

# PROTOMONT HD Rubber Flexible Cables NSSHÖU

## Application

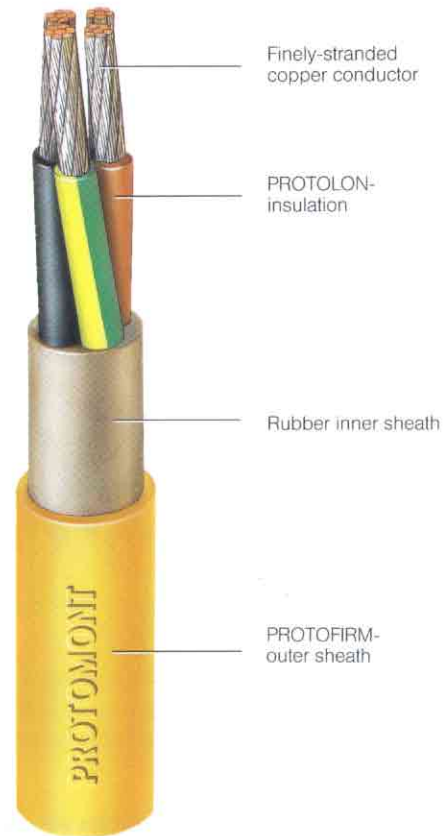
PROTOMONT® heavy duty rubber flexible cables NSSHÖU are intended for flexible connection to heavy electrical equipment used in above ground (open cut) mines and in quarries acc. to DIN VDE 0168 as well as in underground mines acc. to DIN VDE 0118, on construction sites, in industry, in industrial and agricultural plants und heavy mechanical stresses. PROTOMONT cables have been tested and accepted by the US-Mine Safety and Health Administration (MSHA). This testing is designed to confirm that the cable is flame retardant.

They can be used indoors as well as outdoors, in areas exposed to explosion hazards acc. to DIN VDE 0165 and in workshops exposed to fire risks. The cable may also be used as on board fixed cable on electric shovels, draglines, stackers, reclaimers and hoists etc. or laid direct on-to the surface.

PROTOMONT® cables with 3 and 4 cores and all other constructions where a dash (see \* in table) is imprinted on the sheath both before and after the cable marking, can be used for the power supply of electrical equipment in waste water. Due to the different and frequently varying mixture of waste water these cables are only allowed to be used in areas which can be serviced and inspected easily (upto a depth of approx. 10 m as it is usually in waste water basins).

PROTOMONT® cables are also be used in process, cooling, surface and rain water, and in combined waste water as well as in sea water, however only in special cases in ground water. By that the requirements on easy service and inspection can be reduced and there are no additional requirements HYDROFIRM(T) cables are recommended for big water depths basically and for use in drinking water. For this kind of application HYDROFIRM(T) cables have their special properties. The above water types are defined within DIN 4045 and DIN 4046.

Before use in aggressive water or water containing special compounds, the stability of the cable has to be checked individually. In other respects, DIN VDE 0298 Part 3 applies.

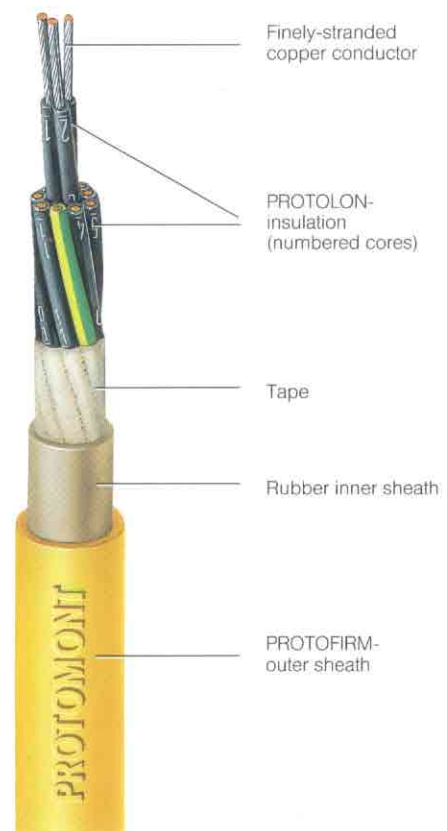


Finely-stranded copper conductor

PROTOLON-insulation

Rubber inner sheath

PROTOFIRM-outer sheath



Finely-stranded copper conductor

PROTOLON-insulation (numbered cores)

Tape

Rubber inner sheath

PROTOFIRM-outer sheath

# PROTOMONT HD

## Rubber Flexible Cables NSSHÖU

### Technical details

Design complies with DIN VDE 0250 Part 812.

