



Project-ID: --

**Report for fire performance according to EN 45545-2
Fire protection on railway vehicles****Product:**942 025 - 008
OS24-080900T5T5TNEBHH**AGILE Doc-ID:**

000188557DNR

Date

04.02.2019

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Releases

Simone Kiesel

Date:

Approved by: Simone Kiesel

Date: 04. Feb 19

Conclusion

The total combustible mass of the components that must be verified is < 100gr.

The device is compliant to the requirements of EN 45545 – 2 Hazard Level HL3.



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1. History

Rel.	Date	Released	Author	Changes
1v0	2015-07-28	y	Paul Eberling	Document created
2v0	2019-02-04	y	Simone Kiesel	New issue date of standard

2. Scope

This report describes the procedure and the tests that are done to evaluate whether the device meets the requirements according to EN 45545-2: 2013 + A1:2015.

3. Equipment under test

Product Code	Order Number	Serial Number
OS24-080900T5T5TNEBHH	942025008	-

3.1 Related Equipment

Product Code	Order Number	Serial Number
n.a.		

4. Requirements

4.1 Essential fire safety objectives

The design of rolling stock and the products used shall incorporate the aim of limiting fire development should an ignition event occur so that an acceptable level of safety is achieved.

4.2 Hazard level

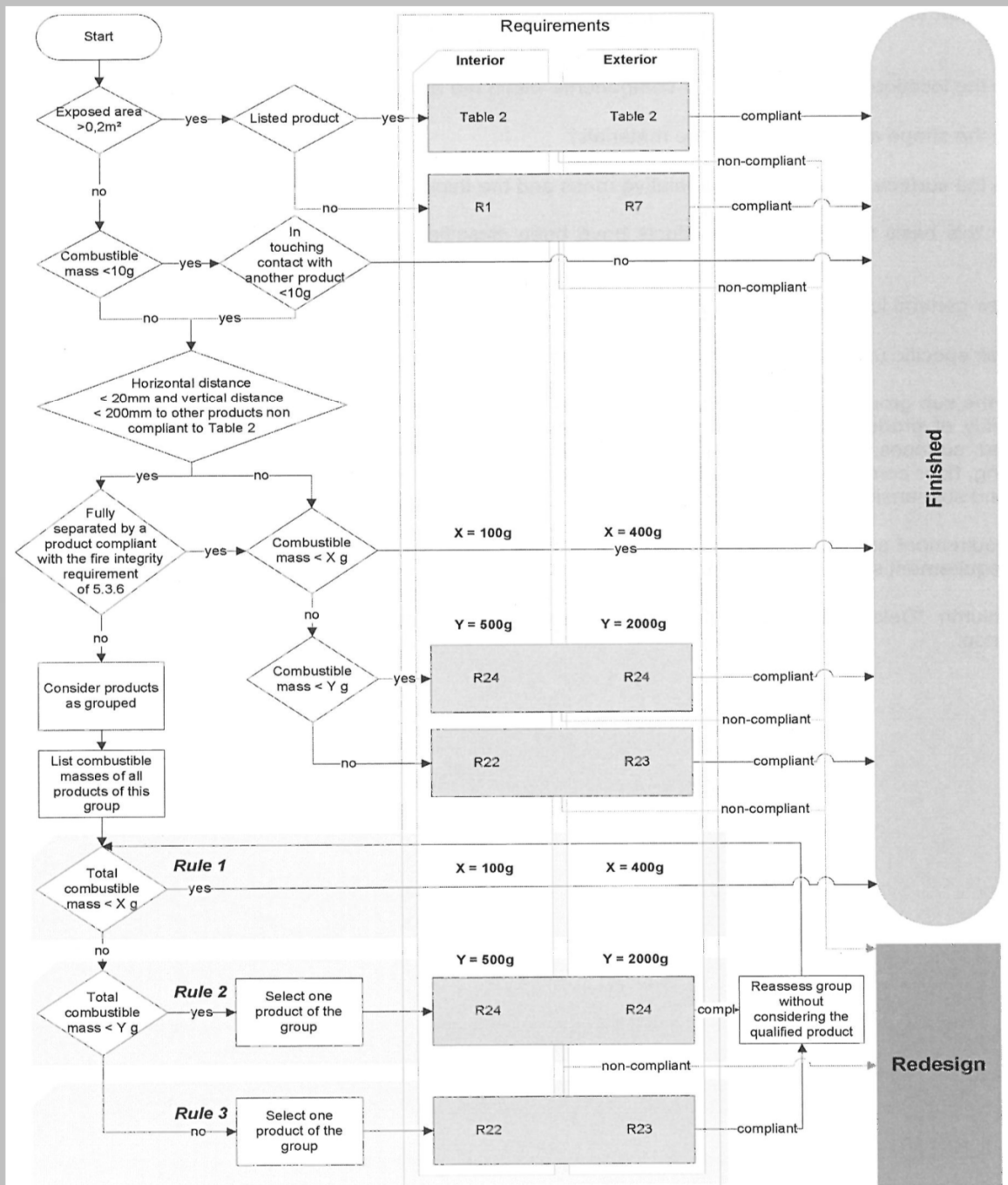
The Hazard level for the device under test is: HL3

