LZ, UK		

### **Material Data Sheet**

## WLDC 3S

A flux cored submerged-arc welding consumable for the single layer surfacing of new continuous caster rolls. To be used with Weldclad UNIVERSAL Flux



 

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 Doc. No. DS027
 Doc. Name: WLDC 3S std data sheet
 Issue: 1
 Issue date: 1/6/2010
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### **Material Data Sheet**

400 425 450 475 500 525 550 575 600 625 650 Tempering Temperature, °C.

## WLDC 3XCR

enhanced flux cored An submerged-arc welding consumable for multi-layer surfacing of continuous caster rolls. To be used with Weldclad UNIVERSAL Flux

#### Nominal All Weld Composition, wt%. Temper Response: for guidance only 55 С Ν Mn Si Cr Ni Mo 50 0.06 0.06 11.75 1 0.6 3.1 1.6 45 Microstructure Hardness, HRc. 40 Martensitic matrix 35 30 25

Welding Parameters: for guidance only

Roll Ø mm	Ø mm	Pre heat °C	Polarity	Wire Feed Speed Inches / min	Amps A	Volts V	Travel Speed mm/min	Stick Out mm.	Bead Width mm	Overlap (mm)
≤150	2.4	250	DCEP	110	300	29	300	35	12 (stringer)	50%
>150	2.4	250	DCEP	130	350	29	300	35	12 (stringer)	50%
≤150	2.4	250	DCEP	160	400	29	150	35	40 (oscillated)	10
>150	2*2.4	250	DCEP	117	550	29	150	35	60 (oscillated)	10
>150	3.2	250	DCEP	75	375	30	300	35	12 (stringer)	50%
>150	3.2	250	DCEP	110	500	29	150	35	60 (oscillated)	10
						10 10 10 10 10 10 10 10 10 10 10 10 10 1	C LEVI I .			

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#### **UNIVERSAL Flux:** AWS A5.17-89 EM13K

A fully basic, all mineral, non-alloying agglomerate flux for submerged arc welding. Excellent hot slag release, especially suitable for continuous welding operations. Universal Flux is suitable for single and multi-pass welding using single or twin wire technique. Welding currents up to 1200A may be used with either DCEP or DCEN polarity.

Composition	////	Density	Basicity	Consumption	
<u>SiO<sub>2</sub> + TiO<sub>2</sub></u> <u>CaO</u> 20 3	<u>+ MgO Al<sub>2</sub>O<sub>3</sub>+ MnO CaF<sub>2</sub> 8 17 19</u>	1.2Kg/dm <sup>2</sup>	3	0.6-0.9kg /kg weld	
Availability		Healt	h and Sa	fety	
-					
2.4 mm Ø	25kg spool. 250kg pay-off pack.	Welding	produces fur	nes and gases which can b	e dangerous to your
2.4 mm Ø 3.2 mm Ø	25kg spool. 250kg pay-off pack. 25kg spool. 300kg pay-off pack	Welding — health. A importan	produces fur rc rays can in t to take su	nes and gases which can b jure eyes and burn skin. Elect table precautions when wel	e dangerous to your tric shock can kill. It is ding and follow safe
2.4 mm Ø 3.2 mm Ø UNIVERSAL Flux	25kg spool. 250kg pay-off pack. 25kg spool. 300kg pay-off pack 25Kg plastic sacks	Welding health. A importan working Associat	produces fur rc rays can in t to take sui practices. The ion leaflets 23	nes and gases which can b jure eyes and burn skin. Elect table precautions when well se should be based on the W 6, 237 and 239.	e dangerous to your tric shock can kill. It is ding and follow safe /elding Manufacturers
2.4 mm Ø 3.2 mm Ø UNIVERSAL Flux The	25kg spool. 250kg pay-off pack. 25kg spool. 300kg pay-off pack 25Kg plastic sacks information contained in this docur Specifica	Welding health. A importan working Associat nent is typical tion may chan	produces fur rc rays can in t to take sui practices. The ion leaflets 23 of the produce ge without no	nes and gases which can b jure eyes and burn skin. Elect table precautions when well ese should be based on the W 6, 237 and 239. Ct described but is not guara otice	e dangerous to your tric shock can kill. It is ding and follow safe /elding Manufacturers anteed.

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## HARDFACING CONSUMABLES

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### **Material Data Sheet**

## WLDC 3HT

An enhanced flux cored submerged-arc welding consumable for multi-layer surfacing of continuous caster rolls. To be used with Weldclad UNIVERSAL Flux

#### Nominal All Weld Composition, wt%.

С	Mn	Si	Cr	Ni	Мо
0.1	1	0.6	11.75	3.1	3

#### Microstructure

Martensitic matrix





#### Welding Parameters: for guidance only

Roll Ø mm	Ø mm	Pre heat °C	Polarity	Wire Feed Speed Inches / min	Amps A	Volts V	Travel Speed mm/min	Stick Out mm.	Bead Width mm	Overlap (mm)
≤150	2.4	250	DCEP	110	300	29	300	35	12 (stringer)	50%
>150	2.4	250	DCEP	130	350	29	300	35	12 (stringer)	50%
≤150	2.4	250	DCEP	160	400	29	150	35	40 (oscillated)	10
>150	2*2.4	250	DCEP	117	550	29	150	35	60 (oscillated)	10
>150	3.2	250	DCEP	75	375	30	300	35	12 (stringer)	50%
>150	3.2	250	DCEP	110	500	29	150	35	60 (oscillated)	10

#### UNIVERSAL Flux:

AWS A5.17-89 EM13K

Composition	D	ensity	Basicity	Consumption	-		
$\frac{\text{SiO}_2 + \text{TiO}_2}{20} \frac{\text{CaO} + \text{MgO}}{38} \frac{\text{Al}_2\text{O}_3}{17}$	<u>+ MnO</u> <u>CaF<sub>2</sub></u> 1.2	Kg/dm²	3	0.6-0.9kg /kg weld	_		
Availability		Health	and Safe	ty			
2.4 mm Ø 25kg sp	ool. 250kg pay-off pack.	Welding pro	oduces fumes	and gases which o	an be d	langerous to your	
3.2 mm Ø 25kg sp	ool. 300kg pay-off pack	- nearn. Arc rays can injure eyes and burn skin. Electric shock can kill. It is important to take suitable precautions when welding and follow safe					
UNIVERSAL Flux 25Kg p	astic sacks	Association	leaflets 236, 2	237 and 239.	the weid	Ing Manufacturers	
The information c	ontained in this documen Specification	t is typical of may change	the product d without notic	escribed but is not g	guarante	eed.	
Doc. No. DS029 Doc. Name:	WLDC 3HT std data sheet	lssu	e: 1	Issue date: 1/6/20	10	page 1 of 1	
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### **Material Data Sheet**

## WLDC 3Co

A flux cored submerged-arc welding consumable for multilayer surfacing of continuous caster rolls. To be used with Weldclad UNIVERSAL Flux

#### Nominal All Weld Composition, wt%.

С	Mn	Si	Cr	Ni	Мо	Co
0.1	1	0.6	12.2	2.7	1.1	2

#### Microstructure

Martensitic matrix





#### Welding Parameters: for guidance only

Roll Ø mm	Ø mm	Pre heat °C	Polarity	Wire Feed Speed Inches / min	Amps A	Volts V	Travel Speed mm/min	Stick Out mm.	Bead Width mm	Overlap (mm)
≤150	2.4	250	DCEP	110	300	29	300	35	12 (stringer)	50%
>150	2.4	250	DCEP	130	350	29	300	35	12 (stringer)	50%
≤150	2.4	250	DCEP	160	400	29	150	35	40 (oscillated)	10
>150	2*2.4	250	DCEP	117	550	29	150	35	60 (oscillated)	10
>150	3.2	250	DCEP	75	375	30	300	35	12 (stringer)	50%
>150	3.2	250	DCEP	110	500	29	150	35	60 (oscillated)	10

