DZZM

SILA

Welding electrodes

DNIPROWSKYI PLANT
OF WELDING MATERIALS
“DZZM SILA” Ltd.

Welding electrodes of new generation…

ASSORTMENTAND TECHNICAL CHARACTERISTICS

DNIPROWSKYI PLANT OF WELDING MATERIALS“DZZM SILA” Ltd.

In 2014, DZZM SILA Ltd started production of new generation welding electrodes.

Thanks to the update of classic production technologies welding electrodes (DSTU) through the introduction of the latest developments, the establishment of careful control over each technological operation, as well as the use of only high quality raw materials, we have achieved a significant improvement in the technological and consumer-oriented characteristics of our products.

Electrodes produced by **“DZZM SILA” Ltd.**are electrodes of the new generation!

The range of products manufactured by our company covers all current brands of electrodes on the Ukrainian market.

DZZM SILA is a top player in Ukraine for the manufacture of electrodes under the trademark of our customers (Private label).

To carry out the tasks set by clients for Private Label to achieve competitive advantages over other manufacturers of electrodes DZZM SILA has implemented the following:

- the end of each electrode is painted in the color of the Trademark;
- each electrode is marked with the name of the trademark;
- coated cardboard packing made in Germany;
- internal branded polyethylene;
- external polyethylene with minimization of seams on the package;
- glossy corrugated box for transportation with a design;
- aromatic carbohydrate is addedduring production of an electrode for a unique product odor.

DNIPROWSKYI PLANT OF WELDING MATERIALS“DZZM SILA” Ltd.

ADVANTAGES OF OUR ELECTRODES

The highest quality Ukrainian wire (DSTU 2246-70) is used.

Western European raw materials are used in the electrode coating, used by leading European manufacturers of electrodes (some of them were obtained / created no more than 3 years ago).

Easy separation or self-separation of slag crust due to particle size characteristics of charge materials and method of their chemical connection.

Can be used in different weather conditions and in different climatic zones due to the introduction of special materials in the charge.

Increased corrosion resistance and high mechanical properties of the obtained seams and welded surfaces are ensured by the low content of harmful impurities in the evaporating gases.

Easy primary and secondary pilot-arc starting.

Stable arcing during welding.

Reduced (and in some brands - excluded) the probability of electrodes’sticking after welding.

Introduction of special elements into the charge of the coating and the corresponding particle size distribution of the raw material of the charge.

Reduced negative impact on the health of the welder due to a significant reduction in emissions of nitrogen oxide, carbon monoxide and other harmful substances.

Indoor use with forced ventilation, as well as significant reduction of emissions.

The high coefficient of building-up in comparison with the electrodes of other Ukrainian manufacturers makes them more cost-effective.

High level of root penetration (a root of a seam), in particular with a cold running.

DNIPROWSKYI PLANT OF WELDING MATERIALS"DZZM SILA" Ltd.

CLASSIFICATION BY APPLICATION

Household

Small, single steel welding - **E-36, E-60/13**

(Electrodes do not require special welding skills).

Stainless steel welding - **OZL-8.**

Automotive repair- **E-60/13.**

Construction of buildings and structures, infrastructure maintenance

Small and private construction (cottages) - **E-36, E-60/13.**

Professional construction of large facilities, which do not have special requirements - **ANO-4, ANO-21,**

E-60/13.

Welding of pipes **- ANO-4.**

Welding of pipes under pressure - **ANO-21, E-60/13.**

Stainless steel (drains, roofs, eaves) - **OZL-8.**

Construction of facilities in special conditions or facilities, the operation of which is subject to special requirements - **UONI 13/55.**

Production and repair enterprises

Enterprises that carry out constant and periodic repair of steel parts of machines and equipment operating in abrasive conditions, by building up - **T-590.**

Car services and companies that produce standard products made of stainless and chromium-nickel steel - **OZL-8.**

Repair and transport enterprises working with steel - **E-60/13.**

Shipbuilding - repair and construction of water transport - **UONI-13/55, E-60/13.**

Specialized enterprises (manufacture of industrial chemical / food equipment) producing products from stainless and chromium-nickel steels, to which the increased requirements apply - **CL-11.**

Industrial enterprises that produce cast iron products or carry out repairs of cast iron products - **CCH-4**

(ЦЧ-4).