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5. Test procedure

According to EN 45545-2 capture 4.3 there are no requirements to products with a combustible mass of < 10 g not in touching contact with another unclassified product and the exposed area is < 0,2m². For grouped products no requirements apply to the products if the combustible mass is < 100 g. The assessment process for all parts of the device is visualized in the following flow chart (Figure 1).

Figure 1:



**HIRSCHMANN**

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5.1 Evaluation of components

SAP BOM Pos.	Hirschmann Part number	Hirschmann part description	quantity	combustible mass per unit [gr]	comments	total combustible mass [gr]
0001	Z05S10 942025008					
0070	742317012	OS20/24 9TX xV, Gehäuse	1	10,00	< 10gr. Same housing as OCTOPUS 8M-Train >>> see 000174077DNR - Datei 1120889.xls	10,00
0090	742335001	OS20/24 xTX PoE, Gehäuserückwand	1	0,00	Aluminium part	0,00
0100	737888001	OCTOPUS 8M, Dichtung	1	6,00	measured	6,00
0110	255962000	ZYL-SCHR.M 4X16 NRST	8	0,00	Metall part	0,00
0180	742475008	OS24 9TX Basic man. mPoE HV, Aufkleber	1	9,00	measured	9,00
0200	742237001	Haftetikett 57x30 3M7818 silbermatt	2	0,50	calculated - density 1,4g/CM3	1,00
0210	743887001	HAFTETIKETT 38,1 x 6,35 PS WS	1	0,08	calculated - density 1,4g/CM3	0,08
0230	742321001	Aufkleber bedruckt, Schutzerde	1	0,01	calculated - density 1,4g/CM3	0,01
0299	PCBAs					
0330	837571115	OS20/24 9TX HV/LV, Haupt -LP, best.CC	1	0,00		0,00
		tested parts of PCBA:				
		742285001 - OS20/24 9TX HV/LV, Haupt -LP, best.	1	0,00	PCB fulfills the requirements of table 2 EN45545 for PCB's - R24 OI= 32% see OI testreport AGILE DOC-ID: 000169390DNR - OI = 39,7%	0,00
		If suitable products which achieve the requirements are not available on the market, the electronics devices on printed boards are approved on functional necessity. According to Capture 4.7 of EN 45545-2.			The M12 contact housings we use are UL94V0 listed - see AGILE Doc-ID: 000177321DNR	
0350	837549315	OS24 xTX mPoE HV/LV, CPU/PSE-LP, best.CC	1	0,00		0,00
		tested parts of PCBA:				
		742313003 - OS20/24 xTX HV/LV, Leiterplatte CPU/PoE	1	0,00	PCB fulfills the requirements of table 2 EN45545 for PCB's - R24 OI= 32% see OI testreport AGILE DOC-ID: 000169391DNR - OI = 36,3%	0,00
		If suitable products which achieve the requirements are not available on the market, the electronics devices on printed boards are approved on functional necessity. According to Capture 4.7 of EN 45545-2.				
0370	837578105	OS20/OS24 xTX HV, PWR-LP best.CC	1	0,00		0,00
		tested parts of PCBA:				
		742315001 - OS20/24 xTX HV, Leiterplatte (PWR)	1	0,00	PCB fulfills the requirements of table 2 EN45545 for PCB's - R24 OI= 32% see OI testreport AGILE DOC-ID: 000169389DNR - OI = 44%	0,00
		If suitable products which achieve the requirements are not available on the market, the electronics devices on printed boards are approved on functional necessity. According to Capture 4.7 of EN 45545-2.				
0410	269230000	KABELSCHUH RING 1,5-2,5 / M4	1	0,00	Metall part	0,00
0420	253368000	L-SCHR.AM 3X6 ST/NI	12	0,00	Metall part	0,00
0430	253379000	L-SCHR.AM 4X8 ST/NI	1	0,00	Metall part	0,00
0450	257305000	ZAHNSCHEIBE A 4,3 ST/ZN	1	0,00	Metall part	0,00
0460	251654000	DISTANZBLZ.M 3X10 MS/NI	2	0,00	Metall part	0,00
0470	251600000	DISTANZBLZ.M 3X10 MS/NI	4	0,00	Metall part	0,00
0610	210906000	M12 Gehäuseteil f.Federleiste	10	0,00	Metall part	0,00
0620	210907000	M12 Gehäuseteil f.Messerleiste	1	0,00	Metall part	0,00
0630	257209000	6KT-MUTTER M 14X1 MS/NI	11	0,00	Metall part	0,00
0640	219379000	O-RING 7X1 (FKM-LABSFR. -40 GRAD) GRUEN	10	0,04	calculated, desnity 1,9 mg/mm ³	0,40
0650	219386000	O-RING 14X1 NBR BIS -40 GRAD)	11	0,08	calculated, desnity 1,9 mg/mm ³	0,88
0670	742312001	7/8" Assembly DC HV, Octopus OS20/24	1	35,00	The assembly consists of metall parts and combustible parts. Some of the combustible parts are UL94-V0 listed. The total mass of the assembly is 35gr. The combustilbe mass is estimated with about 30%. But even when we use the total mass we are under the 100gr. combustible mass for the complete product.	35,00