- Finely-stranded conductor of tinned copper wires, Class 5 according to DIN VDE 0295 and IEC 228
- Ozone and weather resistant PROTOLON® insulation (EPR base)
- Rubber inner sheath for all multi-core constructions
- PROTOFIRM® outer sheath of synthetic vulcanized rubber, oil-resistant acc. to DIN VDE 0472 Part 803, especially tear and abrasion resistant with a very high resistance to tear propagation.

Burning behaviour according to DIN VDE 0472 Part 804, Test B.

#### Permissible temperatures

at conductor  
 permanent load 90°C  
 short circuit 200°C  
 during transportation, storage, laying, handling and operation  
 flexible - 25°C  
 fixed - 40°C

Permissible water temperature 40°C

At higher water temperature, reduced cable service life must be expected.

Colour of outer sheath:  
 Yellow

External marking:  
 The sheath is continuously marked with:

### Current carrying capacity

The values apply to a cable in continuous operation and an ambient temperature of 30 °C.

At other ambient temperatures, the current-carrying capacities must be converted with the following factors.

°C	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
f	1,15	1,12	1,08	1,04	1,00	0,96	0,91	0,87	0,82	0,76	0,71	0,65	0,58	0,50	0,40

In other respects, DIN VDE 0298 Parts 4 applies.

### Minimum bending radii

According to DIN VDE 0298 Part 3

For cables with outer diameter d	to 12 mm	to 20 mm	above 20 mm
For permanent installation	3d	4d	4d
For free movement and introduction	4d	5d	5d

### Continuous tensile stress



15 N/mm<sup>2</sup> considering the entire copper cross-section of the main conductor (acc. to DIN VDE 0298 Part 3).

### Voltages

Rated voltage	U <sub>0</sub> /U 0,6/1 kV
Maximum permissible operating voltage for Three-phase and single-phase AC operation DC operation	U <sub>0</sub> /U 0,7/1,2 kV U <sub>0</sub> /U 0,9/1,8 kV
AC test voltage	3 kV

[year of manufacture] SIEMENS <VDE> PROTOMONT NSSHÖU [No. of cores x conductor cross-section].