DNIPROWSKYI PLANT OF WELDING MATERIALS"DZZM SILA" Ltd.

PACKAGING INFORMATION

ITEM	DIAMETER OF ELECTRODE, mm	LENGTH OF ELECTRODE, mm	PACKING WEIGHT, KG
E-60/13	3 4	350 450	1 2.5 5 5
ANO-4	3 4 5 6	250 450 450 450	1 2.5 5 5 5 5
ANO-21	3 4 5	350 450 450	1 2.5 5 5 5
E-36	3 4	350 450	1 2.5 5 5
UONI-13/55	3 4	350 450	5 5
CL-11	3	350	1
OZL-8	3	350	1
T-590	4 5	450 450	5 5
ССН (ЦЧ)-4	3 4	350 450	1 1

We are ready to consider every requirements of our customers and work on it continuously improving the technological and consumer-oriented characteristics of our products.

DNIPROWSKYI PLANT OF WELDING MATERIALS"DZZM SILA" Ltd.

UNIVERSAL ELECTRODES E-60/13

Standard	Standards compliance	Mark sign
DSTU 9466-75 TUU 25.9-40109236-001:2016	DSTU 9467 type Э46 E 38 2 R R 12 on EN 499 E 6013 on AWS/ASME SFA 5.1	Э46-Е60/13-d-УД TUU 25.9-40109236-001:2016

Purpose and Scope

Electrodes E-60/13 aremade to replace electrodes of brands: MR-3, ANO-4, OZS-4, OZS-12, ANO-21 and ANO-36 They are significantly exceeding them in welding and technological characteristics and do not compromise on quality to the best European analogues. They areused in the process of manual arc welding of ordinary and essential structures of low-carbon steel grades with a carbon content of not more than 0.25% of all groups and degrees of deoxidation. They are recommended for welding of shipbuilding steels of A and D classes, production of the vessels working under pressure, forconstruction and mounting works and welding in living environment. Electrodesare also ideal for tacking and short welded joints. High resistance of arc combustion at low currents allows using low-power small welding power supply with no-load voltage no more than 50V. Suitable for AC or DC welding of any polarity.

BAKING OF ELECTRODES BEFORE WELDING

Under normal storage conditions, they do not require baking before welding.
In case of moistening, bake before welding at 160 ° C (+/- 10%) for 60 minutes.

WELDING CONDITIONS

Welding space position	Low	Vertical	Overhead
Current strength,A, d-r 3 mm	120	90-130	90-110
Current strength,A, d-r 4 mm	140	130-160	140-1600

MECHANICAL CHARACTERISTICS OF WELD METAL

Yield strength, Н/мм²	Temporary resistance, Н/мм²	Relative elongation, %	Impact strength, J/c m²
380	≤470	≤20	≤70

Special characteristics

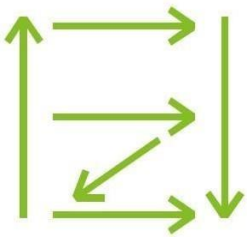
They are characterized by low quantity and low intensity of aerosol emission in during welding process, which allows carrying out welding works indoors without special ventilating equipment.
They are rust-resisting and are not affected by other surface contaminants of the metal, provide excellent formation of the weld metal and slag crust detachment of the slag crust.
Their specific small-scale structure ofthe weld metal allows carrying out welding of front weld without subsequent machining. Besides, their main properties include: instantaneous arc agitation at the primary and secondaryarcing, stable arcing in different welding space positions and at
variable distance between the electrode and the surface of the welded part, low spraying of the electrode metal, uniform melting of the electrode coating.

WELDING SPACE POSITION

Electrodes with a diameter of 3 and 4 mm are suitable for welding in all space positions.

METAL CHEMISTRY

Mn	Si	C	P
0.3-0.5	0.10-0.30	≤0.10	≤0.03



DNIPROWSKYI PLANT OF WELDING MATERIALS"DZZM SILA" Ltd.