#### UNIVERSAL Flux:

AWS A5.17-89 EM13K

Composition	////	Density	Basicity	Consumption				
$\frac{\text{SiO}_2 + \text{TiO}_2}{20} \frac{\text{CaO}}{3}$	<u>+ MgO Al<sub>2</sub>O<sub>3</sub>+ MnO CaF<sub>2</sub> 8 17 19</u>	1.2Kg/dm <sup>2</sup>	3	0.6-0.9kg /kg weld				
Availability		Healt	h and Sa	fety				
2.4 mm Ø	25kg spool. 250kg pay-off pack	k. Welding	produces fur	mes and gases which ca	an be dangerous to your			
3.2 mm Ø	25kg spool. 300kg pay-off pack	k importar	- nearth. Arc rays can injure eyes and burn skin. Electric shock can kill. It is important to take suitable precautions when welding and follow safe					
UNIVERSAL Flux	25Kg plastic sacks	Associat	ion leaflets 23	ese should be based on the base	ie weiding Manufacturers			
The	e information contained in this docu Specific	iment is typical ation may chan	of the producing without no	ct described but is not g otice	uaranteed.			
Doc. No. DS030	Doc. Name: WLDC 3Co std data s	heet I	ssue: 1	Issue date: 1/6/201	0 page 1 of 1			
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### **Material Data Sheet**

Tempering Temperature, °C.

## WLDC 4

A flux cored submerged-arc welding consumable for multi-layer surfacing of hot strip mill process rolls including pinch rolls and edger rolls. To be used with Weldclad UNIVERSAL Flux



#### Welding Parameters: for guidance only

Roll Ø mm	Ø mm	Pre heat °C	Polarity	Wire Feed Speed Inches / min	Amps A	Volts V	Travel Speed mm/min	Stick Out mm.	Bead Width mm	Overlap (mm)
≤150	2.4	250	DCEP	110	300	29	300	35	12 (stringer)	50%
>150	2.4	250	DCEP	130	350	29	300	35	12 (stringer)	50%
≤150	2.4	250	DCEP	160	400	29	150	35	40 (oscillated)	10
>150	2*2.4	250	DCEP	117	550	29	150	35	60 (oscillated)	10
>150	3.2	250	DCEP	75	375	30	300	35	12 (stringer)	50%
>150	3.2	250	DCEP	110	500	29	150	35	60 (oscillated)	10

#### UNIVERSAL Flux:

AWS A5.17-89 EM13K

	Composition	////	Density	Basicity	Consumption	_				
	<u>SiO<sub>2</sub> + TiO<sub>2</sub></u> <u>CaO</u> 20 3	<u>) + MgO Al<sub>2</sub>O<sub>3</sub>+ MnO CaF<sub>2</sub></u> 38 17 19	1.2Kg/dm²	3	0.6-0.9kg /kg weld	_				
	Availability		Healt	th and Sa	fety					
	2.4 mm Ø	25kg spool. 250kg pay-off pack.	Welding	produces fur	nes and gases which	can be	dangerous to your			
	3.2 mm Ø	25kg spool. 300kg pay-off pack	important to take suitable precautions when welding and follow safe							
	UNIVERSAL Flux	25Kg plastic sacks	Associa	Association leaflets 236, 237 and 239.						
	The	information contained in this docun Specificat	nent is typica tion may chai	l of the producinge without no	ct described but is not otice	guarar	nteed.			
Doo	c. No. DS031	Doc. Name: WLDC 4 std data sheet		Issue: 1	Issue date: 1/6/20	010	page 1 of 1			
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### **Material Data Sheet**

## WLDC 5

An flux cored submerged-arc welding consumable for multi-layer surfacing of Hot Strip Mill rolls. To be used with Weldclad UNIVERSAL Flux.



#### Welding Parameters: for guidance only

Roll Ø mm	Ø mm	Pre heat °C	Polarity	Wire Feed Speed Inches / min	Amps A	Volts V	Travel Speed mm/min	Stick Out mm.	Bead Width mm	Overlap (mm)
≤150	2.4	250	DCEP	110	300	29	300	35	12 (stringer)	50%
>150	2.4	250	DCEP	130	350	29	300	35	12 (stringer)	50%
≤150	2.4	250	DCEP	160	400	29	150	35	40 (oscillated)	10
>150	2*2.4	250	DCEP	117	550	29	150	35	60 (oscillated)	10
>150	3.2	250	DCEP	75	375	30	300	35	12 (stringer)	50%
>150	3.2	250	DCEP	110	500	29	150	35	60 (oscillated)	10

#### UNIVERSAL Flux:

AWS A5.17-89 EM13K

-	Composition			Density	Basicity	Consumption	-					
-	<u>SiO<sub>2</sub> + TiO<sub>2</sub></u> <u>CaO</u> 20 3	<u>+ MgO Al<sub>2</sub>O<sub>3</sub>+ Mn</u> 8 17	10 <u>CaF<sub>2</sub></u> 19	1.2Kg/dm <sup>2</sup>	3	0.6-0.9kg /kg weld	_					
	Availability			Неа	Ith and Sa	fety						
-	2.4 mm Ø	25kg spool. 2	250kg pay-off pack	. Weldir	ng produces fur	nes and gases which o	an be	dangerous to your				
-	3.2 mm Ø	25kg spool. 3	300kg pay-off pack	import	important to take suitable precautions when welding and follow safe							
	UNIVERSAL Flux	25Kg plastic	sacks	Association leaflets 236, 237 and 239.								
	The	information conta	ined in this docu Specifica	ment is typic ition may cha	al of the produce ange without not	ct described but is not gotice	guarar	nteed.				
Doc	. No. DS032	Doc. Name: WL	DC 5 std data shee	t	Issue: 1	Issue date: 1/6/20	10	page 1 of 1				
	Tel: +44(0) 1252 Fax: +44 (0) 1252	517766 2 515833		ORE	RDFACING CONSU	RE Er	nail: ir www	nfo@corewire.com v.corewire.com				
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### **Material Data Sheet**

## WLDC 5Mod

An enhanced flux cored submerged-arc welding consumable for multi-layer surfacing of Hot Strip Mill rolls. To be used with Weldclad UNIVERSAL Flux

#### Nominal All Weld Composition, wt%.

С	Mn	Si	Cr	Ni	Мо
0.25	1	0.6	9	0.25	2

#### Microstructure

Martensitic matrix





#### Welding Parameters: for guidance only

Roll Ø mm	Ø mm	Pre heat °C	Polarity	Wire Feed Speed Inches / min	Amps A	Volts V	Travel Speed mm/min	Stick Out mm.	Bead Width mm	Overlap (mm)
≤150	2.4	250	DCEP	110	300	29	300	35	12 (stringer)	50%
>150	2.4	250	DCEP	130	350	29	300	35	12 (stringer)	50%
≤150	2.4	250	DCEP	160	400	29	150	35	40 (oscillated)	10
>150	2*2.4	250	DCEP	117	550	29	150	35	60 (oscillated)	10
>150	3.2	250	DCEP	75	375	30	300	35	12 (stringer)	50%
>150	3.2	250	DCEP	110	500	29	150	35	60 (oscillated)	10

#### UNIVERSAL Flux:

AWS A5.17-89 EM13K

Composition		Density	Basicity	Consumption						
<u>SiO<sub>2</sub> + TiO<sub>2</sub> CaO</u> 20 38	<u>+ MgO Al<sub>2</sub>O<sub>3</sub>+ MnO CaF<sub>2</sub> 8 17 19</u>	1.2Kg/dm <sup>2</sup>	3	0.6-0.9kg /kg weld						
Availability		Health	and Sat	iety						
2.4 mm Ø	25kg spool. 250kg pay-off pack.	Welding p	produces fum	nes and gases which ca	In be dangerous to your					
3.2 mm Ø	25kg spool. 300kg pay-off pack	important	important to take suitable precautions when welding and follow safe							
UNIVERSAL Flux	25Kg plastic sacks	Associatio	Association leaflets 236, 237 and 239.							
The	information contained in this docur Specifica	ment is typical o tion may chang	f the produc e without no	t described but is not g tice	uaranteed.					
Doc. No. DS033	Doc. Name: WLDC 5Mod std data s	sheet Iss	sue: 1	Issue date: 1/6/2010	0 page 1 of 1					
Tel: +44(0) 1252 5 Fax: +44 (0) 1252	517766 CO	DRE		RE Em	ail: info@corewire.com www.corewire.com					
Registered i	in England No. 1236964. Registered	office: Station	Road West, A	Ash Vale, Aldershot, Ha	nts, GU12 5LZ, UK					

### **Material Data Sheet**

## WLDC 5XCR

An enhanced flux cored submerged-arc welding consumable for multi-layer surfacing of Hot Strip Mill rolls. To be used with Weldclad UNIVERSAL Flux.

