



DIN EN 45545-2 : 2013-08



Guide to handling the standard

Hippe- products with rail certificate

EP GC 202 HFD, EP GC 202 HFS, PF CP 308, EP GC 103 S30

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Guide to DIN EN 45545-2 : 2013-08

After 20 years of standardization work the European Standard EN 45545 was ratified by CEN in March 2013 and its German version was released in August 2013 as DIN EN 45545.

This standard replaces all national standards with a transition period of 3 years.

Fire safety objectives: to minimize the likelihood of a fire-break out
to limit the spreading of a fire once started
to reduce the effects of a fire on passengers

It is aimed at enabling persons and passengers to leave the vehicle unassisted and to reach a safe area.

The DIN EN 45545 is divided into 7 parts. **Part 2** describes the requirements for fire behaviour of materials and components.

In "Table 2-Sets of requirements for listed components" 68 components are related to a total of 26 sets of requirements. The sets of requirements R1 to R26 arise out of the function, the exact area of application and the position of the components.

In "Table 5-Material requirements" the sets of requirements R1 to R26 are related to specific test methods and limit values for their results.

The classification of the limit values is done in three hazard levels (HL). The lowest limit value is related to HL 1, the highest limit value is related to HL 3.

The question as to which hazard level applies to a particular component is determined by the operation category and the design category.

Operation Category	Design Category			
	N Standard vehicle	A Automatic train	D Double decked veh.	S Sleeping waggon
1 Vehicles designed to run at ground level	HL 1	HL 1	HL 1	HL 2
2 Tunnel max. 5 km	HL 2	HL 2	HL 2	HL 2
3 Tunnel > 5 km	HL 2	HL 2	HL 2	HL 3
4 no lateral evacuation	HL 3	HL 3	HL 3	HL 3

Materials of the Erhard Hippe KG according to DIN EN 45545-2

Fire tests according to DIN EN 45545-2

EP GC 202 HFD

Oxygen concentration	T01	EN ISO 4589-2	Vol. %	min.		76,7
Smoke density D_s max	T10.03	EN ISO 5659-2		max.		82
Smoke toxicity CIT _{NLP}	T12	NF X 70-100		max.		0,09
					3 mm	20 mm
MARHE- value	T03.01	ISO 5660-1	kW/m ²	max.	22,1	16,2
Smoke density D_s max	T10.04	EN ISO 5659-2		max.	431	388
Smoke density D_s (4)	T10.01	EN ISO 5659-2		max.	116	52
Smoke darkening VOF4	T10.02	EN ISO 5659-2		max.	179	75
Smoke toxicity CIT _G -value	T11.01	EN ISO 5659-2		max.	0,12	0,06
Flux at extinguishment CFE	T11.02	EN ISO 5658-2	kW/m ²	min.	42,3	46,3

These tests allow a classification into the requirement levels R1, R2, R3, R7, R11, R12, R17, R22 R23 and R24 according to DIN EN 45545-2.

EP GC 202 HFS

					1,6 mm	10/ 25 mm
Oxygen concentration	T01	EN ISO 4589-2	Vol. %	min.	53,9	53,6
Smoke density D_s max	T10.03	EN ISO 5659-2		max.	70	5
Smoke toxicity CIT _{NLP}	T12	NF X 70-100		max.	0,05	0,05

These tests allow a classification into the requirement levels R22, R23 and R24 according to DIN EN 45545-2.

EP GC 103 S30

					2 mm	25 mm
Oxygen concentration	T01	EN ISO 4589-2	Vol. %	min.	32,2	32,7 (3 mm)
Smoke density D_s max	T10.03	EN ISO 5659-2		max.	255	25
Smoke toxicity CIT _{NLP}	T12	NF X 70-100		max.	0,04	0,04

These tests allow a classification into the requirement levels R22, R23 and R24 according to DIN EN 45545-2.