UNIVERSAL ELECTRODES ANO-4

Standard	Standards compliance	Mark
DSTU 9466-75	DSTU 9467 Э46	Э46-АНО-4-d-УД
ISO 2560 E 43 2 R21		
TUU 25.9-40109236-001:2016	DIN 1913 E 43 32 R21	E 430 (3) – P 21

Purpose and Scope

Electrodes are intended for manual arc welding of conventional and critical structure from low-carbon grades of steels with the carbon content no more than 0,25% as per DSTU 2651 / DEST 380-2005(Steel 0, Steel 1, Steel 2, Steel 3 Steel 10, Steel 20 and others),all groups (A, B, C) and degrees of deoxidation(KS, SS, US) as per DEST 380-94 and DEST 1050 -88(05us/unkilled steel), 08 us, 08ss/semikilled steel, 08, 10us, 10ss, 10,15us, 15ss, 15,20us, 20ss, 20). They are used for butt and filletoverlap welding with a thickness of 3 to 20 mm. Also, they are used for tube welding in the horizontal-fixed position.
They are compatible with alternating current from the welding machine at no-load voltage of not less than 50V and direct current of any polarity.

BAKING OF ELECTRODES BEFORE WELDING

Under normal storage conditions, they do not require baking before welding.
In case of moistening, bake before welding at 180 ° C (+/- 10%) for 40 minutes.

WELDING CONDITIONS

Welding space position	Low	Vertical	Overhead
Current strength, A, d-r 3 mm	110-140	90-100	100-120
Current strength, A, d-r 4 mm	170-210	140-150	140-170
Current strength, A, d-r 5 mm	190-270	150-170	-
Current strength, A, d-r 6 mm	210-330	170-200	-

MECHANICAL CHARACTERISTICS OF WELD METAL

Yield strength, Н/мм²	Temporary resistance, Н/мм²	KCV>34 J/sm²at tem-re	Impact strength, J/c m²
450	≤18	-20	≤78

THEY PROVIDE

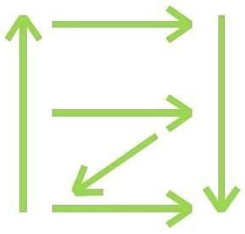
- Consumption of electrodes per 1 kg of weld metal is not more than 1.75 kg.
- Small losses of metal caused by spraying.
- Obtaining a flawlesswelding jointwhile welding at power up welding conditions.
- Good formation of weld metal.
- High resistance of weld metal against the formation of weld porosity and autocracks.
- Easy initial and secondary striking of the arc.
- Stable arcing.
- Formation of easy separated slag.
- Welding of wet, rusty, poorly cleaned metal.

WELDING SPACE POSITION

Electrodes with a diameter of 3 and 4 mm are suitable for welding in all space positions except downstairs. Electrodes with a diameter
5 and 6 mm are suitable for welding in the lower, horizontal on the vertical plane andvertical up positions.

METAL CHEMISTRY

Mn	Si	C	P	S
0.55-0.8	≤0.1	≤0.2	≤0.045	≤0.04



DNIPROWSKYI PLANT OF WELDING MATERIALS"DZZM SILA" Ltd.

UNIVERSAL ELECTRODES ANO-21

Standard	Standards compliance			Mark
DSTU 9466-75	DSTU 9467	Э46		Э46-АНО-21-d-УД
ISO 2560 E 43 2 RC 11				
TUU 25.9-40109236-001:2016	DIN 1913	E 43 32 R(C) 11	E 432 (3) – P 11	
	AWS A5.1	E 6013		

Purpose and Scope

Electrodes are intended for manual arc welding of conventional and critical structure from low-carbon grades of steels with the carbon content no more than 0,25% as per DSTU 2651 / DEST 380-2005(Steel 0, Steel 1, Steel 2, Steel 3 Steel 10, Steel 20 and others), all groups (A, B, C) and degrees of deoxidation(KS, SS, US) as per DEST 380-94 and DEST 1050 -88 (05us/unkilled steel, 08 us, 08 ss/semikilled steel, 08, 10us, 10ss, 10,15us, 15ss, 15,20us,20ss, 20). They are used for butt and fillet overlap welding with a thickness of 3 to 20 mm. In addition, they are used for tube welding in the horizontal-fixed position.
They are compatible with alternating current from the welding machine at no-load voltage of not less than 50V and direct current of any polarity.

BAKING OF ELECTRODES BEFORE WELDING

Under normal storage conditions, they do not require baking before welding.
In case of moistening, bake before welding at 180 ° C (+/- 10%) for 40 minutes.

