

STANDARD/SPECIFICATION

NUMBER

ALUMINIUM AND ALUMINIUM
ALLOY FILLER WIRE

GOST 7871-75

SUPERSEDES
GOST 7871-63

SHEET: 1 OF 8

This standard is applicable to drawn or extruded wire from aluminium or aluminium alloys to be used as filler wire in welding.

1. ASSORTMENT.

1.1. Diameter of wire and their maximum deviations should correspond to that given in table 1.

TABLE: 1

Diameter of wire	MM Maximum deviation in diameter	
	drawn wires	extruded wires
0.80	-0.060	-
0.90	-0.060	-
1.00	-0.060	-
1.12	-0.060	-
1.25	-0.060	-
1.40	-0.060	-
1.60	-0.060	-
1.80	-0.080	-
2.00	-0.080	-
2.25	-0.080	-
2.50	-0.080	-
2.80	-0.080	-
3.15	-0.080	-
3.55	-0.096	-
4.00	-0.096	-
4.50	-0.096	-0.30
5.00	-0.096	-0.30
5.60	-0.096	-0.30
6.30	-0.096	-0.30
7.10	-0.116	-0.36
8.00	-0.116	-0.36
9.00	-0.116	-0.36
10.00	-0.140	-0.36
11.20	-	-0.70
12.50	-	-0.70

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Example of conventional designation of welding wire from aluminium alloy of grade AM75 having dia. 2.00 mm is:

2-SvAM₇₅ GOST 7871-75

2. TECHNICAL REQUIREMENTS.

2.1. Wire is made from aluminium and aluminium alloy of grade and chemical composition as given in table 2

2.2 Ovality should not exceed the maximum deviation on size given in table 1.

2.3. Wires of dia. 4.00 mm and less are subjected to chemical treatment. After treatment the wire should have shining surface in which the roughness should be (Ra) as per GOST 2789-73-max. 2.5 microns.

Till 1.1.79 wires of dia. 4.00 mm or less have been supplied without chemical treatment in coils. From 1.1.79 wires of dia. 4.00 mm. or less without surface chemical treatment are being supplied in coils as per the order of the customer.

2.4. Wire with chemically treated surface is wound on spool by mechanical means, the wires being in rows without kinks or gaps.

Ends of wire should come out on the sides so that they can be easily located.

Top-most layer of winding should be 5-7 mm, below the spool tip where spool dia. is 100 mm; and for spool of dia. 200, 300 and 430 mm the toplayer should be 10-12 mm below.

2.5. Wire of dia 4.00 mm and below from alloys of grades SvA97, SvA85T, SvA5 and SvAM+S is wound on the spool in cold hardened condition when tensile strength is min. 10 kg/mm². and wire made from alloys SvAM63, SvAM65, Sv1557, SvAM653 SvAM663, SvAM661, SvAK5, SvAK10, and Sv1201 as per order of the customer is wound it annealed or cold hardened conditions.

2.6. Size of spool and length of wire should correspond to figures given in appendix.

2.7. Wire in a spool should consist of a single length. Butt welding of wire of a single melt is permitted. In this case the wire at the welded places should correspond to the requirements of this standard.

2.8. Wire of dia. 4.5 mm and more is supplied without chemical treatment in spools or in coils of length min. 1 m.

Inside dia. of the coil should be max. 750 mm.

2.9. The wire in coil should have clean surface without scales, cracks, laps, dents, burrs or kinks.

Local surface defects of the wire are not allowed if they lead the wire diameter beyond the negative tolerance after rectification.

White and dark spots without roughness and also temper colour are permitted on the surface of wire.

3. ACCEPTANCE RULES

3.1. Wire is offered in batches for acceptance. The batch should comprise of wires of same dia; same grade of alloy, same melt and same material condition. Weight of a batch is not limited.

3.2. Each spool or each coil of the batch is subjected to checking of sizes.

3.3. Each spool or coil of wire is subjected to checking for surface quality.

3.4. 3% sample of spool or coil from each batch, but not less than two spools or coils, are subjected to checking for chemical composition.

Chemical composition, %

Aluminum	Main components							Impurity maximum						
	Magnesium	Manganese	Iron	Silicon	Titanium	Beryllium	Zinc	Iron	Silicon	Zinc	Copper	Magnesium	Other impurity	Total impurity
99.97	-	-	-	-	-	-	-	0.015	0.015	-	0.005	-	0.01	0.03
99.9	-	-	-	-	0.2-0.5	-	-	0.04	0.04	0.02	0.01	0.01	-	0.08
99.5	-	-	0.2-0.35	0.10-0.25	-	-	-	-	-	-	0.015	-	0.05	0.5
99.0	-	1.0-1.5	0.3-0.5	0.2-0.4	-	-	-	-	-	0.1	0.2	0.05	0.1	1.35
do	3.2-3.8	0.3-0.6	-	0.5-0.8	-	-	-	0.5	-	0.2	0.05	-	0.1	0.85
do	4.0-4.5	0.5-0.8	-	Chromium 0.05-0.25	0.05-0.15	0.002-0.005	-	0.4	0.4	0.2	0.05	-	0.1	1.15
do	4.8-5.8	0.5-0.8	-	-	0.1-0.2	0.002-0.005	-	0.4	0.4	0.2	0.05	-	0.1	1.4
do	4.5-5.5	0.2-0.6	-	-	Chromium 0.07-0.15	0.002-0.005	0.2-0.35	0.3	0.15	-	0.05	-	0.1	0.6
do	5.8-6.8	0.5-0.8	-	-	0.1-0.2	0.002-0.005	-	0.4	0.4	0.2	0.1	-	0.1	1.2
do	5.8-6.8	0.5-0.8	-	-	-	0.002-0.005	0.15-0.35	0.05	0.05	0.05	0.05	-	0.001	0.15
do	5.5-6.5	0.8-1.1	-	-	-	0.0001-0.0003	0.002-0.012	0.4	0.4	0.2	0.05	-	0.1	1.15
do	-	-	-	4.5-6.0	0.1-0.2	-	-	0.6	-	Zinc & tin 0.1	0.2	-	0.1	1.0
do	-	-	-	7.0-10.0	-	-	-	0.6	-	0.2	0.1	0.10	0.1	1.1
do	Copper 6.0-6.8	0.2-0.4	-	Vanadium 0.05-0.15	0.1-0.2	0.0001-0.0003	0.1-0.25	0.15	0.08	0.05	-	0.02	0.001	0.3