## Selection data

	Number of cores and conductor size mm <sup>2</sup>	Order No.	Conductor Approx. No. of strands x max. strand diameter mm	Diameter (approx.) mm	Overall diameter of cable		Net weight 1000 m approx. kg	Current-carrying capacity free in air	
					Minimum mm	Maximum mm		 A	 A
<b>PROTOMONT NSSHÖU-O</b> with black core insulation	1 x 16	5DL1 112	123 x 0,41	5,6	10,5	12,5	255	149	99
	1 x 25	5DL1 113	190 x 0,41	6,8	13,0	15,0	283	197	131
	1 x 35	5DL1 114	268 x 0,41	8,1	14,5	16,5	493	244	162
	1 x 50	5DL1 115	384 x 0,41	9,6	16,0	18,5	670	304	202
	1 x 70	5DL1 116	545 x 0,41	11,2	18,0	20,5	900	376	250
	1 x 95	5DL1 117	724 x 0,41	13,2	21,0	23,5	1140	453	301
	1 x 120	5DL1 118	926 x 0,41	14,9	22,5	25,5	1430	529	352
	1 x 150	5DL1 120	1154 x 0,41	16,6	24,5	27,5	1740	608	404
	1 x 185	5DL1 121	1407 x 0,41	18,0	27,5	31,0	2150	693	461
	1 x 240	5DL1 122	1866 x 0,41	21,2	31,0	34,5	2760	823	547
1 x 300	5DL1 123	2331 x 0,41	23,6	34,5	38,0	3480	952	633	
<b>PROTOMONT NSSHÖU-O</b> without protective conductor	* 2 x 1,5	5DL1 204	28 x 0,26	1,5	11,0	13,0	187	24	23
	* 2 x 2,5	5DL1 205	45 x 0,26	1,9	12,0	14,0	239	32	30
	* 2 x 4	5DL1 206	51 x 0,31	2,5	14,5	17,0	356	43	41
	* 3 x 2,5	5DL1 751	45 x 0,26	1,9	12,5	15,0	273	32	30
	* 3 x 4	5DL1 760	51 x 0,31	2,5	15,5	18,0	408	43	41
	* 3 x 6	5DL1 850	75 x 0,31	3,2	17,0	19,5	510	56	53
* 3 x 10	5DL1 901	77 x 0,41	4,1	20,5	23,0	770	78	74	
<b>PROTOMONT NSSHÖU-J</b> with protective conductor	* 3 x 1,5	5DL1 304	28 x 0,26	1,5	11,5	13,5	210	24	23
	* 3 x 2,5	5DL1 305	45 x 0,26	1,9	12,5	15,0	273	32	30
	* 3 x 4	5DL1 306	51 x 0,31	2,5	15,5	18,0	408	43	41
	* 3 x 6	5DL1 307	75 x 0,31	3,2	17,0	19,5	510	56	53
	* 4 x 1,5	5DL1 404	28 x 0,26	1,5	12,0	14,0	239	24	23
	* 4 x 1,5	5DL1 405	45 x 0,26	1,9	14,5	17,0	364	32	30
	* 4 x 4	5DL1 406	51 x 0,31	2,5	16,5	19,0	477	43	41
	* 4 x 6	5DL1 407	75 x 0,31	3,2	18,0	20,5	600	56	53
	* 4 x 10	5DL1 410	77 x 0,41	4,1	22,0	25,0	920	78	74
	* 4 x 16	5DL1 412	123 x 0,41	5,6	26,5	30,0	1370	104	99
* 4 x 25	5DL1 413	190 x 0,41	6,8	31,5	35,5	2010	138	131	
* 4 x 35	5DL1 414	268 x 0,41	8,1	34,5	38,5	2530	171	162	
* 4 x 50	5DL1 415	384 x 0,41	9,6	40,5	45,0	3520	213	202	
* 3 x 70/35	5DL1 716	545 x 0,41	11,2	44,5	49,0	4280	263	250	
* 3 x 95/50	5DL1 717	724 x 0,41	13,2	51,5	57,0	5710	317	301	
* 3 x 120/70	5DL1 718	926 x 0,41	14,9	57,5	63,5	7010	371	352	
5 x 1,5	5DL1 504	28 x 0,26	1,5	13,0	15,0	266	24	23	
5 x 2,5	5DL1 505	45 x 0,26	1,9	16,0	18,0	403	32	30	
5 x 4	5DL1 506	51 x 0,31	2,5	18,0	20,5	540	43	41	
5 x 6	5DL1 507	75 x 0,31	3,2	20,0	23,0	720	56	53	
5 x 10	5DL1 510	77 x 0,41	4,1	24,0	27,0	1050	78	74	
5 x 16	5DL1 512	123 x 0,41	5,6	29,0	32,5	1580	104	99	
5 x 25	5DL1 513	190 x 0,41	6,8	34,5	38,5	2320	138	131	
* 7 x 1,5	5DL1 933	28 x 0,26	1,5	16,0	18,5	416	24	23	
* 8 x 1,5	5DL1 931	28 x 0,26	1,5	17,3	19,1	462	24	23	
* 10 x 1,5	5DL1 878	28 x 0,26	1,5	18,5	21,0	540	24	23	
* 11 x 1,5	5DL1 903	28 x 0,26	1,5	19,3	20,7	580	24	23	
* 7 x 2,5	5DL1 911	45 x 0,26	1,9	18,0	21,0	530	32	30	
* 10 x 2,5	5DL1 748	45 x 0,26	1,9	21,6	23,6	760	32	30	
12 x 2,5	5DL1 755	45 x 0,26	1,9	22,5	25,0	790	32	30	
* 12 x 2,5	5DL1 923	45 x 0,26	1,9	22,5	25,0	810	32	30	
* 18 x 2,5	5DL1 937	45 x 0,26	1,9	26,0	30,0	1140	32	30	
* 18 x 2,5	5DL1 950	45 x 0,26	1,9	26,0	30,0	1180	32	30	

\* This construction can be used in waste water

Delivery on request