WELDING CONDITIONS

Welding space position	Low	Vertical	Overhead
Current strength, A, d-r 3 mm	100-140	80-100	100-130
Current strength, A, d-r 4 mm	160-210	130	140-180
Current strength, A, d-r 5 mm	190-270	150-170	-

MECHANICAL CHARACTERISTICS OF WELD METAL

Yield strength, Н/мм²	Temporary resistance, Н/мм²	KCV>34 J/sm²at tem-re	Impact strength, J/c m²
450	≤18	-20	≤78

THEY PROVIDE

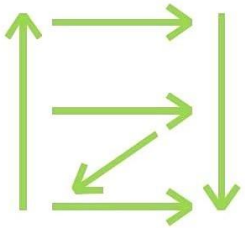
- Consumption of electrodes per 1 kg of weld metal is not more than 1.65 kg.
- Small losses of metal caused by spraying.
- Obtaining a flawless welding joint while welding at power up welding conditions.
- Good formation of weld metal.
- High resistance of weld metal against the formation of weld porosity and autocracks.
- Easy initial and secondary striking of the arc.
- Stable arcing.
- Formation of easy separated slag.
- Welding of wet, rusty, poorly cleaned metal.

WELDING SPACE POSITION

Electrodes with a diameter of 3 and 4 mm are suitable for welding in all space positions except downstairs. Electrodes with a diameter
5 are suitable for welding in the lower, horizontal on the vertical plane andvertical up positions.

METAL CHEMISTRY

Mn	Si	C	P	S
0.50-0.8	≤0.1	≤0.2	≤0.045	≤0.04



DNIPROWSKYI PLANT OF WELDING MATERIALS"DZZM SILA" Ltd.

UNIVERSAL ELECTRODES MP-3

Standard	Standards compliance		Mark
DSTU 9466-75	DSTU 9467	Э46	Э46-МР-3-d-УД
ISO 2560 E 43 2 RC 11			
TUU 25.9-40109236-001:2016	DIN 1913	E 43 32 R(C) 11	E 432 (3) – P 11
	AWS A5.1	E 6013	

Purpose and Scope

Electrodes are intended for manual arc welding of conventional and critical structure from low-carbon grades of steels with the carbon content no more than 0,25% as per DSTU 2651 / DEST 380-2005(Steel 0, Steel 1, Steel 2, Steel 3 Steel 10, Steel 20 and others), all groups (A, B, C) and degrees of deoxidation(KS, SS, US) as per DEST 380-94 and DEST 1050 -88 (05us/unkilled steel, 08 us, 08ss/semikilled steel, 08, 10us, 10ss, 10,15us, 15ss, 15,20us, 20ss, 20). They are used for butt and fillet overlap welding with a thickness of 3 to 20 mm. Also, they are used for tube welding in the horizontal-fixed position.
They are compatible with alternating current from the welding machine at no-load voltage of not less than 50V and direct current of any polarity.

BAKING OF ELECTRODES BEFORE WELDING

Under normal storage conditions, they do not require baking before welding.
In case of moistening, bake before welding at 180 ° C (+/- 10%) for 40 minutes.

WELDING CONDITIONS

Welding space position	Low	Vertical	Overhead
Current strength, A, d-r 3 mm	100-140	80-100	100-130
Current strength, A, d-r 4 mm	160-210	130	140-180
Current strength, A, d-r 5 mm	190-270	150-170	-

MECHANICAL CHARACTERISTICS OF WELD METAL

Yield strength, Н/мм²	Temporary resistance, Н/мм²	KCV>34 J/sm²at tem-re	Impact strength, J/c m²
450	≤18	-20	≤78

THEY PROVIDE

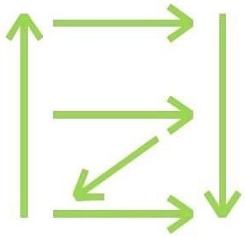
- Consumption of electrodes per 1 kg of weld metal is not more than 1.65 kg.
- Small losses of metal caused by spraying.
- Obtaining a flawless welding joint while welding at power up welding conditions.
- Good formation of weld metal.
- High resistance of weld metal against the formation of weld porosity and autocracks.
- Easy initial and secondary striking of the arc.
- Stable arcing.
- Formation of easy separated slag.
- Welding of wet, rusty, poorly cleaned metal.

