

Mining Cables



 Nexans

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General Information

Introduction

Machinery and equipment of the most modern design are required for deep mining. The work in mines has totally changed by the use of heavy equipment. Kabelmetal has close contacts to the mining industry and its problems right from the beginning.

Kabelmetal manufactures, supplies, and installs manifold cable designs which are adapted to the application and which have been proved in practical operation. Assistance can be given in selection of suitable cable types; amongst others the following has to be considered

- power to be transmitted or current load
- permissible or required short circuit stress
- mechanical stress
- existing regulations.

Besides mining cables to DIN VDE standards the product range also includes mining cables to international standards.



Mechanical properties of insulation and sheath materials

to DIN VDE 0207 (extract)	insulation compounds			sheath compounds				
code for compound	YI4	YI5	3GI3	YM1	YM3	YM5	GM1b	5GM5
normally based on ¹⁾	PVC	PVC	EPR	PVC	PVC	PVC	SR	CR
highest perm. operating temp. ²⁾ at cond. °C	70	70	90	70	80	90	90	90
tensile strength min. N/mm ²	12.5	12.5	4.2	12.5	12.5	12.5	4.2	15.0
elongation at break min. %	175	125	200	125	150	150	200	300
abrasion to VDE 0472 part 613 max. mm ³	—	—	—	—	—	—	—	300
tear resistance to VDE 0472 part 613 min. N/mm ²	—	—	—	—	—	—	—	30
flame retardancy to VDE 0472 part 804	—	—	—	—	—	—	—	yes
oil resistance to VDE 0472 part 803	—	—	—	—	—	—	—	yes

- ¹⁾ PVC polyvinylchloride
 SR synthetic rubber
 EPR ethylene-propylene rubber
 CR chloroprene rubber

²⁾ The cables are designed for these max. conductor temperatures. Installation regulations (e.g. DIN VDE 0118) have to be taken into consideration for individual applications, e.g. the current carrying capacities have to be reduced for ambient temperatures higher than 30 °C, as well as for different installation arrangements or cable groupings.

Conductor designs
and resistances

rated cross section mm ²	max. diameter of single strands mm	conductor resistance, max. value	
		bare strands Ω/km	metal clad strands Ω/km
1.5	0.26	13.3	13.7
2.5	0.26	7.98	8.21
4	0.31	4.95	5.09
6	0.31	3.30	3.39
10	0.41	1.91	1.95
16	0.41	1.21	1.24
25	0.41	0.780	0.795
35	0.41	0.554	0.565
50	0.41	0.386	0.393
70	0.51	0.272	0.277
95	0.51	0.206	0.210
120	0.51	0.161	0.164
150	0.51	0.129	0.132

NSSHOEU 0.6/1 kV yellow

heavy duty rubber insulated
and sheathed cable
for underground mines
to DIN VDE 0250 part 812



Construction

phase cores:

copper conductor, tinned, finely stranded — insulation of dielectrical and thermal high quality, ozone resistant ethylene-propylene-rubber (EPR), compound type 3 GI3, coloured

protection conductor:

tinned copper wires laid either over the insulation (individually concentric, coding ...3/E) or between inner and outer sheath (concentric, coding ...kon)

inner sheath filling interstices, compound type GM1b — control cores in the interstices, if required — outer sheath of chlorinated rubber-like polychloroprene (CR), oil resistant and flame retardant, tear and abrasion resistant, compound type 5GM5.

Application

NSSHOEU was developed for the special conditions in open cast and underground mines. These cables are suitable for very high mechanical stresses

Core colours

- 0 design
- single core black
- 3 cores
- black, blue, brown
- 5 cores
- black, blue, brown, black, black
- J design
- 3 cores
- green-yellow, black, blue
- 4 cores
- green-yellow, black, blue, brown
- 5 cores
- green-yellow, black, blue, brown, black
- 6 cores and more
- green-yellow, all other cores black with white numbers

Sheath colour

yellow

and for connection to mobile equipment. They can also be used in dry, moist and wet rooms, as well as outdoors.