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SAP BOM Pos.	Hirschmann Part number	Hirschmann part description	quantity	combustible mass per unit [gr]	comments	total combustible mass [gr]
0700	737763001	OCTOPUS 8M, Light-Pipe	21	0,09	measured	1,89
0711	742481003	OS20/24, Wärmeleitpad 31x22x2,5	2	0,00	Table 2: EL10 >> R26 V0 material Data-Sheet see Doc-ID 000159718DNR (Bergquist) Table 2: EL10 >> R26 V0 material Data Sheet see Doc-ID 000171434DNR (MTC)	0,00
0712	742481002	OS20/24, Wärmeleitpad 38x31x2,5	4	0,00	Table 2: EL10 >> R26 V0 material Data-Sheet see Doc-ID 000159718DNR (Bergquist) Table 2: EL10 >> R26 V0 material Data Sheet see Doc-ID 000171434DNR (MTC)	0,00
0713	742481004	OS20/24, Wärmeleitpad 29x29x5,08	3	0,00	Table 2: EL10 >> R26 V0 material Data-Sheet see Doc-ID 000184852DNR (Bergquist)	0,00
0714	742481500	OS20/24, Wärmeleitpad Planarcore	1	0,00	Table 2: EL10 >> R26 V0 material Data-Sheet see Doc-ID 000184852DNR (Bergquist)	0,00
0715	737983001	Substation, Wärmeleitpad (SFP - MTRJ)	1	0,00	Table 2: EL10 >> R26 V0 material Data-Sheet see Doc-ID 000159718DNR (Bergquist) Table 2: EL10 >> R26 V0 material Data Sheet see Doc-ID 000171434DNR (MTC)	0,00
0716	737964001	OCTOPUS, Wärmeleitpad	1	0,00	Table 2: EL10 >> R26 V0 material Data-Sheet see Doc-ID 000159718DNR (Bergquist) Table 2: EL10 >> R26 V0 material Data Sheet see Doc-ID 000171434DNR (MTC)	0,00
0720	742405100	OpenBAT-F, Verschlusschr.M12 Stiftflansch	1	0,00	Metall part	0,00
0730	219368000	O-RING 9,25X1,78 (NBR-LABSFREI -40 GRAD)	1	0,08	calculated, desnity 1,9 mg/mm ³	0,08
0740	211801000	Laschenstopfen 12xy 1,5 natur-PE-LD	10	1,00	only used for shipping. To preserve the suitability of your device for IP65/67 :Seal unused sockets and plugs with your desired type of protection screws -> 734209200 Verschluss-Schraube M12X1 VS	10,00
0760	742557001	7/8" Stecker,Verschl.kappe Kunstst. H111	1	0,00	only used for shipping	0,00
					Total:	74,3