WELDING SPACE POSITION

Electrodes with a diameter of 3 and 4 mm are suitable for welding in all space positions except downstairs. Electrodes with a diameter
5 are suitable for welding in the lower, horizontal on the vertical plane and vertical up positions.

METAL CHEMISTRY

Mn	Si	C	P	S
0.50-0.8	≤0.1	≤0.2	≤0.045	≤0.04



DNIPROWSKYI PLANT OF WELDING MATERIALS"DZZM SILA" Ltd.

UNIVERSAL ELECTRODES UONI-13/55

Standard	Standards compliance		Mark
DSTU 9466-75	DSTU 9467	Э50АЭ50-UONI-13/55-d-УД	
ISO 2560 E 43 4 B 20			
TUU 25.9-40109236-001:2016	DIN 1913	E 51 43 B	E 514- Б20
	AWS A5.1	20 E 7015	

Purpose and Scope

Electrodes are intended for welding of high-strength constructions of carbon (types: 08, 20, 20L, St 3)and low-alloy steel (types 26GS, 09G2S), S235-S355, P235-P355, E295 (according to EN 10027-1, EN 10028-2, EN 10028-3).
They are widely used for metal weld with increased
requirements for ductility and strength even while working at low temperatures.

Recommendations

The electrodes ensure the stability of the arc and the formation of the metal frame with high resistance to crystallization cracking and low hydrogen content. Welding of especially high-strength metal constructions operating at dynamic stress in conditions of low temperature (up to -40 ° C), vessels operating under pressure and ship steel constructions is allowed.
Larger thickness – metal welding and welding of base defects.

THEY PROVIDE

- Consumption of electrodes per 1 kg of weld metal is not more than 1.65 kg.
- Small losses of metal caused by spraying.
- Obtaining a flawless welding from the temple resistance to the formation of crystallization cracks.
- Stable arcing.

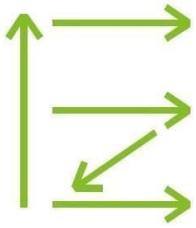
- Obtainingof a metal weldwith a specific metallurgicalpuritywithlowhydrogencontent.
- Theformationof a slagcrustwitheasyseparation
- Relatively easy initial and secondary striking of the arc.

WELDING CONDITIONS

Current strength, A, d-r 3 mm	80-140	70-90	70-90
Current strength, A, d-r 4 mm	130-160	130-140	130-140

METAL CHEMISTRY

0.65-1.2	≤0.18-0,50	0.11	≤0.035	≤0.03



MECHANICAL CHARACTERISTICS OF WELD METAL

Temporary resistance, Н/мм²	Relative position,%	KCV>34 J/sm²at tem-re	Impact strength, J/c m²
450	≤20	-40	≤127

DNIPROWSKYI PLANT OF WELDING MATERIALS "DZZM SILA" Ltd.

UNIVERSAL ELECTRODES CL-11

Standard	Standards compliance	Mark
DSTU 9466-75	DSTU 10052 Э-08Х20Н9Г2Б	Э-08Х20Н9Г2Б-ЦЛ-11
ISO 3581 E 19.9 Nb B 20		
TUU 25.9-40109236-001:2016	DIN 8556 E 19.9 Nb B 20ВДЕ4-2005-Б20	
AWS A5.4 E 347-15		

Purpose and Scope

Electrodes are intended for manual arc welding of conventional and critical structure from low-carbon grades of steels with the carbon content no more than 0,25% as per DSTU 2651 / DEST 380-2005(Steel 0, Steel 1, Steel 2, Steel 3 Steel 10, Steel 20 and others), all groups (A, B, C) and degrees of deoxidation (US, SS, KS) as per DEST 380-94 and DEST 1050 -88 (05us/unkilled steel, 08 us, 08 ss/semikilled steel, 08, 10us, 10ss, 10,15us, 15ss, 15,20us, 20ss, 20). They are used for butt and fillet overlap welding with a thickness of 2 to 15 mm. In addition, they areused for welding non-rotating joints of water pipes and low pressure pipelines, as well as for welding the root weld of metal. Allow carrying out welding at extremely low currents - are excellent for work with household networks. It is developed for use in a household.
They are compatible with alternating current from the welding machine at no-load voltage of not less than 50V and direct current of any polarity.

BAKING OF ELECTRODES BEFORE WELDING

Under normal storage conditions, they do not require baking before welding.
In case of moistening, bake before welding at 180 -200°C for 60 minutes.