Operating conditions

rated voltage	$U_0/U = 0.6/1$ kV
max. permissible operating voltages in 3-phase and A.C. systems in D.C. systems	$U_0/U = 0.69/1.15$ kV $U_0/U = 1.04/1.73$ kV
A.C. test voltage	3 kV
max. permissible operating temperature at conductor	+ 90 °C
permissible surface temperature in mobile condition	+ 80 °C/- 25 °C
in fixed condition	+ 80 °C/- 40 °C
smallest permissible bending radii in fixed installations	4 d
when freely moved	5 d
current carrying capacities acc. to DIN VDE 0118 and 0298 part 4	

No. of cores and rated cross section mm ²	outer diameter approx. mm	weight approx. kg/km	inductive resistance at 50 Hz approx. Ω/km
NSSH0EU-O with black cores			
1 x 16	11-14	250	—
1 x 25	13-18	400	—
1 x 35	14-18	500	—
1 x 50	16-19	700	—
1 x 70	18-21	950	—
1 x 95	20-24	1200	—
1 x 120	23-26	1500	—
1 x 150	25-28	1800	—
1 x 185	28-31	2300	—
1 x 240	32-36	3000	—
NSSH0EU-J			
3 x 1.5	11-14	250	0.11
3 x 2.5	13-16	300	0.11
4 x 1.5	13-16	300	0.11
4 x 2.5	15-18	400	0.11
4 x 4	17-20	500	0.10
4 x 6	19-22	600	0.10
4 x 10	23-26	950	0.09
4 x 16	27-30	1400	0.09
4 x 25	33-37	2100	0.09
4 x 35	35-39	2600	0.08
4 x 50	42-46	3700	0.08
4 x 70	45-49	4600	0.08
4 x 95	53-57	6300	0.08
4 x 120	59-63	7800	0.08
5 x 4	19-22	600	0.10
5 x 6	21-24	750	0.10
7 x 2.5	18-21	600	0.11
12 x 2.5	23-26	850	0.11
19 x 2.5	28-32	1200	0.11
NSSH0EU ...+... / 3E			
3 x 2.5+3 x 2.5/3E	16-19	350	0.11
3 x 4 +3 x 4 /3E	19-22	500	0.10
3 x 6 +3 x 6 /3E	20-23	600	0.09
3 x 10 +3 x 10 /3E	24-28	950	0.09
3 x 16 +3 x 16 /3E	27-30	1200	0.08
3 x 25 +3 x 16 /3E	29-33	1800	0.08
3 x 35 +3 x 16 /3E	34-38	2300	0.08
3 x 50 +3 x 25 /3E	40-44	3300	0.08
3 x 70 +3 x 35 /3E	44-48	4100	0.08
3 x 95 +3 x 50 /3E	50-55	5500	0.08
3 x 120 +3 x 70 /3E	55-60	6800	0.08
3 x 150 +3 x 70 /3E	59-64	8000	0.08

No. of cores and rated cross section mm ²	outer diameter approx. mm	weight approx. kg/km	inductive resistance at 50 Hz approx. Ω/km
NSSHOU ...+.../3E+3x ... St			
3 x 2.5+3 x 2.5/3E+3 x 1.5 St	18-20	500	0.11
3 x 4 +3 x 4 /3E+3 x 1.5 St	19-22	550	0.10
3 x 6 +3 x 6 /3E+3 x 1.5 St	20-24	650	0.10
3 x 10 +3 x 10 /3E+3 x 2.5 St	24-28	1000	0.09
3 x 16 +3 x 16 /3E+3 x 2.5 St	27-30	1300	0.09
3 x 25 +3 x 16 /3E+3 x 2.5 St	30-34	1800	0.09
3 x 35 +3 x 16 /3E+3 x 2.5 St	34-38	2400	0.08
3 x 50 +3 x 25 /3E+3 x 2.5 St	40-44	3200	0.08
3 x 70 +3 x 35 /3E+3 x 2.5 St	44-48	4200	0.08
3 x 95 +3 x 50 /3E+3 x 2.5 St	48-53	5600	0.08
3 x 120 +3 x 70 /3E+3 x 2.5 St	51-56	6800	0.08
3 x 150 +3 x 70 /3E+3 x 2.5 St	59-64	8100	0.08
NSSHOU .../... kon			
3 x 2.5/2.5 kon	15-18	350	0.10
5 x 2.5/2.5 kon	19-23	500	0.10
5 x 4 /4 kon	20-23	650	0.10
5 x 6 /6 kon	21-24	800	0.10
10 x 1.5/1.5 kon	20-24	800	0.11
10 x 2.5/2.5 kon	26-29	1100	0.10