Nominal All Weld Composition, wt%.										
С	Mn	Si	Cr	Ni	Мо					
0.15	1	0.6	9	2	3					
Microstructure										

Martensitic matrix





#### Welding Parameters: for guidance only

Roll Ø mm	Ø mm	Pre heat °C	Polarity	Wire Feed Speed Inches / min	Amps A	Volts V	Travel Speed mm/min	Stick Out mm.	Bead Width mm	Overlap (mm)
≤150	2.4	250	DCEP	110	300	29	300	35	12 (stringer)	50%
>150	2.4	250	DCEP	130	350	29	300	35	12 (stringer)	50%
≤150	2.4	250	DCEP	160	400	29	150	35	40 (oscillated)	10
>150	2*2.4	250	DCEP	117	550	29	150	35	60 (oscillated)	10
>150	3.2	250	DCEP	75	375	30	300	35	12 (stringer)	50%
>150	3.2	250	DCEP	110	500	29	150	35	60 (oscillated)	10

#### UNIVERSAL Flux:

AWS A5.17-89 EM13K

Composition	D	ensity	Basicity	Consumption					
$\frac{\text{SiO}_2 + \text{TiO}_2}{20}  \frac{\text{CaO} + \text{MgO}}{38}  \frac{\text{Al}_2\text{O}_3 + 1}{17}$	<u>/InOCaF<sub>2</sub>191.2</u>	2Kg/dm²	3	0.6-0.9kg /kg weld					
Availability		Health	and Safe	ety					
2.4 mm Ø 25kg spoo	. 250kg pay-off pack.	Welding pr	oduces fume	s and gases which ca	an be dange	rous to your			
3.2 mm Ø 25kg spoo	. 300kg pay-off pack	important to take suitable precautions when welding and follow safe							
UNIVERSAL Flux 25Kg plas	tic sacks	Association leaflets 236, 237 and 239.							
The information cor	tained in this documen Specification	t is typical of may change	the product without noti	described but is not g ce	uaranteed.				
Doc. No. DS034 Doc. Name: W	LDC 5XCR std data shee	et Issu	ıe: 1	Issue date: 1/6/201	0 page	1 of 1			
Tel: +44(0) 1252 517766 Fax: +44 (0) 1252 515833				RE Em	ail: info@co www.corew	vire.com			
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### **Material Data Sheet**

## WLDC 5HT

An enhanced flux cored submerged-arc welding consumable for multi-layer surfacing of Hot Strip Mill rolls. To be used with Weldclad UNIVERSAL Flux.

# Nominal All Weld Composition, wt%.CMnSiCrMo0.2510.693Microstructure

Martensitic matrix





#### Welding Parameters: for guidance only

Roll Ø mm	Ø mm	Pre heat °C	Polarity	Wire Feed Speed Inches / min	Amps A	Volts V	Travel Speed mm/min	Stick Out mm.	Bead Width mm	Overlap (mm)
≤150	2.4	250	DCEP	110	300	29	300	35	12 (stringer)	50%
>150	2.4	250	DCEP	130	350	29	300	35	12 (stringer)	50%
≤150	2.4	250	DCEP	160	400	29	150	35	40 (oscillated)	10
>150	2*2.4	250	DCEP	117	550	29	150	35	60 (oscillated)	10
>150	3.2	250	DCEP	75	375	30	300	35	12 (stringer)	50%
>150	3.2	250	DCEP	110	500	29	150	35	60 (oscillated)	10
						C 0.60	E LET !			

#### UNIVERSAL Flux: AWS A5.17-89 EM13K

A fully basic, all mineral, non-alloying agglomerate flux for submerged arc welding. Excellent hot slag release, especially suitable for continuous welding operations. Universal Flux is suitable for single and multi-pass welding using single or twin wire technique. Welding currents up to 1200A may be used with either DCEP or DCEN polarity.

Composition	1/1//	Density	Basicity	Consumption					
$\frac{\text{SiO}_2 + \text{TiO}_2}{20} \frac{\text{CaO} + \text{MgO}}{38} \frac{\text{Al}_2\text{O}_3 + 1}{17}$	<u>MnO</u> <u>CaF<sub>2</sub></u> 1 19 1	.2Kg/dm²	3	0.6-0.9kg /kg weld					
Availability		Health	and Sa	fety					
2.4 mm Ø 25kg spo	ol. 250kg pay-off pack.	Welding p	produces fun	nes and gases which ca	In be dangerous to your				
3.2 mm Ø 25kg spo	ol. 300kg pay-off pack	important to take suitable precautions when welding and follow safe							
UNIVERSAL Flux 25Kg pla	stic sacks	- working p Associatio	n leaflets 23	se should be based on th 6, 237 and 239.	e weiding Manufacturers				
The information co	ontained in this docum Specificati	ent is typical o on may chang	of the produce without no	ct described but is not g otice	uaranteed.				
Doc. No. DS035 Doc. Name:	WLDC 5HT std data she	et Iss	sue: 1	Issue date: 1/6/2010	0 page 1 of 1				
the state of the second se									
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Registered in England No	. 1236964. Registered o	office: Station	Road West,	Ash Vale, Aldershot, Ha	nts, GU12 5LZ, UK				

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### **Material Data Sheet**

## WLDC 6

A flux-cored submerged-arc welding consumable producing a precipitation hardening stainless steel deposit. To be used with Weldclad UNIVERSAL Flux

#### Nominal All Weld Composition, wt%.

С	Mn	Si	Cr	Ni	Мо	Nb	Cu
0.05	1	0.6	14	5.2	1.4	0.4	1.5

#### Microstructure

Martensitic matrix





#### Welding Parameters: for guidance only

Roll Ø mm	Ø mm	Pre heat °C	Polarity	Wire Feed Speed Inches / min	Amps A	Volts V	Travel Speed mm/min	Stick Out mm.	Bead Width mm	Overlap (mm)
≤150	2.4	250	DCEP	110	300	29	300	35	12 (stringer)	50%
>150	2.4	250	DCEP	130	350	29	300	35	12 (stringer)	50%
≤150	2.4	250	DCEP	160	400	29	150	35	40 (oscillated)	10
>150	2*2.4	250	DCEP	117	550	29	150	35	60 (oscillated)	10
>150	3.2	250	DCEP	75	375	30	300	35	12 (stringer)	50%
>150	3.2	250	DCEP	110	500	29	150	35	60 (oscillated)	10

