Greenlam Industries Limited

Mikasa®
REAL WOOD FLOORS

FLAME IGNITABILITY TEST REPORT - EN ISO 11925-2:2010

Prüfprotokoll / *Test protocol*

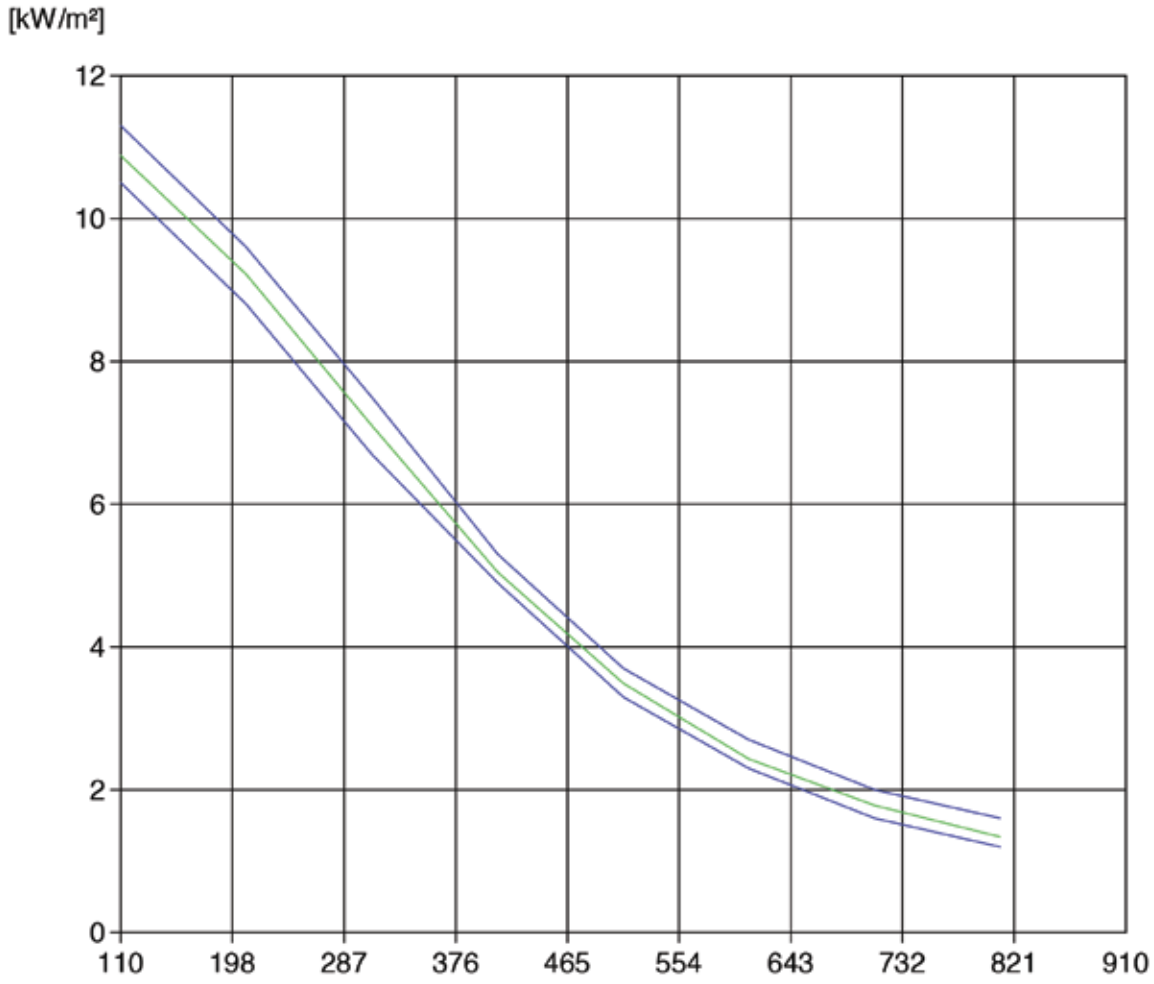
Entzündbarkeit von Produkten bei direkter Flammeneinwirkung - Teil 2: Einzelflammentest nach EN ISO 11925-2:2010
Ignitability of products subjected to direct impingement of flame - Part 2: Single-flame source test acc. to EN ISO 11925-2:2010