NSSHCGEWOEU 0.6/1 kV yellow

lighting cable for mines
with control cores and
monitoring core
to DIN VDE 0250 part 812



Construction

phase cores:

copper conductor, tinned, finely stranded — insulation of dielectrical and thermal high quality, ozone resistant ethylene-propylene-rubber (EPR), compound type 3GI3, coloured — outer conducting layer of conductive rubber, cold strippable — insulation and conducting layer extruded and cross-linked in one process

control core:

copper conductor, tinned, finely stranded — insulation of dielectrical and thermal high quality, ozone resistant ethylene-propylene-rubber (EPR), compound type 3GI3, coloured

monitoring core:

copper conductor, tinned, finely stranded — jacket of conductive rubber

3 phase cores laid-up with short pitch diameter, 2 control cores and 1 monitoring core in the interstices

inner sheath filling the interstices, compound type GM1b — concentric conductor of tinned copper conductors — outer sheath of chlorinated rubber like polychloroprene (CR), oil resistant and flame retardant, compound type 5GM5

Core colours

phase cores
black, blue, brown
control cores
blue and brown
monitoring core
black

Sheath colour

yellow

Application

for underground mines as well as in tunnels, if monitoring of outer damages is required, especially for lights in mines

Operating conditions

rated voltage	$U_0/U = 0.6/1$ kV
max. permissible operating voltage	$U_0/U = 0.72/1.2$ kV
max. permissible operating temperature at conductor	+ 90 °C
permissible surface temperature	
in mobile condition	+ 80 °C/- 25 °C
in fixed condition	+ 80 °C/- 40 °C
smallest permissible bending radii	
in fixed installations	4 d
when freely moved	5 d
current carrying capacities acc. to DIN VDE 0118 and 0298 part 4	

No. of cores and rated cross section	outer diameter approx.	weight approx.	inductive resistance at 50 Hz approx.	capacity of phase cores approx.
mm ²	mm	kg/km	Ω/km	μF/km
3 x 6/6 kon + 2 x 1.5 St + 1.5 UEL	24-28	900	0.5	0.3

coal cutter cable, reinforced with control cores and individual concentric monitoring conductor to DIN VDE 0250 and DIN VDE 0118



NSSHCGEWOEU-V 0.6/1 kV yellow

Construction

phase cores:
copper conductor, tinned, finely stranded — insulation of dielectrical and thermal high quality, ozone resistant ethylene-propylene-rubber (EPR), compound type 3GI3, coloured — outer conducting layer of conductive rubber (monitoring jacket) — insulation and conducting layer extruded and cross-linked in one process

control core:
copper conductor, tinned, finely stranded — insulation of dielectrical and thermal high quality, ozone resistant ethylene-propylene-rubber (EPR), compound type 3GI3, coloured

monitoring conductor:
copper conductor, tinned, finely stranded — jacket of conductive rubber

2 control cores and the monitoring conductor laid up with short pitch diameter as a triple to meet the special requirements for monitoring functions as well as high mechanical stresses

3 phase cores laid-up with 1 triple each in the interstices

inner sheath filling the interstices, compound type GM1b — concentric reinforced protection conductor of special steel/copper strands — outer sheath of chlorinated rubber like polychloroprene (CR), oil resistant, tear and abrasion resistant, compound type 5GM5

