Current carrying capacity of cables with improved characteristics in case of fire

acc. to HD 604 S1 and HD 627, part 7H

The HD 604 and HD 627 are identical to DIN VDE 0276-604, respectively DIN VDE 0276-627.

Bayka products

The values given below are applicable to these products:

Column N2XH [copper, without concentric conductor and braid] (with CPR or nonfire):

feedIN DC (without concentric conductor)	Power Soil	Telekom-Power

Column N2XCH/N2XCWH [copper, with concentric conductor or braid] (with CPR or nonfire):

feedIN DC (with concentric conductor)	feedIN DC EMC	soilblack EMC	soilblack VFD EMC

General

This section applies to the capacity under both agreed but also deviating conditions, provided that three cores are loaded in three-phase operation or only one single-core cable is loaded in DC operation.

The rated currents listed in the tables are recommended values under normal operating conditions.

General conditions

Temperatures °C (conductor)	
maximum admissible operating temperature	+90
maximum admissible temperature in case of short circuit	+250

Concentric conductors are grounded on both ends.

Operating frequency 50 Hz.

The tabulated loading capacities are based on various conditions such as

- operating mode,
- laying conditions,
- environmental conditions.

In the event of deviating operating conditions, the loading capacities are to be multiplied by suitable conversion factors, which are based on the same calculation principles and operating conditions as the given values.

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Current carrying capacities of cables with improved characteristics in case of fire

Laying in air (30°C)

recommended values acc. to HD 604 S1, table B.1

Admissible operating temperature				90°C	
	N2XH [copper, without concentric conductor and braid]			N2XCH / N2XCWH [copper, with concentric conductor or braid]	
			 *)		
Number of loaded cores	3	3	1	3	3
cross-section mm^2	Copper conductor rated current in A				
1,5	26	24	33	27	25
2,5	34	32	43	36	33
4	44	42	57	47	43
6	56	53	72	59	54
10	77	74	99	81	75
16	102	98	131	109	100
25	138	133	177	146	136
35	170	162	217	179	165
50	207	197	265	218	201
70	263	250	336	275	255
95	325	308	415	336	314
120	380	359	485	388	364
150	437	412	557	438	416
185	507	475	646	501	480
240	604	564	774	580	565
300	697	649	901	654	643
400	811	761	1060	733	737
500	940	866	1252	825	807

*) rated current in DC plants with far off return conductor

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Current carrying capacity of cables with improved characteristics in case of fire

Admissible short-circuit temperatures and rated short-circuit current densities

recommended values acc. to HD 604 S1, table B.2

Cables with	admissible short-circuit temperature °C	rated short-circuit current densities in A/mm² for a rated short-circuit duration of 1s							
		conductor temperature at the beginning of short-circuit in °C							
		90	80	70	60	50	40	30	20
Copper conductor	250	143	149	154	159	165	170	176	181

Current carrying capacity of multicore cables

Conversion factors for different numbers of loaded cores of multi-core cables in air

The following applies to three loaded cores:

HD 604, Part 5, main section G, attachment B (Current carrying capacity) and attachment B, Table B.1 (rated current capacity, cable in air), column 3 and column 5.

Conversion factors for different numbers of loaded cores

acc. to HD 627 S1, part 7H, table A.1

NUMBER OF LOADED CORES	LAYING IN AIR
5	0,75
7	0,65
10	0,55
14	0,50
19	0,45
24	0,40
40	0,35
61	0,30