

TITARC® (H01N2-D) 100v, welding cable

Application for use with hand-held electrodes at 100 V.

Description

HELUKABEL B.V. is a specialist in flexible cables and for several years the distributor for the extremely safe-to-use, very flexible and robust arc welding electrode support TITARC® cables, for the Netherlands.

The construction of conducting cores, particularly for "extra-flexible" models, was designed to make them very flexible and keep them in excellent resistance to deformation.

Jacket-casings are made of cross-linked synthetic elastomer with high mechanical strength.

Their exceptional performances guarantee:

- High flexibility and robustness in use,
- Unequalled safety in use, due to the cross-linked insulation that gives good resistance against splashes of molten metal,
- Good resistance to radiated heat,
- Good resistance to high temperatures making them capable of supporting a permanent temperature of 85°C.

Standardization

In 1990 CENELEC published a European standardization document on cables for arc welding (HD 2-6-S1).

This harmonization document defines the following two models:

- The extra-flexible cable model H01 N2-E, has the same main properties as the old UTE U100SSN model. Its very good flexibility in use makes it particularly suitable for the power supply of manual electrode supports.
- The H01 N2-D flexible model has the same main properties as the former model VDE 0250/803, NSLFFÖ-U series. This model is particularly recommended for wiring of robots and welding robots.

Since the factory has obtained qualification from official approval organizations (particularly the UTE) for these two models of harmonized cables, their use is authorized without any other formality in all EEC and EFTA countries that are members of CENELEC (Austria, Germany, Belgium, Denmark, Spain, Finland, France, Greece, Iceland, Ireland, Italy, Luxembourg, Norway, Netherlands, Portugal, United Kingdom, Sweden, Switzerland).

Cable model H01 N2-D also complies with IEC 60245-6 international standard (cable type 245 IEC 82) for the cross-sections concerned. There is no international IEC standard at the present time for models H01 N2-E.

Voltage drop

For long cable runs, it may be necessary to choose the cable dimensions as a function of the voltage drop. The values given below are valid for a 10 meter cable carrying 100 amperes. Values should be increased pro-rata for longer cables and higher currents. Values in the table are applicable only to dc circuits. Values will be higher for ac circuits and will depend on the spacing between the two cables forming the welding circuit. In order to reduce the effects of ac current on voltage drop, the two cables forming the welding circuit must be kept as close as possible. Welding cables must not be wound together during the operation.

Nominal cross section of copper core mm ²	Voltage drop for 100 A dc and 10m of cables at:		
	20°C V	60°C V	85°C V
10	1,95	2,26	2,450
16	1,24	1,45	1,560
25	0,795	0,920	0,998
35	0,565	0,654	0,709
50	0,393	0,455	0,493
70	0,277	0,321	0,348
95	0,210	0,243	0,264
120	0,164	0,190	0,206
150	0,132	0,153	0,166
185	0,108	0,125	0,136

Allowable currents

Allowable current for service in a single cycle, with a maximum period of 5 minutes.

Conducting core cross-section mm ²	Allowable current (Amperes)			
	Percentage of time on load			
	100%	85%	60%	35%
10	100	103	108	122
16	135	145	175	230
25	180	195	230	300
35	225	245	290	375
50	285	305	365	480
70	355	385	460	600
95	430	470	560	730
120	500	540	650	850
150	580	630	750	980
185	665	720	860	1120

(Table 1)

Allowable currents

Allowable currents given have been calculated on the base of IEC recommendation in publication 287, assuming the following operating and installation conditions:

- Conductor operating temperature under permanent conditions : +85°C
- Cable installed in the open air at +25°C
- Maximum allowable current under permanent conditions (100% load conditions).

The following correction factors should be applied if the ambient temperature is not equal to 25°C.

Ambient temperature (°C)	25	30	35	40	45
Multiplication factor	1	0,95	0,91	0,87	0,82

Allowable currents also depend on the load cycle (expressed in %) and the number of cycle repetitions.

Note: if a cable is used for 3 minutes every 5 minutes, the load cycle is 3/5=0.6=60%.

The tables on the following page give allowable currents in the following three forms:

Table 1: (bottom of this page) allowable current for service in a single cycle with a maximum period of 5 minutes.

Table 2: (bottom of next page) allowable current for repeated service based on a repetition period of 5 minutes.

Table 3: (bottom of next page) allowable current for repeated service based on a repetition period of 10 minutes.

For service cycles with percentages not given in the tables, use the next highest value of the percentage in service.