Core colours

phase cores
black, blue, brown
covered by a black cond. layer (monitoring jacket)
control cores
blue, brown
monitoring cores black

Sheath colour

yellow

Application

for underground mines as well as in tunnels, if monitoring of outer damages is required. Suitable for very high bending stresses and moderate tensile stresses. As supply cable to mobile equipment such as coal cutting machinery, this cable is laid into drag chains (see also DIN VDE 0298 part 3)

Operating conditions

rated voltage	$U_0/U = 0.6/1$ kV
max. permissible operating voltage	$U_0/U = 0.72/1.2$ kV
max. permissible operating temperature at conductor	+ 90 °C
permissible surface temperature	
in mobile condition	+ 80 °C/- 25 °C
in fixed condition	+ 80 °C/- 40 °C
smallest permissible bending radii	
in fixed installations	1.5 d
when freely moved	2.5 d
current carrying capacities acc. to DIN VDE 0118 and 0298 part 4	

No. of cores and rated cross section	outer diameter approx.	weight approx.	inductive resistance at 50 Hz approx.	capacity of phase cores approx.
mm ²	mm	kg/km	Ω/km	μF/km
3 x 16/16 kon + 2 x 2.5 St + 2.5 UEL	33-38	2000	0.10	0.44
3 x 25/16 kon + 3 x (2 x 1.5 St + 1.5 UEL)	41-46	3000	0.10	0.45
3 x 35/16 kon + 3 x (2 x 1.5 St + 1.5 UEL)	41-46	3200	0.09	0.50
3 x 50/25 kon + 3 x (2 x 1.5 St + 1.5 UEL)	46-51	4200	0.09	0.56
3 x 70/35 kon + 3 x (2 x 1.5 St + 1.5 UEL)	50-55	5400	0.08	0.65
3 x 95/50 kon + 3 x (2 x 1.5 St + 1.5 UEL)	57-62	6900	0.08	0.69
3 x 120/70 kon + 3 x (2 x 1.5 St + 1.5 UEL)	62-67	8600	0.08	0.75

Special Designs

Cables with smaller or larger conductor cross sections

Cables to international specifications, also with deviating monitoring systems

Further information upon request

NSSHCGEWOEU-Z 0.6/1 kV yellow

coal cutter cable (tensile proof)
with control cores and
individually concentric
monitoring conductor
to DIN VDE 0250 part 812



Construction

phase cores:

copper conductor, tinned, finely stranded — insulation of dielectrical and thermal high quality, ozone resistant ethylene-propylene-rubber (EPR), compound type 3GI3, coloured — outer conducting layer of conductive rubber (monitoring jacket) — insulation and conducting layer extruded and cross-linked in one process

control core:

copper conductor, tinned, finely stranded — insulation of dielectrical and thermal high quality, ozone resistant ethylene-propylene-rubber (EPR), compound type 3GI3, coloured

monitoring conductor:

copper conductor, tinned, fineley stranded — jacket of conductive rubber

2 control cores and the monitoring conductor laid up with short pitch diameter as a triple to meet the special requirements for monitoring functions as well as high mechanical stresses

3 phase cores laid-up with 1 triple each in the interstices

inner sheath filling the interstices, compound type GM1b — concentric, highly tensile proof protection conductor of special steel/copper strands — outer sheath of chlorinated rubber like polychloroprene (CR), oil resistant, tear and abrasion resistant, flame retardant, compound type 5GM5

Core colours

phase cores

black, blue, brown

covered by a black cond. layer

(monitoring jacket)

control cores

blue, brown

monitoring core

black

Sheath colour

yellow

Application

for underground mines as well as in tunnels, if monitoring of outer damages is required. Suitable for very high bending stresses and very high tensile stresses. As supply cable to mobile equipment such as coal cutting machinery.

