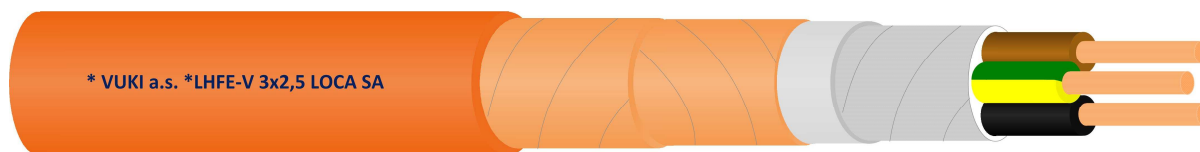




Halogen-free cables are dedicated to nuclear power plant VVER 440



### Application:

Power cables in LOCA execution are used in nuclear power plant of type VVER 440 (STN IEC 60780, IEEE323, IEEE 383), they are with resistance to flame propagation according to STN EN 60332-3-... (STN EN 50266-2-...), halogen-free, with low density of smoke according to STN EN 61034-2 and low corrosivity of combustion gases according to STN EN 50267-2-3. These are used for nominal voltage of 0,6/1 kV for fixed installation both in normal and moist environments (STN 33 2000-5-51). Cables can be used in the fire hazard conditions and can be installed on flammable material. Cables type -V are functional in fire for time period 180 min. according to IEC 60331-21. In a primary zone of nuclear power plant VVER 440 are guaranteed life 40 years in normal use, including LOCA and severe accidents.

### Cable construction:

- **Number of cores:** 1 - 37
- **Cable cores:** Cu or CuSn, conductor cl. 1, cl. 2 or cl.5
- **Nominal cross-section:** 1 mm<sup>2</sup> - 10 mm<sup>2</sup>
- **Insulation:** Special mixtures on homo- / copolymere base(-V type in combination with mica-glass tape)
- **Filler:** halogen-free, flame-retardant material + glass tape
- **Shield construction:**
  - K-** unshielded cable
  - F-** ALPET foil + enclosed CuSn wire / or 2x Cu tape with nominal thickness 0,07mm with positive overlap
  - O-** Cu braiding with min. covering 75 %
  - S-** CuSn braiding with min. covering 75 %
  - J-** longitudinal ALPET foil + CuSn braiding with min. covering 45 %
- **Cable sheath:** halogen-free, flame-retardant
- **Colour of sheath:** type -V orange, type -R green, or other if required

### Technical data:

- **Nominal voltage U<sub>0</sub>/U (kV):** 0,6/1
- **Test voltage [kV]:** 4
- **Max. short-circuit temperature:** 90 °C
- **Operating temperature:** -40 °C to +90 °C
- **Min. temperature for laying:** -5 °C
- **The maximum permissible operating ambient temperature for fixed installation and service life 40 years:** +60 °C
- **Min. bending radius:** conductors cl. 1 - 15 x cable diamete, conductors cl. 2 or cl. 5 - 12 x cable diameter
- **Electrical resistance of core:** acc. to STN EN 60228

### Marking:

- **Core identification:** Acc. to EN 60446
- **position**

letter	meaning	
1.	J C L	copper conductor whithout class specification copper conductor cl. 1 copper conductor cl. 2 or cl.5
2.	H X	mica-glass tape + homo- / copolymere ethylene, HFFR XPE
3.	K F, O, S, J	unshielded cable shielded cable
4.	E	homo- / copolymer ethylene, HFFR
5.	R V	cable is flame-retardant cable is flame-retardant with maintaining its functionality at fire
	LOCA-SA	cable is dedicated to nuclear power plant VVER 440 resistant to LOCA and severe accident



Application table:

Number of cores	Nominal cross-section	Current carrying capacity in air	Effective resistance of conductors cl. 1 and cl. 2	Effective resistance of conductors cl. 5	Outer diameter (appr.)
	mm <sup>2</sup>	A	Ω/km		
2	1	19	18,1	19,5	10,5
	1,5	29	12,1	13,3	11,5
	2,5	38	7,41	7,98	12,5
	4	51	4,61	4,95	13,5
	6	62	3,08	3,30	17,5
	10	86	1,83	1,91	20
3	1	16	18,1	19,5	11
	1,5	24	12,1	13,3	12
	2,5	32	7,41	7,98	13
	4	42	4,61	4,95	14,5
	6	52	3,08	3,30	17
	10	72	1,83	1,91	20
4	1	16	18,1	19,5	12
	1,5	24	12,1	13,3	13
	2,5	32	7,41	7,98	14
	4	42	4,61	4,95	16
	6	53	3,08	3,30	17,5
	10	74	1,83	1,91	20,5
5	1	14	18,1	19,5	13
	1,5	22	12,1	13,3	15
	2,5	30	7,41	7,98	16
	4	39	4,61	4,95	18
	6	53	3,08	3,30	20
	10	74	1,83	1,91	22,0
7	1	11	18,1	19,5	14,5
	1,5	15	12,1	13,3	16
	2,5	21	7,41	7,98	17
	4	29	4,61	4,95	20
	6	38	3,08	3,30	22
	10	57	1,83	1,91	24,5
12	1	9	18,1	19,5	18
	1,5	13	12,1	13,3	20
	2,5	18	7,41	7,98	22
	4	24	4,61	4,95	24
	6	30	3,08	3,30	25,5
	10	39	1,83	1,91	28
19	1	7	18,1	19,5	21
	1,5	12	12,1	13,3	23
	2,5	16	7,41	7,98	25
24	1	7	18,1	19,5	22,5
	1,5	10	12,1	13,3	25
	2,5	13	7,41	7,98	27,5
37	1	6	18,1	19,5	26,5
	1,5	9	12,1	13,3	29
	2,5	12	7,41	7,98	32