#### UNIVERSAL Flux:

AWS A5.17-89 EM13K

Composition		Density	Basicity	Consumption			
<u>SiO<sub>2</sub> + TiO<sub>2</sub> CaO</u> 20 38	<u>+ MgO Al<sub>2</sub>O<sub>3</sub>+ MnO CaF<sub>2</sub></u> 8 17 19	1.2Kg/dm <sup>2</sup>	3	0.6-0.9kg /kg weld	-		
Availability	/////	Health	and Sat	fety			
2.4 mm Ø	25kg spool. 250kg pay-off pack	. Welding	produces fun	nes and gases which ca	an be dangerous to you	ur ic	
3.2 mm Ø	25kg spool. 300kg pay-off pack	k important to take suitable precautions when welding and follow safe					
UNIVERSAL Flux	25Kg plastic sacks	Associatio	on leaflets 23	se should be based on th 6, 237 and 239.	ne weiding Manufacturer	.'S	
The	information contained in this docur Specifica	ment is typical o ition may chang	of the produc	t described but is not g tice	juaranteed.		
Doc. No. DS036	Doc. Name: WLDC 6 std data shee	t Is:	sue: 1	Issue date: 1/6/201	0 page 1 of 1		
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### **Material Data Sheet**

## WLDC 8

A flux cored submerged-arc welding consumable for multi-layer surfacing of hot strip mill process rolls including table rolls. To be used with Weldclad UNIVERSAL Flux

#### Nominal All Weld Composition, wt%.

С	Mn	Si	Cr	Мо	V
0.3	1	0.6	12.2	0.75	0.15

#### Microstructure

Martensitic matrix





#### Welding Parameters: for guidance only

Roll Ø mm	Ø mm	Pre heat °C	Polarity	Wire Feed Speed Inches / min	Amps A	Volts V	Travel Speed mm/min	Stick Out mm.	Bead Width mm	Overlap (mm)
≤150	2.4	250	DCEP	110	300	29	300	35	12 (stringer)	50%
>150	2.4	250	DCEP	130	350	29	300	35	12 (stringer)	50%
≤150	2.4	250	DCEP	160	400	29	150	35	40 (oscillated)	10
>150	2*2.4	250	DCEP	117	550	29	150	35	60 (oscillated)	10
>150	3.2	250	DCEP	75	375	30	300	35	12 (stringer)	50%
>150	3.2	250	DCEP	110	500	29	150	35	60 (oscillated)	10

#### UNIVERSAL Flux:

AWS A5.17-89 EM13K

Composition		Density	Basicity	Consumption			
<u>SiO<sub>2</sub> + TiO<sub>2</sub></u> <u>CaO</u> 20 38	<u>+ MgO Al<sub>2</sub>O<sub>3</sub>+ MnO CaF<sub>2</sub> 3 17 19</u>	1.2Kg/dm <sup>2</sup>	3	0.6-0.9kg /kg weld			
Availability		Health	and Sat	fety			
2.4 mm Ø	25kg spool. 250kg pay-off pack	. Welding	produces fun	nes and gases which ca	n be dangerous to your		
3.2 mm Ø	25kg spool. 300kg pay-off pack	k important to take suitable precautions when welding and follow safe					
UNIVERSAL Flux	25Kg plastic sacks	Associatio	on leaflets 23	se should be based on th 6, 237 and 239.	e weiding manufacturers		
The	information contained in this docur Specifica	ment is typical o ition may chang	of the produc	t described but is not g tice	uaranteed.		
Doc. No. DS037	Doc. Name: WLDC 8 std data shee	t Is:	sue: 1	Issue date: 1/6/2010	) page 1 of 1		
Tel: +44(0) 1252 5 Fax: +44 (0) 1252	517766 515833			RE Em	ail: info@corewire.com www.corewire.com		
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### **Material Data Sheet**

## WLDC 9 & 10

Low alloys flux-cored submerged-arc welding consumable for build-up, maintenance and repair. To be used with Weldclad UNIVERSAL Flux

#### Nominal All Weld Composition, wt%.

	С	Mn	Si	Cr	Мо
WLDC 9	0.1	1	0.5	0.1	0.5
WLDC 10	0.1	1.5	0.	1.25	0.5

As Welded Hardness,	
Hv	
160	
270	

#### Welding Parameters: for guidance only

Roll Ø mm	Ø mm	Pre heat °C	Polarity	Wire Feed Speed Inches / min	Amps A	Volts V	Travel Speed mm/min	Stick Out mm.	Bead Width mm	Overlap (mm)
≤150	2.4	250	DCEP	110	300	29	300	35	12 (stringer)	50%
>150	2.4	250	DCEP	130	350	29	300	35	12 (stringer)	50%
≤150	2.4	250	DCEP	160	400	29	150	35	40 (oscillated)	10
>150	2*2.4	250	DCEP	117	550	29	150	35	60 (oscillated)	10
>150	3.2	250	DCEP	75	375	30	300	35	12 (stringer)	50%
>150	3.2	250	DCEP	110	500	29	150	35	60 (oscillated)	10

#### **UNIVERSAL Flux:** AWS A5.17-89 EM13K

A fully basic, all mineral, non-alloying agglomerate flux for submerged arc welding. Excellent hot slag release, especially suitable for continuous welding operations. Universal Flux is suitable for single and multi-pass welding using single or twin wire technique. Welding currents up to 1200A may be used with either DC+ve or DC-ve polarity.

11

		11 11 11 11 1	
Composition	Density	Basicity	Consumption
$\begin{array}{c c} \underline{SiO_2 + TiO_2} & \underline{CaO + MgO} & \underline{AI_2O_3 + MnO} & \underline{CaF_2} \\ 20 & 38 & 17 & 19 \end{array}$	1.2Kg/dm <sup>2</sup>	3	0.6-0.9kg /kg weld
Availability			

1/11

11

#### **Availability**

1.2 mm Ø	- 12Ka + 25ka Coilo	////						
1.3 mm Ø	ISNY +2SNY COIIS	Health and Safety						
2.4 mm Ø	25kg spool. 250kg pay-off pack.	Welding produces fur	mes and gases which can be	e dangerous to your				
3.2 mm Ø	25kg spool. 300kg pay-off pack	important to take suitable precautions when welding and follow safe						
UNIVERSAL Flux	25Kg plastic sacks	<ul> <li>working practices. These should be based on the Welding Manufacturers Association leaflets 236, 237 and 239.</li> </ul>						
The	information contained in this documer Specification	nt is typical of the produ n may change without n	ict described but is not guara otice	nteed.				
Doc. No. DS038	Doc. Name: WLDC 9 & 10 std data she	eet Issue: 1	Issue date: 1/6/2010	page 1 of 1				
Tel: +44(0) 1252 5 Fax: +44 (0) 1252	517766 515833		JMABLES Email: i	nfo@corewire.com w.corewire.com				
Registered i	in England No. 1236964, Registered of	lice: Station Road West.	Ash Vale, Aldershot, Hants,	GU12 5LZ. UK				

### **Material Data Sheet**

## WLDC 11, 11F, 12 A family of flux cored submerged-arc welding consumable for build-up, maintenance and repair. To be used with Weldclad UNIVERSAL Flux

#### Nominal All Weld Composition, wt%.

	С	Mn	Si	Cr	Мо
WLDC 11	0.15	1	0.5	2.5	0.5
WLDC 11F	0.15	1	0.5	3.5	0.7
WLDC 12	0.15	1	0.5	3.5	-

As Welded Hardness,
HRc
34
40
38

#### Welding Parameters: for guidance only

Roll Ø mm	Ø mm	Pre heat °C	Polarity	Wire Feed Speed Inches / min	Amps A	Volts V	Travel Speed mm/min	Stick Out mm.	Bead Width mm	Overlap (mm)
≤150	2.4	250	DCEP	110	300	29	300	35	12 (stringer)	50%
>150	2.4	250	DCEP	130	350	29	300	35	12 (stringer)	50%
≤150	2.4	250	DCEP	160	400	29	150	35	40 (oscillated)	10
>150	2*2.4	250	DCEP	117	550	29	150	35	60 (oscillated)	10
>150	3.2	250	DCEP	75	375	30	300	35	12 (stringer)	50%
>150	3.2	250	DCEP	110	500	29	150	35	60 (oscillated)	10

#### **UNIVERSAL Flux:** AWS A5.17-89 EM13K

A fully basic, all mineral, non-alloying agglomerate flux for submerged arc welding. Excellent hot slag release, especially suitable for continuous welding operations. Universal Flux is suitable for single and multi-pass welding using single or twin wire technique. Welding currents up to 1200A may be used with either DC+ve or DC-ve polarity.