Operating conditions

rated voltage	$U_0/U = 0.6/1$ kV
max. permissible operating voltage	$U_0/U = 0.72/1.2$ kV
max. permissible operating temperature at conductor	+ 90 °C
permissible surface temperature	
in mobile condition	+ 80 °C/- 25 °C
in fixed condition	+ 80 °C/- 40 °C
smallest permissible bending radii	
in fixed installations	2 d
when freely moved	3 d
current carrying capacities acc. to DIN VDE 0118 and 0298 part 4	

No. of cores and rated cross section	outer diameter approx.	weight approx.	inductive resistance at 50 Hz approx.	capacity of phase cores approx.
mm ²	mm	kg/km	Ω/km	μF/km
3 x 16/16 kon + 2 x 2.5 St + 2.5 UEL	36-40	2300	0.10	0.44
3 x 25/16 kon + 3 x (2 x 1.5 St + 1.5 UEL)	43-48	3100	0.10	0.45
3 x 35/16 kon + 3 x (2 x 1.5 St + 1.5 UEL)	43-48	3400	0.09	0.50
3 x 50/25 kon + 3 x (2 x 1.5 St + 1.5 UEL)	49-54	4400	0.09	0.56
3 x 70/35 kon + 3 x (2 x 1.5 St + 1.5 UEL)	52-57	5400	0.08	0.65
3 x 95/50 kon + 3 x (2 x 1.5 St + 1.5 UEL)	60-65	6900	0.08	0.69
3 x 120/70 kon + 3 x (2 x 1.5 St + 1.5 UEL)	63-68	8400	0.08	0.75
3 x 150/70 kon + 3 x (2 x 1.5 St + 1.5 UEL)	67-72	10000	0.08	0.80

Special Designs

Cables with smaller or larger conductor cross sections

Cables to international specifications, also with deviating monitoring systems

Further information upon request

NYHSSYCY 3.6/6 kV red

screened mining cable, light design (PVC) with control cores and concentric monitoring conductor to DIN VDE 0250 part 212 and DIN VDE 0118



Construction

phase cores:
copper conductor, bare, finely stranded — insulation of PVC, compound type Y15 — individually concentric protection conductor of bare copper wires laid around insulated cores

control core:
copper conductor, bare, finely stranded — insulation of PVC, compound type Y14

3 phase cores laid-up with 3 control cores in the interstices

plastic filling in the interstices — inner sheath of PVC, compound type YM1 concentric monitoring conductor applied on top of an overlapped special conductive tape which holds the copper elements in position — intermediate sheath of PVC, compound type

YM1 — armour of braided steel wires, galvanized — outer sheath of PVC, compound type YM3

Core colours

phases cores natural shade
control cores black with white numbers

Sheath colour

red

Application

for underground mines as well as in tunnels, if monitoring of outer damages is required. The cable is flexible and can be used as supply cable to mobile equipment which, however, are not moved during operation. (See also DIN VDE 0298 part 3).

Operating conditions

rated voltage	$U_0/U = 3.6/6$ kV
max. permissible operating voltage	$U_0/U = 4.2/7.2$ kV
max. permissible operating temperature at conductor	+ 70 °C
permissible surface temperature	
in mobile condition	+ 70 °C/+ 5 °C
in fixed condition	+ 70 °C/- 40 °C
smallest permissible bending radii	
in fixed installations	5 d
during transport and paying condition	5 d
current carrying capacities acc. to DIN VDE 0118 and 0298 part 4	

No. of cores and rated cross section	outer diameter approx.	weight approx.	inductive resistance at 50 Hz approx.	capacity of phase cores approx.
mm ²	mm	kg/km	Ω/km	μF/km
3 x 25 + 3 x 16/3E + 3 x 2.5 St + UEL	48-53	3800	0.11	0.62
3 x 35 + 3 x 16/3E + 3 x 2.5 St + UEL	50-55	4400	0.10	0.70
3 x 50 + 3 x 25/3E + 3 x 2.5 St + UEL	54-59	5200	0.10	0.79
3 x 70 + 3 x 35/3E + 3 x 2.5 St + UEL	58-63	6300	0.09	0.91
3 x 95 + 3 x 50/3E + 3 x 2.5 St + UEL	62-67	7600	0.09	1.02

Cable fittings

Cables can be supplied with compatible sealing ends, if required (test certificate incl.)