Auftrags-Nr.: *Order-No.:*	**2718085/F**	Datum der Prüfung: *Date of testing:*	28.11.2018
Auftraggeber: *Costumer:*	Greenlam Industries Limited, RIICO Industrial Area, Phase-II, Po.-Behror-301701 / Indien / *India*		
Auftragnehmer: *Testing institute:*	Entwicklungs- und Prüflabor Holztechnologie GmbH - **EPH** Laborbereich Oberflächenprüfung *Development and Examination Laboratory for Wood Technology Ltd. – EPH Laboratory Surface Testing*		
Prüfmaterial: *Test object:*	3-Schichtparkett „Eiche London-Planke", lackiert; 15 mm *3 layer parquet „Oak London-Plank", lacquered; 15 mm*		
Trägermaterial: *Backing material:*	8 Faserzement *8 mm fibre cement*		

Art der Beflammung *Kind of impingement*		**Probe** / *Sample*					
Flächenbeflammung *Surface impingement*	15 s (20 s)	**L1** - längs *lengthwise*	**L2**- längs *lengthwise*	**L3** - längs *lengthwise*	**Q1** - quer *crosswise*	**Q2** - quer *crosswise*	**Q3** - quer *crosswise*
Zeitpunkt der Entzündung [s] *Time of ignition [s]*		9	9	9	7	8	9
maximale Flammenhöhe [mm] *max. extent of flame [mm]*		39	32	34	36	36	32
Zeitpunkt des Auftretens [s] *Moment of max. extent of flame [s]*		15	15	15	15	15	15
150 mm Flammenhöhe erreicht (J/N) *150 mm extent reached (Y/N)*		N/N	N/N	N/N	N/N	N/N	N/N
Flamme erloschen vor Versuchsende (J/N) *Extinction of flame before end of test (Y/N)*		J/Y	J/Y	J/Y	J/Y	J/Y	J/Y
Weiterbrennen nach Versuchsende (J/N) *Burning on after the end of test (Y/N)*		N/N	N/N	N/N	N/N	N/N	N/N
Entzündung des Filterpapiers (J/N) *Ignition of the filter paper (Y/N)*		N/N	N/N	N/N	N/N	N/N	N/N
Aussehen der Probe nach der Prüfung: *Appearance of the specimen after the test:*		k. A. *n/s*					
Rauchentwicklung (visuell): *Smoke production (visual):*		**ohne** / gering / normal / stark / sehr stark *no / low / normal / intense / extrem*					
*Probe wurde nach - s gelöscht! / *Specimen was removed after - s!*							

Die Prüfergebnisse beziehen sich nur auf das Verhalten der Proben von einem Bauprodukt unter den speziellen Prüfbedingungen bei der Prüfung. Sie sind nicht als einziges Kriterium zur Bewertung der potentiellen Brandgefahr des Bauproduktes im Anwendungsfall zu verstehen.
The test results only apply tot he reaction to fire behaviour oft he specified building product under the described testing conditions during the test. Those are not allowed to be the only one criterion for the evaluation of the potential fire hazard of the building product in use case.

Heat Flow Profile



Black body temp. calibration	**= 443 °C**
Black body temp. test	**cf. Test protocols**
Test chamber temp. calibration	**= 103 °C**
Test chamber temp. test	**cf. Test protocols**

The test was performed according to EN ISO 9239-1.

Testing Institution
EPH - Entwicklungs- und Prueflabor Holztechnologie Dresden
Zellescher Weg 24
01217 Dresden

Differences to the Standard Test Procedure
acc. to EN ISO 9239-1

Date of Test protocol
28.11.2018

Test protocol Reference
2718085/F-L1

Customer
GREENLAM Industries Limited
Mr. Nagaraja Jeganathan
RIICO Industrial Area, Phase-II
Po.-Behror-301701 / India

Manufacturer/Supplier
cf. customer

Date of Sample receipt
07.11.2018

Sampling Procedure
by the customer

Product Identification
3-layer parquet oak

Details of Conditioning
acc. to DIN EN 13238, article 4

General Product Characterization
3-layer parquet "Oak London-Plank", lacquered
Thickness [mm]: 15
Backing Board: 8 mm fibre cement
Kind of mounting: mechanical
Mass per area unit [kg/m²]: 7,80
Sample lengthwise