PF CP 308

					2 mm	25 mm
Oxygen concentration	T01	EN ISO 4589-2	Vol. %	min.	39,2 (PK III)	38,2 (PK IV)
Smoke density D_s max	T10.03	EN ISO 5659-2		max.	12	13
Smoke toxicity CIT _{NLP}	T12	NF X 70-100		max.	0,13	0,13

These tests allow a classification into the requirement levels R22, R23 and R24 according to DIN EN 45545-2.

Material selection

1. Determination of the set of requirements (R1-R26): component manufacturer, operator
2. Determination of the hazard level (HL 1-HL 3): component manufacturer, operator
3. Search for a suitable material which fulfills the above-mentioned classifications
and the technical specifications of the application: designer, supplier

While doing so, you can count on our assistance!



DIN EN 45545-2: 2013-08 **EP GC 202 HFS** **EP GC 202 HFD** **PF CP 308** **EP GC 103 S30**

Requirement	T02 ISO 5658-2 CFE kW/m ² min			T03.01 ISO 5660-1: 50 kW/m ² MARHE kW/m ² max.			T10.01 EN ISO 5659-2: 50 kW/m ² D _s (4) max.			T10.02 EN ISO 5659-2: 50 kW/m ² VOF ₄ ; min; max.			T10.04 EN ISO 5659-2: 50 kW/m ² D _s max; max.			T11.01 EN ISO 5659-2: 50 kW/m ² CIT _G max.		
	HL 1	HL 2	HL 3	HL 1	HL 2	HL 3	HL 1	HL 2	HL 3	HL 1	HL 2	HL 3	HL 1	HL 2	HL 3	HL 1	HL 2	HL 3
R1	20	20	20	-	90	60	600	300	150	1200	600	300				1.2	0.9	0.75
R2	13	13	13	-	-	90	600	300	150	1200	600	300				1.2	0.9	0.75
R3	13	13	13	-	-	-	-	480	240	-	960	480				1.2	0.9	0.75
R7	20	20	20	-	90	60							-	600	300	-	1.8	1.5
R11	30	30	30	90	90	60	600	300	150	1200	600	300				1.2	0.9	0.75
R12	40	40	40	60	60	60	600	300	150	1200	600	300				1.2	0.9	0.75
R17	13	13	13	-	90	60							-	600	300	-	1.8	1.5
EP GC 202 HFD	42.3	42.3	42.3	22.1	22.1	22.1	116	116	116	179	179	179		431		0.12	0.12	0.12

Requirement	T10.03 EN ISO 5659-2: 25 kW/m ² D _s max; max			T01 EN ISO 4589-2: OI Oxygen concentration Vol.-%; min			T12 NF X70-100-1 and 2 600°C CIT _{NLP} ; max.		
	HL 1	HL 2	HL 3	HL 1	HL 2	HL 3	HL 1	HL 2	HL 3
R22	600	300	150	28	28	32	1.2	0.9	0.75
R23	-	600	300	28	28	32	-	1.8	1.5
R24				28	28	32			
R25									
R26									
EP GC 202 HFS	70	70	70	53,6	53,6	53,6	0,05	0,05	0,05
EP GC 202 HFD	82	82	82	76.7	76.7	76.7	0.09	0.09	0.09
EP GC 130 S30	255	255	255	32,2	32,2	32,2	0,04	0,04	0,04
PF CP 308	13	13	13	38,2	38,2	38,2	0,13	0,13	0,13

T16 EN 60695-2-11 Glow-wire based test min. GWFI			T17 EN 60695-11-10 UL- 94 V- test min.		
HL 1	HL 2	HL 3	HL 1	HL 2	HL 3
850	850	850			
			V-0	V-0	V-0
960/3.0			V-0	V-0	V-0
960/3.0			V-0	V-0	V-0
960/3,0			V-0	V-0	V-0
UL certification E307596					
960/3,0			V-0	V-0	V-0

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