Composition	Density	Basicity	Consumption
$\begin{array}{c c} \underline{SiO_2 + TiO_2} & \underline{CaO + MgO} & \underline{Al_2O_3 + MnO} & \underline{CaF_2} \\ \hline 20 & 38 & 17 & 19 \end{array}$	1.2Kg/dm <sup>2</sup>	3	0.6-0.9kg /kg weld

///

11

#### **Availability**

1.2 mm Ø		/ //							
1.3 mm Ø	— 13Kg +25kg Coils	Health and Safety							
2.4 mm Ø	25kg spool. 250kg pay-off pack.	Welding produces fumes and gases which can be dangerous to your							
3.2 mm Ø	25kg spool. 300kg pay-off pack	<ul> <li>nealth. Arc rays can injure eyes and burn skin. Electric shock can kill, it important to take suitable precautions when welding and follow sa</li> </ul>							
UNIVERSAL Flux	25Kg plastic sacks	work Asso	ing practices. The ciation leaflets 23	ese should be based on the W 36, 237 and 239.	elding Manufacturers				
The	information contained in this documer Specification	nt is typi n may cl	cal of the produ hange without n	ct described but is not guara	inteed.				
oc. No. DS039	Doc. Name: WLDC 11 11F 12 std data	sheet	Issue: 1	Issue date: 1/6/2010	page 1 of 1				
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### **Material Data Sheet**

## **WLDC 15**

A low-alloy buffer material designed for application on substrate with up to 1.2wt% carbon substrate prior to hardfacing. To be used with Weldclad UNIVERSAL Flux

Nominal All Weld Composition, wt%.									
С	Mn	Si	Cr	Мо	Nb				
0.04	1	0.6	4.5	0.8	1.2				

#### Welding Parameters: for guidance only

Roll Ø	Ø	Pre heat	Polarity	Wire Feed Speed	Amps	Volts	Travel Speed	Stick Out	Bead Width	Overlap
mm	mm	°C	rolanty	Inches / min	A	V	mm/min	mm.	mm	(mm)
≤150	2.4	250	DCEP	110	300	29	300	35	12 (stringer)	50%
>150	2.4	250	DCEP	130	350	29	300	35	12 (stringer)	50%
≤150	2.4	250	DCEP	160	400	29	150	35	40 (oscillated)	10
>150	2*2.4	250	DCEP	117	550	29	150	35	60 (oscillated)	10
>150	3.2	250	DCEP	75	375	30	300	35	12 (stringer)	50%
>150	3.2	250	DCEP	110	500	29	150	35	60 (oscillated)	10

#### **UNIVERSAL Flux:**

AWS A5.17-89 EM13K

A fully basic, all mineral, non-alloying agglomerate flux for submerged arc welding. Excellent hot slag release, especially suitable for continuous welding operations. Universal Flux is suitable for single and multi-pass welding using single or twin wire technique. Welding currents up to 1200A may be used with either DCEP or DCEN polarity.

Composition	Density	Basicity	Consumption
$\frac{\text{SiO}_2 + \text{TiO}_2}{20}  \frac{\text{CaO} + \text{MgO}}{38}  \frac{\text{Al}_2\text{O}_3 + \text{MnO}}{17}  \frac{\text{CaF}_2}{19}$	1.2Kg/dm <sup>2</sup>	3	0.6-0.9kg /kg weld

#### **Availability**

2.4 mm Ø	25kg spool. 250kg pay-off pack.
3.2 mm Ø	25kg spool. 300kg pay-off pack
UNIVERSAL Flux	25Kg plastic sacks

#### **Health and Safety**

Welding produces fumes and gases which can be dangerous to your health. Arc rays can injure eyes and burn skin. Electric shock can kill. It is important to take suitable precautions when welding and follow safe working practices. These should be based on the Welding Manufacturers Association leaflets 236, 237 and 239.

The information contained in this document is typical of the product described but is not guaranteed. Specification may change without notice

Doc. No. DS040	Doc. Name: WLDC 15 std data sheet	Issue: 1	Issue date: 1/6/2010	page 1 of 1						
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Registered	in England No. 1236964. Registered office: St	ation Road West, Asl	n Vale, Aldershot, Hants, C	GU12 5LZ, UK						

### **Material Data Sheet**

## **WLDC 17**

A flux cored submerged-arc welding consumable for multilayer surfacing of hot strip mill process rolls including wrapper rolls. To be used with Weldclad UNIVERSAL Flux

#### Nominal All Weld Composition, wt%.

С	Mn	Si	Cr	Мо
0.3	1	0.6	5	3

#### Microstructure

Martensitic matrix





#### Welding Parameters: for guidance only

Roll Ø mm	Ø mm	Pre heat °C	Polarity	Wire Feed Speed Inches / min	Amps A	Volts V	Travel Speed mm/min	Stick Out mm.	Bead Width mm	Overlap (mm)
≤150	2.4	350	DCEP	110	300	29	300	35	12 (stringer)	50%
>150	2.4	350	DCEP	130	350	29	300	35	12 (stringer)	50%
≤150	2.4	350	DCEP	160	400	29	150	35	40 (oscillated)	10
>150	2*2.4	350	DCEP	117	550	29	150	35	60 (oscillated)	10
>150	3.2	350	DCEP	75	375	30	300	35	12 (stringer)	50%
>150	3.2	350	DCEP	110	500	29	150	35	60 (oscillated)	10

#### UNIVERSAL Flux:

AWS A5.17-89 EM13K

Composition	Density	Basicity	Consumption	_	
$\begin{array}{c c} \underline{SiO_2 + TiO_2} & \underline{CaO + MgO} & \underline{Al_2O_3 + MnO} \\ 20 & 38 & 17 & 19 \end{array}$	1.2Kg/dm²	3	0.6-0.9kg /kg weld	_	
Availability	Health	and Saf	ety		
2.4 mm Ø 25kg spool. 250kg pay-off pack	Welding p	produces fum	nes and gases which o	can be dangerou	s to your
3.2 mm Ø   25kg spool. 300kg pay-off pack	important	to take suit	able precautions wher	welding and fo	llow safe
UNIVERSAL Flux 25Kg plastic sacks	Associatio	n leaflets 236	se should be based on 5, 237 and 239.	the weiding Manu	Jtacturers
The information contained in this docur Specifica	nent is typical o tion may chang	f the produc e without no	t described but is not tice	guaranteed.	
Doc. No. DS041 Doc. Name: WLDC 17 std data she	et Iss	sue: 2	Issue date: 21/6/2	010 page 1 o	vf 1
Tel: +44(0) 1252 517766 Fax: +44 (0) 1252 515833			RE E	mail: info@corew www.corewire.	vire.com .com
Registered in England No. 1236964. Registered	office: Station I	Road West, A	Ash Vale, Aldershot, H	ants, GU12 5LZ,	UK

### **Material Data Sheet**

## **WLDC 18**

A flux cored submerged-arc welding consumable for multilayer surfacing of continuous caster rolls. To be used with Weldclad UNIVERSAL Flux

Nominal All Weld Composition, wt%.								
С	Mn	Si	Cr	Ni	Мо			
0.08	1	0.65	13	4	0.4			
Microstructure								

#### Martensitic matrix





#### Welding Parameters: for guidance only

Roll Ø mm	Ø mm	Pre heat °C	Polarity	Wire Feed Speed Inches / min	Amps A	Volts V	Travel Speed mm/min	Stick Out mm.	Bead Width mm	Overlap (mm)
≤150	2.4	250	DCEP	110	300	29	300	35	12 (stringer)	50%
>150	2.4	250	DCEP	130	350	29	300	35	12 (stringer)	50%
≤150	2.4	250	DCEP	160	400	29	150	35	40 (oscillated)	10
>150	2*2.4	250	DCEP	117	550	29	150	35	60 (oscillated)	10
>150	3.2	250	DCEP	75	375	30	300	35	12 (stringer)	50%
>150	3.2	250	DCEP	110	500	29	150	35	60 (oscillated)	10