WELDING CONDITIONS

Welding space position	Low	Vertical	Overhead
Current strength, A, d-r 3 mm	70-90	50-80	50-80

MECHANICAL CHARACTERISTICS OF WELD METAL

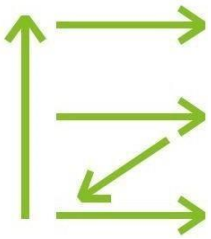
Temporary resistance, Н/мм²	Relative position,%	Impact strength, J/c m²
540	≤22	≤78

THEY PROVIDE

- Consumption of electrodes per 1 kg of weld metal is not more than 1.75 kg.
- Building-up productivity - 1.5 kg / h.
- Building-up in the coefficient - 11g / Ah.
- The content of the ferrite phase in the weld metal is 2.5-10%.
- Obtainingof a metalweldwith a specific metallurgicalpuritywithlowhydrogencontent.
- Small losses of metal caused by spraying.
- They are rust resistingand high-strength and have excellent marketable appearance.
- Relatively easy initial and secondary striking of the arc.
- Stable arcing.
- Formation of easy separated slag.

METAL CHEMISTRY

Mn	Si	Mn	Cr	Ni	Nb	S	P
0.05-0.12	≤1,3	1.0-2.5	18.0-22.0	8.0-10.5	0,7-1.30	≤0.02	≤0.030



DNIPROWSKYI PLANT OF WELDING MATERIALS "DZZM SILA" Ltd.

UNIVERSAL ELECTRODES OZL-8

Standard		Standards compliance		Mark
DSTU 9466-75		DSTU 10052	Э-08Х20Н9Г2Б	Э-07Х20Н9-ОЗЛ-8-ВД
ISO 3581	E 19.9 NbB 20			
TUU 25.9-40109236-001:2016		DIN 8556	E 19.9 NbB 20	E-2004-Б20
AWS A5.4	E 347-15			

PURPOSE AND SCOPE

Electrodes are intended for welding of critical structure from corrosion-resistant and chromium-nickel steels of the 12X18H9, 08X18H10, 08X18H10T, 08X18H12B brands,
12X18H10T, 12X18H9T, 09X18H12T and such like, working in aggressive environments, when the weld metal is not subject to strict requirements forintercrystalline corrosion. Before welding, the surface of the weld metal must be cleaned of all contaminants. When welding, ensure a short arc and perform string bead welding if possible (without string bead welding).
Electrodes with a diameter of 3.0 mm are used for DC reverse polarity welding.

BAKING OF ELECTRODES BEFORE WELDING

Under normal storage conditions, they do not require baking before welding.
In case of moistening, bake before welding at 180 -200°C for 60 minutes.

WELDING CONDITIONS

Welding space position	Low	Vertical	Overhead
Current strength, A, d-r 3 mm	50-90	50-60	50-60

MECHANICAL CHARACTERISTICS OF WELD METAL

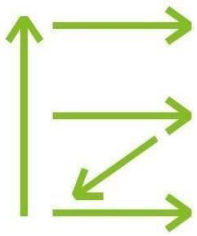
Temporary resistance, Н/мм²	Relative position,%	Impact strength, J/c m²
540	≤30	≤100

THEY PROVIDE

- Consumption of electrodes per 1 kg of weld metal is not more than 1.2 – 1.4 kg.
- Building-up in the coefficient –12 - 14 g / Ah.
The content of the ferrite phase in the weld metal is 2- 8%.
- Small losses of metal caused by spraying.
- They are rust resisting and high-strength and have excellent marketable appearance.
- Obtainingof a metalweldwith a specific metallurgicalpuritywithlowhydrogencontent.
- Relatively easy initial and secondary striking of the arc.
- Stable arcing.
- Formation of easy separated slag.

METAL CHEMISTRY

Mn	Si	Mn	Cr	Ni	Nb	S	P
≤0.09	0.3-1.2	1.0-2.0	18.0-21.5	7.5-10	0,7-1.30	≤0.020	≤0.030



DNIPROWSKYI PLANT OF WELDING MATERIALS "DZZM SILA" Ltd.