For all grades excepting SvAMG3, SvAK5 and SvAK10 ratio between content of iron and silicon should be more than unity.

Content of beryllium is fixed based on furnace charge.

For all grades SvAMG3, SvAK5, SvAK10 content of residual titanium is permitted upto 0.15%

On the order of consumer, wires from alloy of grade SvAMG5 is manufactured with hydrogen content max. 0.4 cm³ in 100 g of metal

In column other impurities are included impurities, whose range of content is not indicated in the table contents of other impurities are not defined, but are guaranteed by the manufacturer.

For order of the customer content of iron in grade SvAK5 should not be more than 0.3%

Wires of grade SvAK10 are manufactured by extrusion.

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It is permitted to carryout inspection of chemical composition of each melt at manufacturer's factory.

3.5. For checking mechanical properties of wire, 2% should be taken, but not less than two spools or coils.

3.6. If unsatisfactory test results are obtained even for one of the properties, carryout repeated testing for the same on double the quantity of sample taken from the same batch.

Results of repeated test are applicable for the whole batch.

4. TEST METHODS.

4.1. Diameter of wire is measured by micrometer in two mutually perpendicular directions at the beginning and end portions of the wire of each spool or coil.

4.2 Chemical composition is checked as per GOST 11739-66 GOST 11740-66, GOST 11742-66, GOST 11744-66, GOST 11746-66 to GOST 11748-66, GOST 11753-66, GOST 11755-66, GOST 11759-66, GOST 12698-67, GOST 12702-57, GOST 12706-67.

Sample for checking chemical composition is taken from both the ends of the spool or coil selected for inspection.

Inspection of surface roughness is done as per standard technical documents, approved in the established order.

5. MARKING, PACKING, TRANSPORTATION & STORAGE.

5.1. Each spool should be provided with a tag giving following information:

- a) description or consignment sign of the manufacturer;
- b) conventional designation of the wire;
- c) batch number;
- d) weight of the wire
- e) date of chemical treatment and sealing
- f) condition of metal (M-annealed, N-cold hardened).

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5.2. Spool containing wire is put in polyethylene bag containing dehydrated silicagel packet indicator (GOST 8984-75) which is sealed when relative humidity of surrounding atmosphere is less than 20% within 30 min. after chemical treatment.

5.3.. Airtightness of packing is judged from the colour of silicagel packet indicator. Airtightness is considered in order if the silicagel powder of the indicator maintains pink colour.

5.4. Sealed polyethylene bag is packed in cardboard, plastic or wooden box.

5.5. Marking is done as per GOST 14192-71 by writing down following additional information:

- a) description or consignment sign of manufacturer;
- b) conventional designation of the wire;
- c) melt number
- d) caution sign "Keep away from moisture"
- e) date of manufacture

5.6. Preservation and packing of wire in coils or spools is done as per GOST 9.011-73.

Based on the order of the customer the wires in coils or spools may be despatched without packing or preservation. In this case the manufacturer does not take responsibility for damage or corrosion of surface of wire during transit and storage

5.7. Each batch of wire under supply is accompanied by a document certifying its quality. The document should furnish.

- a) description or consignment marking of the manufacturer
- b) conventional designation of the wire;
- c) melt number.

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- d) number of spools or coils and net wt. of the wire in the batch:
- e) actual chemical composition of wire and hydrogen content in the melt.

6. GUARANTEE OF THE MANUFACTURER

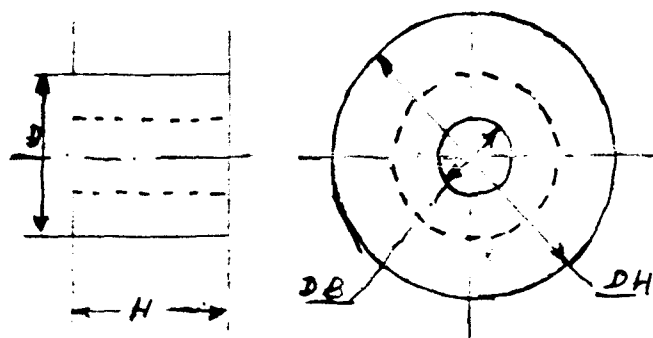
6.1. The manufacturer guarantees that the wires correspond to the requirements of the present standard if they are stored in sealed packing.

Guarantee period for storage of wire is - max. 1 year from the date of manufacture.

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Appendix.
(reference)

SIZE OF SPOOL FOR ALUMINIUM WIRE:



D_H	D_B mm	D	H	Diameter of wire in mm	Length of wire in mm Nominal Tolerances.
100	16.5	50	45	0.80	400
				0.90	250
				1.00	180
				1.12	170
200	51.5	100	55	1.25	500
				1.40	450
				1.60	340
				1.80	300
				2.00	290
300	51.5	200	100	2.00	900
				2.24	600
				2.50	450
				2.80	370
480	51.5	300	100	3.15	890
				3.55	670
				4.00	520

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