Observations
Blistering: No
Molten/ fluid droplets: No
Burning up to backing board: No
Glowing after extinguishment: No
Staining / charring to: 515 mm
Futher observations:

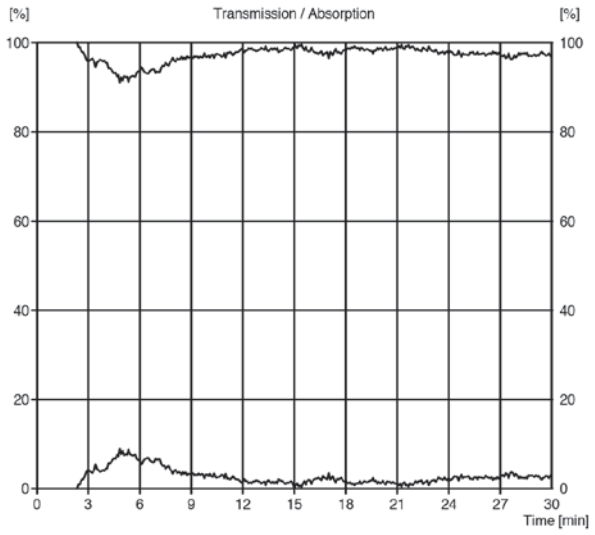
Date of Testing
28.11.2018

Conditions before Testing
Radiant temperature = 442 °C
Test chamber temperatur = 109 °C

Test Results

Position [mm]	Time [s]	Heat Flow [kW/m²]
50	182	11.88
100	262	11.05
150	346	10.22
200	446	9.39
250	571	8.37
300	711	7.31
350	876	6.28
400	1085	5.25
450	1351	4.43
500	1697	3.65
550	-	-
600	-	-
650	-	-
700	-	-
750	-	-
800	-	-
850	-	-
900	-	-
950	-	-
1000	-	-

Light Transmission / Absorption



Time [min]	Position [mm]	Heat Flow [kW/m²]
10	264	8.08
20	426	4.80
30	515	3.44

CHF [kW/m²]	3.44
HF_30 [kW/m²]	3.44
Smoke density integral [%*min]	77.4
Flame extinguished after [min:s]	30:00
max. burnt distance [mm]	515
max. light attenuation [%]	8.9

The test results relate to the behavior of the test specimen of a product under the particular conditions of the test.
They are not intended to be the sole criterion in order to assess the potential fire hazard of the product in real use.

The test was performed according to EN ISO 9239-1.

Testing Institution
EPH - Entwicklungs- und Prueflabor Holztechnologie Dresden
Zellescher Weg 24
01217 Dresden

Differences to the Standard Test Procedure
acc. to EN ISO 9239-1

Date of Test protocol
28.11.2018

Test protocol Reference
2718085/F-Q1

Customer
GREENLAM Industries Limited
Mr. Nagaraja Jeganathan
RIICO Industrial Area, Phase-II
Po.-Behror-301701 / India

Manufacturer/Supplier
cf. customer

Date of Sample receipt
07.11.2018

Sampling Procedure
by the customer

Product Identification
3-layer parquet oak

Details of Conditioning
acc. to DIN EN 13238, article 4

General Product Characterization
3-layer parquet "Oak London-Plank", lacquered
Thickness [mm]: 15
Backing Board: 8 mm fibre cement
Kind of mounting: mechanical
Mass per area unit [kg/m²]: 8,35
Sample crosswise

Observations
Blistering: No
Molten/ fluid droplets: No
Burning up to backing board: No
Glowing after extinguishment: Yes
Staining / charring to: 428 mm
Futher observations:

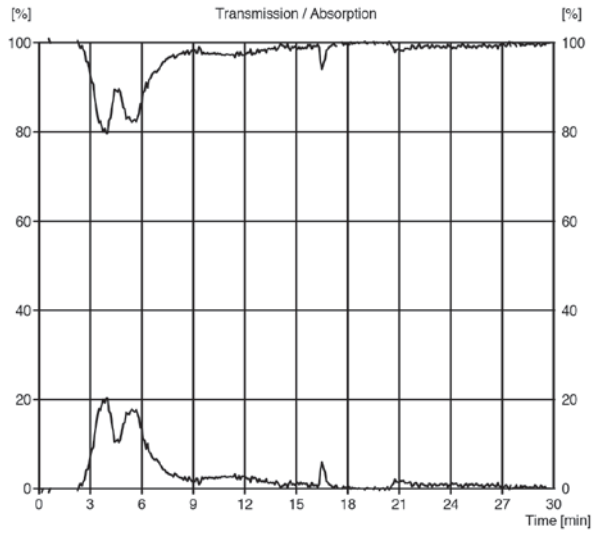
Date of Testing
28.11.2018

Conditions before Testing
Radiant temperature = 446 °C
Test chamber temperatur = 110 °C