UNIVERSAL ELECTRODES T-590

Standard	Standards compliance	Mark
DSTU 9466-75	DSTU 10051-75E 10-UM-60GRЭ320X25C2ГР-T-590-НГ	
DIN 8555	E-750/60-1-П42	

PURPOSE AND SCOPE

The electrodes are used for surfacing of protective coatings and restoration of steel and cast iron parts of machines operating in abrasive wear conditions with medium shocs. They are used for surfacing of teeth on buckets of excavators working with sandy soil, knives of road machines, plowshares, disks and paws of cultivators of agricultural machines, blades of augers of mixing machines, blades of smoke extractors, cheeks of crushers, etc. Direct current of direct polarity is used for performance of works, thus building-up is carried out either with string bead welding orlight string bead welding.

In addition,building-up can be performedat idle by alternating current more than 60B. Building-up of steel parts is carried out no more than in two layers to avoid crumbling; cast iron parts - only in one layer. With significant wear of the part, the lower layers are welded with other electrodes, the choice of which is determined by the composition of the base metal.

The presence of transverse microcracking is an indicator of high hardness of building-up.

HARDNESS OF BUILDING-UP METAL

Without heat treatment it is possible to obtain a welded element with less ductility, but a fairly high hardness HRC 56.5-62.5.

WELDING CONDITIONS

Welding space position	Low
Current strength, A, d-r 3 mm	200-220
Current strength, A, d-r 4 mm	250-280

THEY PROVIDE

- Consumption of electrodes per 1 kg of weld metal is not more than 1.2 – 1.4 kg.
- Building-up in the coefficient –12 - 14 g / Ah.
- The content of the ferrite phase in the weld metal is 2- 8%.
- Small losses of metal with building-up.
- They are rust resisting and high-strength and have excellent marketable appearance.
- Obtainingof a metalweldwith a specific metallurgicalpuritywithlowhydrogencontent.
- Relatively easy initial and secondary striking of the arc.
- Stable arcing.
- Formation of easy separated slag.

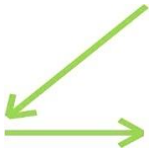
BAKING OF ELECTRODES BEFORE WELDING

Under normal storage conditions, they do not require baking before welding.

In case of moistening, bake before welding at 240-260°C for 60 minutes.

METAL CHEMISTRY

Mn	B	Si	C	Cr	Nb	S	P
1.0-1.5	0.5-1.5	2.0-2.5	2.9-3.5	22.5-27.0	0,7-1.30	≤0.035	≤0.04



UNIVERSAL ELECTRODES ЦЧ-4

Standard	Standards compliance	Mark
DSTU 9466-75	ЦЧ-4	
TUU 25.9-40109236-001:2002БП40		

PURPOSE AND SCOPE

The electrodes are used for cold manual arc welding of damaged parts made of high-strength and gray iron. Welding of cast iron and steel structural joints.
Welding of defects in castings from gray and high-strength cast iron.
For pre-building-up of the first one-two layers on worn-out cast iron parts, the followingbuilding-up with other special electrodes.
Work with these electrodes is carried out with a direct current of return polarity or alternating current from the transformer with an idle voltage not less than 70В

BAKING OF ELECTRODES BEFORE WELDING
Under normal storage conditions, they do not require baking before welding.
In case of moistening, bake before welding at 350°C for 60 minutes.

WELDING CONDITIONS

Welding space position	Low
Current strength, A, d-r 3 mm	65-80
Current strength, A, d-r 4 mm	90-120

MECHANICAL CHARACTERISTICS OF WELD METAL

Temporary resistance, Н/мм²	Relative position,%	Impact strength, J/sm²	Hardness,%
450-510	≤22	≤78	НВ 160-190

THEY PROVIDE

- Consumption of electrodes per 1 kg of weld metal is not more than 1.8 kg.
- Building-up coefficient – 18 g / Ah for Ø4 mm.
- Small losses of metal with building-up.
- They are rust resisting and high-strength and have excellent marketable appearance.
- Building-up metal yield – 118%.
- Obtainingof a metalweldwith a specific metallurgicalpuritywithlowhydrogencontent.
- Relatively easy initial and secondary striking of the arc.
- Stable arcing.
- Formation of easy separated slag.

METAL CHEMISTRY

Mn	Si	C	V	S	P
0.4-1.0	0.8-1.2	0.5-0.9	0.5-0.9	≤0.03	≤0.035