#### UNIVERSAL Flux:

AWS A5.17-89 EM13K

-	Composition		Density	Basicity	Consumption			
	<u>SiO<sub>2</sub> + TiO<sub>2</sub></u> <u>CaO</u> 20 3	<u>+ MgO</u> <u>Al<sub>2</sub>O<sub>3</sub>+ MnO</u> <u>CaF<sub>2</sub></u> 8 17 19	1.2Kg/dm <sup>2</sup>	3	0.6-0.9kg /kg weld	_		
	Availability		Heal	Ith and Sa	afety			
	2.4 mm Ø	25kg spool. 250kg pay-off pack.	Welding produces fumes and gases which can be dangerous to your					
-	3.2 mm Ø	25kg spool. 300kg pay-off pack	pack important to take suitable precautions when welding and follow safe working practices. These should be based on the Welding Manufacturers Association leaflets 236, 237 and 239.					
-	UNIVERSAL Flux	25Kg plastic sacks						
	The	information contained in this docun Specificat	nent is typica ion may cha	al of the prod ange without i	uct described but is no notice	ot guara	nteed.	
Doc	. No. DS042	Doc. Name: WLDC 18 std data shee	et	Issue: 1	Issue date: 1/6/2	2010	page 1 of 1	
	Tel: +44(0) 1252 517766 Fax: +44 (0) 1252 515833 COREVIRE HARDFACING CONSUMABLES Email: info@corewire.com www.corewire.com							
	Registered	in England No. 1236964. Registered	office: Statio	on Road West	, Ash Vale, Aldershot,	Hants, (	GU12 5LZ, UK	

### **Material Data Sheet**

## **WLDC 19M**

An over-alloyed flux cored submerged-arc welding consumable with enhanced molybdenum levels designed to be used as a preparation layer prior to cladding. To be used with Weldclad UNIVERSAL Flux

#### Nominal All Weld Composition, wt%.

С	Mn	Si	Cr	Ni
0.08	0.75	0.65	17	0.8

#### Welding Parameters: for guidance only

Roll Ø mm	Ø mm	Pre heat °C	Polarity	Wire Feed Speed Inches / min	Amps A	Volts V	Travel Speed mm/min	Stick Out mm.	Bead Width mm	Overlap (mm)
≤150	2.4	250	DCEP	110	300	29	300	35	12 (stringer)	50%
>150	2.4	250	DCEP	130	350	29	300	35	12 (stringer)	50%
≤150	2.4	250	DCEP	160	400	29	150	35	40 (oscillated)	10
>150	2*2.4	250	DCEP	117	550	29	150	35	60 (oscillated)	10
>150	3.2	250	DCEP	75	375	30	300	35	12 (stringer)	50%
>150	3.2	250	DCEP	110	500	29	150	35	60 (oscillated)	10

#### **UNIVERSAL Flux:**

AWS A5.17-89 EM13K

A fully basic, all mineral, non-alloying agglomerate flux for submerged arc welding. Excellent hot slag release, especially suitable for continuous welding operations. Universal Flux is suitable for single and multi-pass welding using single or twin wire technique. Welding currents up to 1200A may be used with either DCEP or DCEN polarity.

Composition	Density	Basicity	Consumption
$\frac{\text{SiO}_2 + \text{TiO}_2}{20}  \frac{\text{CaO} + \text{MgO}}{38}  \frac{\text{Al}_2\text{O}_3 + \text{MnO}}{17}  \frac{\text{CaF}_2}{19}$	1.2Kg/dm <sup>2</sup>	3	0.6-0.9kg /kg weld

#### **Availability**

2.4 mm Ø	25kg spool. 250kg pay-off pack.
3.2 mm Ø	25kg spool. 300kg pay-off pack
UNIVERSAL Flux	25Kg plastic sacks

#### **Health and Safety**

Welding produces fumes and gases which can be dangerous to your health. Arc rays can injure eyes and burn skin. Electric shock can kill. It is important to take suitable precautions when welding and follow safe working practices. These should be based on the Welding Manufacturers Association leaflets 236, 237 and 239.

The information contained in this document is typical of the product described but is not guaranteed. Specification may change without notice

- L										
	Doc. No. DS043	Doc. Name: WLDC 19M std data sheet	Issue: 1	Issue date: 1/6/2010	page 1 of 1					
	Tel: +44(0) 1252 Fax: +44 (0) 1252	517766 2 515833	EWIR HARDFACING CONSUMAB	Email: in LES	nfo@corewire.com v.corewire.com					
	Registered	in England No. 1236964. Registered office: Sta	tion Road West, Ash	Vale, Aldershot, Hants, O	GU12 5LZ, UK					

### **Material Data Sheet**

## WLDC 59, 69, 75

A series of flux cored submerged-arc welding consumable designed for build-up welding. To be used with Weldclad UNIVERSAL Flux

#### Nominal All Weld Composition, wt%.

	С	Mn	Si	Cr	Ni	Мо
WLDC 59	0.07	1.3	0.5	-	1.2	0.5
WLDC 69	0.07	1	0.5	1.2	2.25	0.5
WLDC 75	0.1	1	0.5	1.2	0.3	1

#### **Typical Mechanical Properties.**

Dependent on tempering temperature, welding procedure and parameters.

	Rm0.2 (MPa)	Rp (MPa)	El (%)	RA (%)	Charpy Impact (Joules)
WLDC 59	420-520	590-620	~30	~70	~100
WLDC 69	620-695	725-930	~20	~60	~38
WLDC 75	610-775	820-945	~13	~60	~20

#### Welding Parameters: for guidance only

Roll Ø Mm	Ø mm	Pre heat °C	Polarity	Wire Feed Speed Inches / min	Amps A	Volts V	Travel Speed mm/min	Stick Out mm.	Bead Width mm	Overlap (mm)
≤150	2.4	250	DCEP	160	400	28.5	150	35	40	10
>150	2*2.4	250	DCEP	117	550	28.5	150	35	60	10
>150	3.2	250	DCEP	110	500	28.5	150	35	60	10

#### **UNIVERSAL Flux:**

AWS A5.17-89 EM13K

A fully basic, all mineral, non-alloying agglomerate flux for submerged arc welding. Excellent hot slag release, especially suitable for continuous welding operations. Universal Flux is suitable for single and multi-pass welding using single or twin wire technique. Welding currents up to 1200A may be used with either DC+ve or DC-ve polarity.

Composition	Density	Basicity	Consumption
$\frac{\text{SiO}_2 + \text{TiO}_2}{20}  \frac{\text{CaO} + \text{MgO}}{38}  \frac{\text{Al}_2\text{O}_3 + \text{MnO}}{17}  \frac{\text{CaF}_2}{19}$	1.2Kg/dm <sup>2</sup>	3	0.6-0.9kg /kg weld

#### **Availability**

#### Health and Safety

2.4 mm Ø 3.2 mm Ø UNIVERSAL Flux	25kg spool. 250kg pay-off pack. 25kg spool. 300kg pay-off pack 25Kg plastic sacks	Welding produces fumes and gases which can be dangerous to your health. Arc rays can injure eyes and burn skin. Electric shock can kill. It is important to take suitable precautions when welding and follow safe working practices. These should be based on the Welding Manufacturers Association leaflets 236, 237 and 239.				
The information contained in this document is typical of the product described but is not guaranteed. Specification may change without notice         Doc. No. DS044       Doc. Name: WLDC 59 69 75 std data sheet       Issue: 1       Issue date: 1/6/2010       page 1 of 1						
Tel: +44(0) 1252 517766 Fax: +44 (0) 1252 515833 Email: info@corewire.com www.corewire.com						

Registered in England No. 1236964. Registered office: Station Road West, Ash Vale, Aldershot, Hants, GU12 5LZ, UK

### **Material Data Sheet**

## **WLDC 700**

A flux cored submerged-arc welding consumable producing a high quality 29Cr-9Ni deposit.