Test Results

Position [mm]	Time [s]	Heat Flow [kW/m²]
50	160	11.88
100	215	11.05
150	274	10.22
200	331	9.39
250	441	8.37
300	655	7.31
350	833	6.28
400	1054	5.25
450	-	-
500	-	-
550	-	-
600	-	-
650	-	-
700	-	-
750	-	-
800	-	-
850	-	-
900	-	-
950	-	-
1000	-	-

Light Transmission / Absorption



Time [min]	Position [mm]	Heat Flow [kW/m²]
10	294	7.44
20	424	4.83
30	428	4.77

CHF [kW/m²]	4.77
HF_30 [kW/m²]	4.77
Smoke density integral [%*min]	84.8
Flame extinguished after [min:s]	21:01
max. burnt distance [mm]	428
max. light attenuation [%]	20.3

The test results relate to the behavior of the test specimen of a product under the particular conditions of the test.
They are not intended to be the sole criterion in order to assess the potential fire hazard of the product in real use.

The test was performed according to EN ISO 9239-1.

Testing Institution
EPH - Entwicklungs- und Prueflabor Holztechnologie Dresden
Zellescher Weg 24
01217 Dresden

Differences to the Standard Test Procedure
acc. to EN ISO 9239-1

Date of Test protocol
28.11.2018

Test protocol Reference
2718085/F-L2

Customer
GREENLAM Industries Limited
Mr. Nagaraja Jeganathan
RIICO Industrial Area, Phase-II
Po.-Behror-301701 / India

Manufacturer/Supplier
cf. customer

Date of Sample receipt
07.11.2018

Sampling Procedure
by the customer

Product Identification
3-layer parquet oak

Details of Conditioning
acc. to DIN EN 13238, article 4

General Product Characterization
3-layer parquet "Oak London-Plank", lacquered
Thickness [mm]: 15
Backing Board: 8 mm fibre cement
Kind of mounting: mechanical
Mass per area unit [kg/m²]: 8,21
Sample lengthwise

Observations
Blistering: No
Molten/ fluid droplets: No
Burning up to backing board: No
Glowing after extinguishment: No
Staining / charring to: 480 mm
Futher observations:

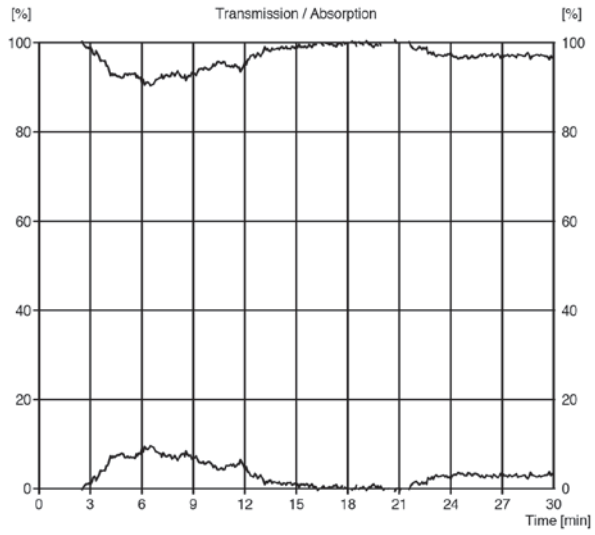
Date of Testing
28.11.2018

Conditions before Testing
Radiant temperature = 441 °C
Test chamber temperatur = 110 °C

Test Results

Position [mm]	Time [s]	Heat Flow [kW/m²]
50	220	11.88
100	271	11.05
150	363	10.22
200	447	9.39
250	545	8.37
300	714	7.31
350	892	6.28
400	1092	5.25
450	1533	4.43
500	-	-
550	-	-
600	-	-
650	-	-
700	-	-
750	-	-
800	-	-
850	-	-
900	-	-
950	-	-
1000	-	-

Light Transmission / Absorption



Time [min]	Position [mm]	Heat Flow [kW/m²]
10	280	7.74
20	422	4.86
30	480	3.96

CHF [kW/m²]	3.96
HF_30 [kW/m²]	3.96
Smoke density integral [%*min]	88.8
Flame extinguished after [min:s]	30:00
max. burnt distance [mm]	480
max. light attenuation [%]	9.6

The test results relate to the behavior of the test specimen of a product under the particular conditions of the test.
They are not intended to be the sole criterion in order to assess the potential fire hazard of the product in real use.