Further details upon request

N3GHSSYCY 3.6/6 kV red

screened mining cable, heavy duty (EPR) with control cores and individually concentric monitoring conductor to DIN VDE 0250 part 605



Construction

phase cores:

copper conductor, bare, finely stranded — insulation of dielectrical and thermal high quality, ozone resistant ethylene-propylene-rubber (ERP), compound type 3GI3 — individually concentric protection conductor of bare copper wires laid around insulated cores

control core:

copper conductor, bare, finely stranded — insulation of dielectrical and thermal high quality, ozone resistant ethylene-propylene-rubber (ERP), compound type 3GI3

3 phase cores laid-up with 3 control cores in the interstices

plastic filling in the interstices — inner sheath of PVC, compound type YM5 —

concentric monitoring conductor of bare copper wires — intermediate sheath of PVC, compound type YM5 — armour of braided steel wires, galvanized — outer sheath of PVC, compound type YM5

Core colours

phase cores natural shade
control cores black with white numbers

Sheath colour

red

Application

for underground mines as well as in tunnels, if monitoring of outer damages is required. The cable is suitable as supply cable to fixed equipment which, however, follows the mining conditions.

Operating conditions

rated voltage	$U_0/U = 3.6/6$ kV
max. permissible operating voltages	$U_0/U = 4.2/7.2$ kV
max. permissible operating temperature at conductor	+ 90 °C
permissible surface temperature	
in mobile condition	+ 70 °C/+ 5 °C
in fixed condition	+ 70 °C/- 40 °C
smallest permissible bending radii	
in fixed installations	5 d
during transport and laying	5 d
current carrying capacities acc. to DIN VDE 0118 and 0298 part 4	

No. of cores and rated cross section	outer diameter approx.	weight approx.	inductive resistance at 50 Hz approx.	capacity of phase cores approx.
mm ²	mm	kg/km	Ω/km	μF/km
3 x 25 + 3 x 16/3E + 3 x 2.5 St + UEL	52-57	4200	0.12	0.30
3 x 35 + 3 x 16/3E + 3 x 2.5 St + UEL	55-60	4800	0.11	0.32
3 x 50 + 3 x 25/3E + 3 x 2.5 St + UEL	58-63	5700	0.10	0.36
3 x 70 + 3 x 35/3E + 3 x 2.5 St + UEL	62-67	6800	0.10	0.41
3 x 95 + 3 x 50/3E + 3 x 2.5 St + UEL	66-71	8000	0.10	0.46

Special Designs

For example cables to international specifications, also with deviating monitoring systems.

Cable fittings

Cables can be supplied with compatible sealing ends, if required (test certificate incl.)

Further details upon request

N3GHSSYCY 6/10 kV red

screened mining cable, heavy duty (EPR) with control cores and concentric monitoring conductor to DIN VDE 0250 part 605



Construction

phase cores:
copper conductor, bare, finely stranded — inner conductive layer of conductive rubber — insulation of dielectrical and thermal high quality, ozone resistant ethylene-propylene-rubber (EPR), compound type 3GI3 — outer conducting layer of conductive rubber (Thermo-Strip) — conductive layers and insulation extruded and cross-linked in one process — individually concentric protection conductor of bare copper wires laid around insulated cores

control core:
copper conductor, bare, finely stranded — insulation of dielectrical and thermal high quality, ozone resistant ethylene-propylene-rubber (EPR), compound type 3GI3

3 phase cores laid-up with 3 control cores in the interstices

plastic filling in the interstices — inner sheath of PVC, compound type YM5 — concentric monitoring conductor of bare copper wires — intermediate sheath of PVC, compound type YM5 — armour of braided steel wires, galvanized — outer sheath of PVC, compound type YM5

Core colours

phase cores natural shade covered by a black conductive layer
control cores black with white numbers

Sheath colour

red

Application

for underground mines as well as in tunnels, if monitoring of outer damages is required. The cable is suitable as supply cable to fixed equipment which, however, follows the mining conditions.