#### Nominal All Weld Composition, wt%.

С	Cr	Ni	Мо	Fe
0.1max	29	9	0.5	Bal

#### Microstructure

Austenitic matrix

#### Welding Parameters: for guidance only

Roll Ø mm	Ø mm	Pre heat °C	Polarity	Wire Feed Speed Inches / min	Amps A	Volts V	Travel Speed mm/min	Stick Out mm.	Bead Width mm	Overlap (mm)
≤150	2.4	250	DCEP	160	400	28.5	150	35	40	10
>150	3.2	250	DCEP	110	500	28.5	150	35	60	10

#### UNIVERSAL Flux: AWS A5.17-89 EM13K

A fully basic, all mineral, non-alloying agglomerate flux for submerged arc welding. Excellent hot slag release, especially suitable for continuous welding operations. Universal Flux is suitable for single and multi-pass welding using single or twin wire technique. Welding currents up to 1200A may be used with either DCEP or DCEN polarity.

Composition	Density	Basicity	Consumption
$\frac{\text{SiO}_2 + \text{TiO}_2}{20}  \frac{\text{CaO} + \text{MgO}}{38}  \frac{\text{Al}_2\text{O}_3 + \text{MnO}}{17}  \frac{\text{CaF}_2}{19}$	1.2Kg/dm <sup>2</sup>	3	0.6-0.9kg /kg weld

#### Availability

#### Health and Safety

2.4 mm Ø	25kg spool. 250kg pay-off pack.
3.2 mm Ø	25kg spool. 300kg pay-off pack
UNIVERSAL Flux	25Kg plastic sacks

## Welding produces fumes and gases which can be dangerous to your health. Arc rays can injure eyes and burn skin. Electric shock can kill. It is important to take suitable precautions when welding and follow safe working practices. These should be based on the Welding Manufacturers Association leaflets 236, 237 and 239.

#### The information contained in this document is typical of the product described but is not guaranteed.

Doc. No. DS045	Doc. Name: WLDC 700 std data sheet	Issue: 1	Issue date: 1/6/2010	page 1 of 1
Tel: +44(0) 125 Fax: +44 (0) 12	2 517766 52 515833		Email: in BLES	nfo@corewire.com v.corewire.com
Registere	d in England No. 1236964. Registered office	: Station Road West, Asl	n Vale, Aldershot, Hants, (	GU12 5LZ, UK

### **Material Data Sheet**

## **WLDC 800**

A flux cored submerged-arc welding consumable designed for the cladding of continuous caster foot rolls. A cost effective alternative to nickel based materials.

Available on a trial basis only

#### Nominal All Weld Composition, wt%.

С	Cr	Ni	Мо	Fe
0.1	20	20	6	Bal

#### Microstructure



#### Welding Parameters: for guidance only

≤ 150     2.4     250     DCEP     160     400     28.5     150     35     40     10       >150     3.2     250     DCEP     110     500     28.5     150     35     60     10	Roll Ø mm	Ø mm	Pre heat °C	Polarity	Wire Feed Speed Inches / min	Amps A	Volts V	Travel Speed mm/min	Stick Out mm.	Bead Width mm	Overlap (mm)
>150 3.2 250 DCEP 110 500 28.5 150 35 60 10	≤150	2.4	250	DCEP	160	400	28.5	150	35	40	10
	>150	3.2	250	DCEP	110	500	28.5	150	35	60	10

#### UNIVERSAL Flux:

AWS A5.17-89 EM13K

A fully basic, all mineral, non-alloying agglomerate flux for submerged arc welding. Excellent hot slag release, especially suitable for continuous welding operations. Universal Flux is suitable for single and multi-pass welding using single or twin wire technique. Welding currents up to 1200A may be used with either DCEP or DCEN polarity.

Composition	Density	Basicity	Consumption
$\frac{\text{SiO}_2 + \text{TiO}_2}{20}  \frac{\text{CaO} + \text{MgO}}{38}  \frac{\text{Al}_2\text{O}_3 + \text{MnO}}{17}  \frac{\text{CaF}_2}{19}$	1.2Kg/dm <sup>2</sup>	3	0.6-0.9kg /kg weld

#### Availability

#### Health and Safety

2.4 mm Ø	25kg spool. 250kg pay-off pack.
3.2 mm Ø	25kg spool. 300kg pay-off pack
UNIVERSAL Flux	25Kg plastic sacks

## Welding produces fumes and gases which can be dangerous to your health. Arc rays can injure eyes and burn skin. Electric shock can kill. It is important to take suitable precautions when welding and follow safe working practices. These should be based on the Welding Manufacturers Association leaflets 236, 237 and 239.

#### The information contained in this document is typical of the product described but is not guaranteed.

Doc. No.DS046	Doc. Name: WLDC 800 std data sheet	Issue: 1	Issue date: 1/6/2010	page 1 of 1	
Tel: +44(0) 1252 Fax: +44 (0) 125	517766 2 515833		Email: in UES	nfo@corewire.com v.corewire.com	
Registered in England No. 1236964. Registered office: Station Road West, Ash Vale, Aldershot, Hants, GU12 5LZ, UK					

### **Material Data Sheet**

## **WLDC 900**

A nickel based flux cored submerged-arc welding consumable designed for the cladding of continuous caster foot rolls subject to corrosion and erosion.

#### Nominal All Weld Composition, wt%.

Ni	Cr	Мо	Nb
Bal	22	9	3.8

#### Microstructure

austenitic

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#### Welding Parameters: for guidance only

Roll Ø mm	Ø mm	Pre heat °C	Polarity	Wire Feed Speed Inches / min	Amps A	Volts V	Travel Speed mm/min	Stick Out mm.	Bead Width mm	Overlap (mm)
≤150	2.4	N/A	DCEP	160	400	28.5	150	35	40	10
>150	3.2	N/A	DCEP	110	500	28.5	150	35	60	10

During welding the temperature of the roll should not exceed ~150°C

#### UNIVERSAL Flux: AWS A5.17-89 EM13K

A fully basic, all mineral, non-alloying agglomerate flux for submerged arc welding. Excellent hot slag release, especially suitable for continuous welding operations. Universal Flux is suitable for single and multi-pass welding using single or twin wire technique. Welding currents up to 1200A may be used with either DCEP or DCEN polarity.

Composition	Density	Basicity	Consumption
$\frac{\text{SiO}_2 + \text{TiO}_2}{20}  \frac{\text{CaO} + \text{MgO}}{38}  \frac{\text{Al}_2\text{O}_3 + \text{MnO}}{17}  \frac{\text{CaF}_2}{19}$	1.2Kg/dm <sup>2</sup>	3	0.6-0.9kg /kg weld

#### Availability

#### Health and Safety

2.4 mm Ø	25kg spool. 250kg pay-off pack.
3.2 mm Ø	25kg spool. 300kg pay-off pack
UNIVERSAL Flux	25Kg plastic sacks

## Welding produces fumes and gases which can be dangerous to your health. Arc rays can injure eyes and burn skin. Electric shock can kill. It is important to take suitable precautions when welding and follow safe working practices. These should be based on the Welding Manufacturers Association leaflets 236, 237 and 239.

#### The information contained in this document is typical of the product described but is not guaranteed.

Doc. No. DS047	Doc. Name: WLDC 900 std data sheet	Issue: 1	Issue date: 1/6/2010	page 1 of 1
Tel: +44(0) 1252 Fax: +44 (0) 1252	517766 2 515833		E Email: in www	nfo@corewire.com v.corewire.com
Registered	in England No. 1236964. Registered office: S	tation Road West, Ash	n Vale, Aldershot, Hants, G	GU12 5LZ, UK

### **Material Data Sheet**

## WLDC 2000

A flux cored submerged-arc welding consumable for multilayer surfacing of hot strip mill process rolls including table rolls. To be used with Weldclad UNIVERSAL Flux

#### Nominal All Weld Composition, wt%.

				•			
С	Mn	Si	Cr	Ni	Мо	W	V
0.25	1	0.6	11.75	1.5	2	0.8	0.5

#### Microstructure

Martensitic matrix





Tempering Temperature, °C.