Service voltage

Cables are designed for welding equipment working at phase/earth voltages not exceeding 100 volts in ac or 150 volts in dc.

Guide to use:

Cenelec HD 516 "Guide to use of low voltage harmonized cables"

Usage

Duty: Heavy
 Presence of water: AD1, AD2
 Corrosive or polluting substances: AF3
 Impact: AG2
 Vibration: AH3
 Outdoor use: Temporary/permanent
 Frequent flexible: suitable
 Frequent torsion: suitable

TITARC® (H01N2-D) 100v, welding cable



Technical data

- Harmonized welding cable with cross-linked synthetic elastomer jacket, according to HD 22.6 S2
- **Conductor resistance** according to HD 383 cl. 6
- **Conductor resistance factor** See Technical Informations
- **Temperature range** flexing -25°C to +85°C fixed installation -40°C to +85°C
- **Admissible working temperature** at conductor +85°C
- **Nominal voltage** U0/U 100/100 V
- **Test voltage** 1000 V

Cable construction

- Plain copper conductors (on request tinned conductor available), extra fine stranded till 95mm² 0,16mm max, from 120 mm² 0,51mm max
- Cross-linked synthetic elastomer with high mechanical performances EMS
- Outer sheath black
- Without green-yellow marking

Properties

- Test according to DIN VDE 0482 part 265-2-1/ EN 50265-2-1/ IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Oil resistant according to VDE 0472 part 803, test method A and IEC 60540 (part 803/804)

Note

- No. wires = Guiding value, the number of individual wires are without obligation.

Application

For use between the welding generator and the hand-electrode and the workpiece. For use in the automobile industry, in shipbuilding, in transport and conveyor systems, tool making machinery, welding robots etc. These cables retain their high flexibility even under influence of ozone, light, oxygen, protective gasses, oil and petrol. The robust construction makes these cables resistant to both cold and heat as well as to flames. They are suitable for use in open spaces and in dry and damp conditions.

CE = The product is conformed with the EC Low-Voltage Directive 73/23/EEC and 93/68/EEC.

TITARC® (H01N2-D NSKFFöu): Cables with standard flexibility, bending radius: approx. 12 x CableØ

Part No.	No. cores x cross-sec. mm ²	Core diameter mm	Specified coating thickness mm	Outside diameter in mm		Copper weight kg/km	Approx. cable mass kg/m	Maximum resistance of core per unit plain copper length at 20°C Ω/km	Maximum allowable current for a 100% load cycle A
				Mini	maxi				
931002	1x16	5,2	2,0	8,8	11,0	154	204	1,210	135
931003	1x25	6,5	2,0	10,1	12,7	240	292	0,780	180
931004	1x35	7,7	2,0	11,4	14,2	336	388	0,554	225
931005	1x50	9,2	2,2	13,2	16,5	480	542	0,386	285
931006	1x70	11,0	2,4	15,3	19,2	672	756	0,272	355
931007	1x95	12,9	2,6	17,1	21,4	912	976	0,206	430
931008	1x120	14,0	2,8	19,2	24,0	1152	1221	0,161	500

H01N2-E or other sizes on request

Allowable currents

Allowable current for repeated service based on a repetition period of 5 minutes

Conducting core cross-section mm ²	Allowable current (Amperes)						
	Percentage of time on load						
	100%	85%	80%	60%	35%	20%	8%
10	100	101	102	106	119	143	206
16	135	138	140	148	173	212	314
25	180	186	189	204	244	305	460
35	225	235	239	260	317	400	608
50	285	299	305	336	415	529	811
70	355	375	383	426	531	682	1053
95	430	456	467	523	658	850	1319
120	500	532	545	613	776	1006	1565
150	580	619	634	716	911	1184	1845
185	665	711	729	826	1054	1374	2145

(Table 2)

Allowable current for repeated service based on a repetition period of 10 minutes

Conducting core cross-section mm ²	Allowable current (Amperes)						
	Percentage of time on load						
	100%	85%	80%	60%	35%	20%	8%
10	100	100	100	101	106	118	158
16	135	136	136	139	150	174	243
25	180	182	183	190	213	254	366
35	225	229	231	243	279	338	497
50	285	293	296	316	371	457	681
70	355	367	373	403	482	602	908
95	430	448	456	498	606	765	1164
120	500	524	534	587	721	917	1404
150	580	610	622	689	853	1090	1676
185	665	702	717	797	995	1277	1971

(Table 3)