Operating conditions

rated voltage	$U_0/U = 6/10 \text{ kV}$
max. permissible operating voltage	$U_0/U = 7.2/12 \text{ kV}$
max. permissible operating temperature at conductor	+ 90 °C
permissible surface temperature in mobile condition	+ 70 °C/+ 5 °C
in fixed condition	+ 70 °C/- 40 °C
smallest permissible bending radii in fixed installations	5 d
during transport and laying	5 d
current carrying capacities acc. to DIN VDE 0118 and 0298 part 4	

No. of cores and rated cross section	outer diameter approx.	weight approx.	inductive resistance at 50 Hz approx.	capacity of phase cores approx.
mm ²	mm	kg/km	Ω/km	μF/km
3 x 16 + 3 x 16/3E + 3 x 2.5 St + UEL	51-56	3900	0.13	0.23
3 x 25 + 3 x 16/3E + 3 x 2.5 St + UEL	54-59	4500	0.12	0.26
3 x 35 + 3 x 16/3E + 3 x 2.5 St + UEL	57-62	5200	0.11	0.29
3 x 50 + 3 x 25/3E + 3 x 2.5 St + UEL	60-65	5900	0.11	0.33
3 x 70 + 3 x 35/3E + 3 x 2.5 St + UEL	64-69	7000	0.10	0.37
3 x 95 + 3 x 50/3E + 3 x 2.5 St + UEL	68-73	8300	0.10	0.41

Special Designs

For example cables to international specifications, also with deviating monitoring systems.

Cable fittings

Cables can be supplied with compatible sealing ends, if required (test certificate incl.)

Further details upon request

NTSCGECW0EUS 3.6/6 kV red

6 kV trailing cable
with control cores and concentric monitoring conductor to
DIN VDE 0250 part 813



Construction

phase cores:

copper conductor, tinned, finely stranded — insulation of dielectrical and thermal high quality, ozone resistant ethylene-propylene-rubber (EPR), compound type 3GI3 — individually concentric protection conductor of tinned copper wires applied over insulation

control core:

copper conductor, tinned, finely stranded — insulation of dielectrical and thermal high quality, ozone resistant ethylene-propylene-rubber (EPR), compound type 3GI3 — 3 control cores laid up with short pitch diameter as a tripple

3 phase cores laid-up with 1 tripple each in the interstices

inner sheath filling the interstices — compound type GM1b — concentric

monitoring conductor of special steel/copper strands applied on top of an overlapped special conductive tape — outer sheath of chlorinated rubber-like polychloroprene (CR), oil resistant, tear and abrasion resistant, flame retardant, compound type 5GM5.

Core colours

phase cores natural shade
control cores black, blue, brown

Sheath colour

red

Application

for underground mines as well as in tunnels, if monitoring of outer damages is required. The robust construction allows the cable to be used on mobile equipment, on energy lines, as well as for occasional reeling (see also DIN VDE 0298 part 3).

Operating conditions

rated voltage	$U_0/U = 3.6/6$ kV
max. permissible operating voltage	$U_0/U = 4.2/7.2$ kV
max. permissible operating temperature at conductor	+ 90 °C
permissible surface temperature	
in mobile condition	+ 80 °C/- 25 °C
in fixed condition	+ 80 °C/- 40 °C
smallest permissible bending radii	
in fixed installations	4 d
when freely moved	7.5 d
current carrying capacities acc. to DIN VDE 0118 and 0298 part 4	