The test was performed according to EN ISO 9239-1.

Testing Institution
EPH - Entwicklungs- und Prueflabor Holztechnologie Dresden
Zellescher Weg 24
01217 Dresden

Differences to the Standard Test Procedure
acc. to EN ISO 9239-1

Date of Test protocol
28.11.2018

Test protocol Reference
2718085/F-L3

Customer
GREENLAM Industries Limited
Mr. Nagaraja Jeganathan
RIICO Industrial Area, Phase-II
Po.-Behror-301701 / India

Manufacturer/Supplier
cf. customer

Date of Sample receipt
07.11.2018

Sampling Procedure
by the customer

Product Identification
3-layer parquet oak

Details of Conditioning
acc. to DIN EN 13238, article 4

General Product Characterization
3-layer parquet "Oak London-Plank", lacquered
Thickness [mm]: 15
Backing Board: 8 mm fibre cement
Kind of mounting: mechanical
Mass per area unit [kg/m²]: 7,96
Sample lengthwise

Observations
Blistering: No
Molten/ fluid droplets: No
Burning up to backing board: No
Glowing after extinguishment: Yes
Staining / charring to: 458 mm
Futher observations:

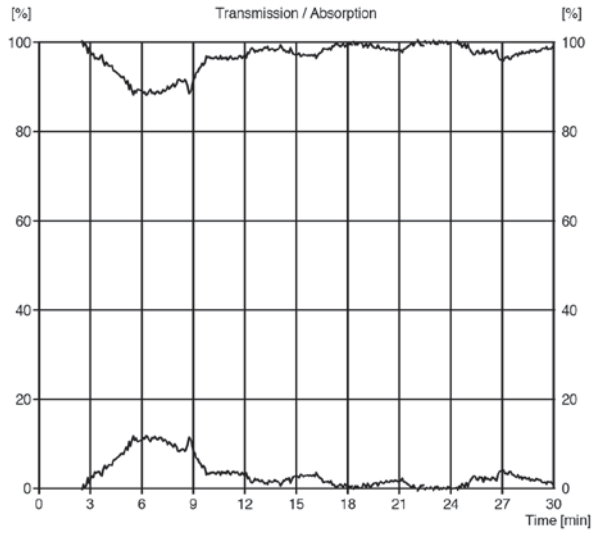
Date of Testing
28.11.2018

Conditions before Testing
Radiant temperature = 443 °C
Test chamber temperatur = 110 °C

Test Results

Position [mm]	Time [s]	Heat Flow [kW/m²]
50	223	11.88
100	330	11.05
150	440	10.22
200	543	9.39
250	728	8.37
300	927	7.31
350	1122	6.28
400	1351	5.25
450	1758	4.43
500	-	-
550	-	-
600	-	-
650	-	-
700	-	-
750	-	-
800	-	-
850	-	-
900	-	-
950	-	-
1000	-	-