#### Welding Parameters: for guidance only

Roll Ø mm	Ø mm	Pre heat °C	Polarity	Wire Feed Speed Inches / min	Amps A	Volts V	Travel Speed mm/min	Stick Out mm.	Bead Width mm	Overlap (mm)
≤150	2.4	250	DCEP	110	300	29	300	35	12 (stringer)	50%
>150	2.4	250	DCEP	130	350	29	300	35	12 (stringer)	50%
≤150	2.4	250	DCEP	160	400	29	150	35	40 (oscillated)	10
>150	2*2.4	250	DCEP	117	550	29	150	35	60 (oscillated)	10
>150	3.2	250	DCEP	75	375	30	300	35	12 (stringer)	50%
>150	3.2	250	DCEP	110	500	29	150	35	60 (oscillated)	10

#### UNIVERSAL Flux:

AWS A5.17-89 EM13K

	Composition		Density	Basicity	Consumption				
	<u>SiO<sub>2</sub> + TiO<sub>2</sub></u> <u>CaO</u> 20 3	<u>+ MgO Al<sub>2</sub>O<sub>3</sub>+ MnO CaF<sub>2</sub></u> 8 17 19	1.2Kg/dm <sup>2</sup>	3	0.6-0.9kg /kg weld				
	Availability		Healt	h and Sa	fety				
	2.4 mm Ø	25kg spool. 250kg pay-off pack	. Welding	produces fur	nes and gases which can	be dangerous to your			
-	3.2 mm Ø	25kg spool. 300kg pay-off pack	importan	important to take suitable precautions when welding and follow safe					
	UNIVERSAL Flux	25Kg plastic sacks	Associat	ion leaflets 23	6, 237 and 239.				
	The	information contained in this docur Specifica	ment is typical ition may chan	of the produc	ct described but is not gua otice	aranteed.			
Doc	. No. DS048	Doc. Name: WLDC 2000 std data s	sheet Is	sue: 1	Issue date: 1/6/2010	page 1 of 1			
	Tel: +44(0) 1252 5 Fax: +44 (0) 1252	517766 2 515833			RE Emai WABLES	l: info@corewire.com ww.corewire.com			
	Registered	in England No. 1236964. Registered	office: Station	Road West,	Ash Vale, Aldershot, Hant	s, GU12 5LZ, UK			

### **Material Data Sheet**

## WLDC 3N

A flux cored submerged-arc welding consumable for multi-layer surfacing of continuous caster rolls. To be used with Weldclad **UNIVERSAL Flux** 

### Nominal All Weld Composition, wt%.

С	Ν	Mn	Si	Cr	Ni	Мо
0.06	0.06	1	0.6	12.2	2.5	0.8

#### Microstructure

Martensitic matrix





#### Welding Parameters: for guidance only

≤150 >150 ≤150	2.4	250	DCEP							()
>150 ≤150				110	300	29	300	35	12 (stringer)	50%
≤150	2.4	250	DCEP	130	350	29	300	35	12 (stringer)	50%
	2.4	250	DCEP	160	400	29	150	35	40 (oscillated)	10
>150	2*2.4	250	DCEP	117	550	29	150	35	60 (oscillated)	10
>150	3.2	250	DCEP	75	375	30	300	35	12 (stringer)	50%
>150	3.0	250	DCEP	110	500	29	150	35	60 (oscillated)	10

#### UNIVERSAL Flux:

AWS A5.17-89 EM13K

A fully basic, all mineral, non-alloying agglomerate flux for submerged arc welding. Excellent hot slag release, especially suitable for continuous welding operations. Universal Flux is suitable for single and multi-pass welding using single or twin wire technique. Welding currents up to 1200A may be used with either DCEP or DCEN polarity.

Composition	Density	Basicity	Consumption
$\frac{\text{SiO}_2 + \text{TiO}_2}{20}  \frac{\text{CaO} + \text{MgO}}{38}  \frac{\text{Al}_2\text{O}_3 + \text{MnO}}{17}  \frac{\text{CaF}_2}{19}$	1.2Kg/dm <sup>2</sup>	3	0.6-0.9kg /kg weld

#### Availability

#### Health and Safety

2.4 mm Ø	25kg spool. 250kg pay-off pack.	Welding produces fumes and gases which can be dangerous to your bealth. Are rays can juiure eves and burn skin. Electric shock can kill it is
3.2 mm Ø	25kg spool. 300kg pay-off pack	important to take suitable precautions when welding and follow safe
UNIVERSAL Flux	25Kg plastic sacks	Association leaflets 236, 237 and 239.

#### The information contained in this document is typical of the product described but is not guaranteed.

Doc. No. DS049	9	Doc. Name: WL	DC 3N std data sheet	Issue: 1	Issue date	: 1/6/2010	page 1 of 1
Tel: +44(0 Fax: +44 (	0) 1252 51 (0) 1252 5	7766 15833				Email: in www	nfo@corewire.com v.corewire.com
Registered in England No. 1236964. Registered office: Station Road West, Ash Vale, Aldershot, Hants, GU12 5LZ, UK							

### **Material Data Sheet**

## WLDC 19XCR

An over-alloyed flux cored submerged-arc welding consumable with enhanced molybdenum levels designed to be used as a preparation layer prior to cladding. To be used with Weldclad UNIVERSAL Flux

#### Nominal All Weld Composition, wt%.

С	Mn	Si	Cr	Ni	Мо
0.08	0.75	0.65	17	0.8	1.5wt%

#### Welding Parameters: for guidance only

Roll Ø mm	Ø mm	Pre heat °C	Polarity	Wire Feed Speed Inches / min	Amps A	Volts V	Travel Speed mm/min	Stick Out mm.	Bead Width mm	Overlap (mm)
≤150	2.4	250	DCEP	110	300	29	300	35	12 (stringer)	50%
>150	2.4	250	DCEP	130	350	29	300	35	12 (stringer)	50%
≤150	2.4	250	DCEP	160	400	29	150	35	40 (oscillated)	10
>150	2*2.4	250	DCEP	117	550	29	150	35	60 (oscillated)	10
>150	3.2	250	DCEP	75	375	30	300	35	12 (stringer)	50%
>150	3.2	250	DCEP	110	500	29	150	35	60 (oscillated)	10

#### **UNIVERSAL Flux:**

AWS A5.17-89 EM13K

A fully basic, all mineral, non-alloying agglomerate flux for submerged arc welding. Excellent hot slag release, especially suitable for continuous welding operations. Universal Flux is suitable for single and multi-pass welding using single or twin wire technique. Welding currents up to 1200A may be used with either DCEP or DCEN polarity.

Composition	Density	Basicity	Consumption
$\frac{\text{SiO}_2 + \text{TiO}_2}{20}  \frac{\text{CaO} + \text{MgO}}{38}  \frac{\text{Al}_2\text{O}_3 + \text{MnO}}{17}  \frac{\text{CaF}_2}{19}$	1.2Kg/dm <sup>2</sup>	3	0.6-0.9kg /kg weld

#### **Availability**

2.4 mm Ø	25kg spool. 250kg pay-off pack.
3.2 mm Ø	25kg spool. 300kg pay-off pack
UNIVERSAL Flux	25Kg plastic sacks

#### **Health and Safety**

Welding produces fumes and gases which can be dangerous to your health. Arc rays can injure eyes and burn skin. Electric shock can kill. It is important to take suitable precautions when welding and follow safe working practices. These should be based on the Welding Manufacturers Association leaflets 236, 237 and 239.

The information contained in this document is typical of the product described but is not guaranteed. Specification may change without notice

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