No. of cores and rated cross section mm ²	outer diameter approx. mm	weight approx. kg/km	inductive resistance at 50 Hz approx. Ω/km	capacity of phase cores approx. μF/km
3 x 16 + 3 x 16/3E + 3 x (3 x 1.5 St) + UEL	46-51	3200	0.12	0.25
3 x 25 + 3 x 16/3E + 3 x (3 x 1.5 St) + UEL	49-54	3700	0.12	0.29
3 x 35 + 3 x 16/3E + 3 x (3 x 1.5 St) + UEL	52-57	4300	0.11	0.32
3 x 50 + 3 x 25/3E + 3 x (3 x 1.5 St) + UEL	55-60	5200	0.10	0.36
3 x 70 + 3 x 35/3E + 3 x (3 x 1.5 St) + UEL	63-68	6200	0.10	0.44
3 x 95 + 3 x 50/3E + 3 x (3 x 1.5 St) + UEL	65-70	7600	0.10	0.46

Special Designs

For example with additional steel wire braid and second outer sheath
Cables to international specifications, also with deviating monitoring systems.

Cable fittings

Cables can be supplied with compatible sealing ends, if required (test certificate incl.)
Further details upon request

NTSCGECWOEUS 6/10 kV red

10 kV trailing cable
with control cores and concentric monitoring conductor
to DIN VDE 0250 part 813



Construction

phase cores:

copper conductor, tinned, finely stranded — inner conductive layer of conductive rubber — of dielectrical and thermal high quality, ozone resistant ethylene-propylene-rubber (EPR), compound type 3GI3 — outer conductive layer of conductive rubber (Thermo-Strip) — conductive layers and insulation extruded and cross-linked in one process — individually concentric protection conductor of tinned copper wires applied over insulation

control core:

copper conductor, tinned, finely stranded — insulation of dielectrical and thermal high quality, ozone resistant ethylene-propylene-rubber (EPR), compound type 3GI3 — 3 control cores laid-up with short pitch diameter as a triple

3 phase cores laid-up with 1 triple each in the interstices

inner sheath filling the interstices — compound type GM1b — concentric monitoring conductor of special steel/ copper strands applied on top of an overlapped special conductive tape — outer sheath of chlorinated rubber like polychloroprene (CR), oil resistant, tear and abrasion resistant, flame retardant, comount type 5GM5.

Core colours

phase cores	natural shade
control cores	black, blue, brown

Sheath colour

red

Application

for underground mines as well as in tunnels, if monitoring of outer damages is required. The robust construction allows the cable to be used on mobile equipment, on energy lines, as well as for occasional reeling (see also DIN VDE 0298 part 3).

Operating conditions

rated voltage	$U_0/U = 6/10$ kV
max. permissible operating voltage	$U_0/U = 7.2/12$ kV
max. permissible operating temperature at conductor	+ 90 °C
permissible surface temperature	
in mobile condition	+ 80 °C/- 25 °C
in fixed condition	+ 80 °C/- 40 °C
smallest permissible bending radii	
in fixed installations	4 d
when freely moved	7.5 d
current carrying capacities acc. to DIN VDE 0118 and 0298 part 4	

No. of cores and rated cross section mm ²	outer diameter approx. mm	weight approx. kg/km	inductive resistance at 50 Hz approx. Ω/km	capacity of phase cores approx. μF/km
3 x 16 + 3 x 16/3E + 3 x (3 x 1.5 St) + UEL	46-51	3400	0.13	0.23
3 x 25 + 3 x 16/3E + 3 x (3 x 1.5 St) + UEL	52-57	4000	0.12	0.27
3 x 35 + 3 x 16/3E + 3 x (3 x 1.5 St) + UEL	54-59	4500	0.11	0.30
3 x 50 + 3 x 25/3E + 3 x (3 x 1.5 St) + UEL	60-65	5800	0.11	0.34
3 x 70 + 3 x 35/3E + 3 x (3 x 1.5 St) + UEL	63-68	6900	0.10	0.37
3 x 95 + 3 x 50/3E + 3 x (3 x 1.5 St) + UEL	66-71	8200	0.10	0.41

Special Designs

For example with additional steel wire braid and second outer sheath
Cables to international specifications, also with deviating monitoring systems.

Cable fittings

Cables can be supplied with compatible sealing ends, if required (test certificate incl.)
Further details upon request