Light Transmission / Absorption



Time [min]	Position [mm]	Heat Flow [kW/m²]
10	219	9.03
20	377	5.73
30	458	4.30

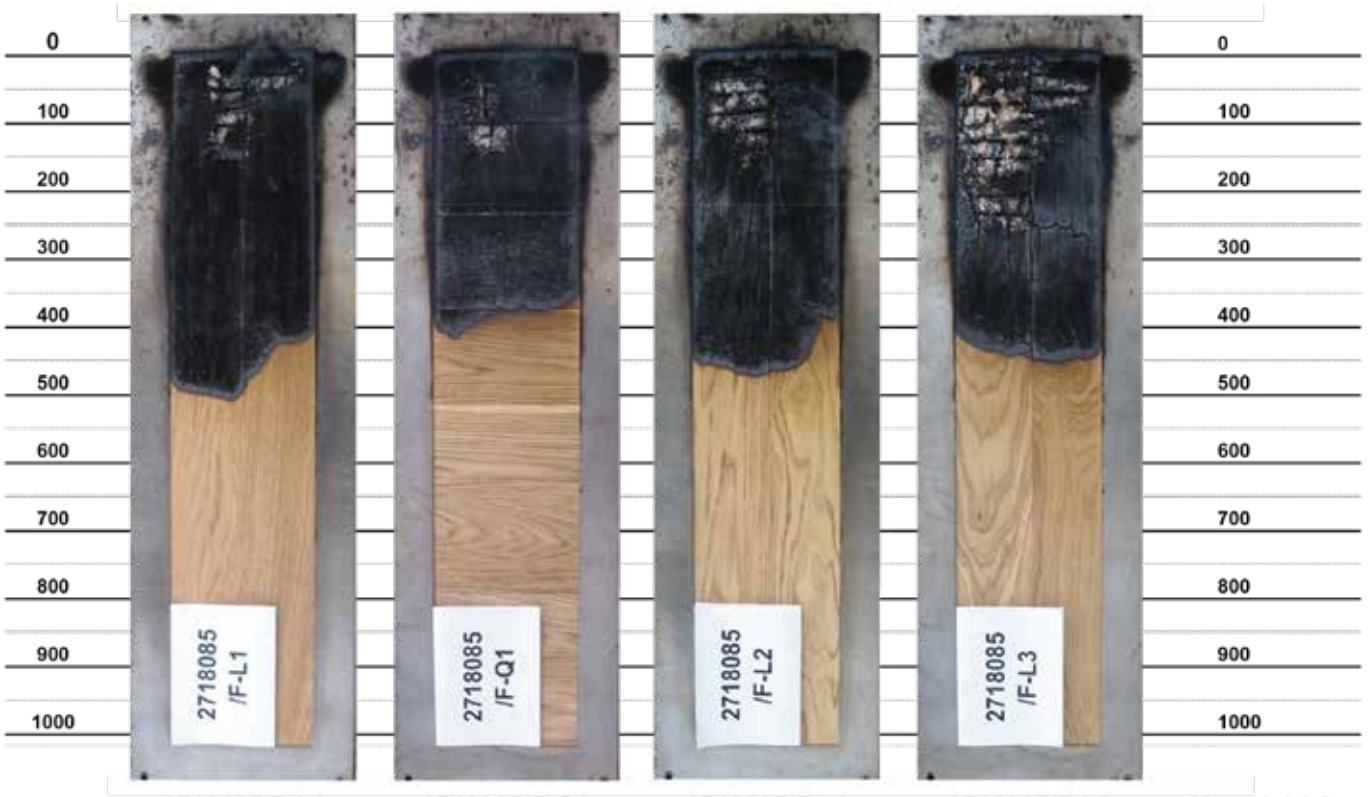
CHF [kW/m²]	4.30
HF_30 [kW/m²]	4.30
Smoke density integral [%*min]	91.9
Flame extinguished after [min:s]	30:00
max. burnt distance [mm]	458
max. light attenuation [%]	11.8

The test results relate to the behavior of the test specimen of a product under the particular conditions of the test.
They are not intended to be the sole criterion in order to assess the potential fire hazard of the product in real use.

Flame spread
L [mm]

Order-No.:

2718085/F



		2718085/F-L1	2718085/F-Q1	2718085/F-L2	2718085/F-L3	Mean L1-L3
Critical heat flow	**CHF**	**3,44 kW/m²**	**4,77 kW/m²**	**3,96 kW/m²**	**4,30 kW/m²**	**3,90 kW/m²**
Smoke production	**∫R**	**77,4 % * min**	**84,8 % * min**	**88,8 % * min**	**91,9 % * min**	**86,0 % * min**
Duration of Flame spreading	**t_{Max}**	1800 s	1261 s	1800 s	1800 s	1800 s
max. Flame spread	**L_{Max}**	515 mm	428 mm	480 mm	458 mm	484 mm
max. Light absorption	**R_{Max}**	8,9 %	20,3 %	9,6 %	11,8 %	10,1 %

Reaction to fire class **D_{fl}-s1**

Anlage 2718085/F - B
Annex 2718085/F - B

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