Prüfbericht-Nr.: *Test report no.:*	**CN2232H0 001**	**Auftrags-Nr.:** *Order no.:*	**244445074**	**Seite 1 von 16** *Page 1 of 16*
Kunden-Referenz-Nr.: *Client reference no.:*	**2110006**	**Auftragsdatum:** *Order date:*	**23.08.2022**	
Auftraggeber: *Client:*	**Shanghai Huitian New Material Co., Ltd.** *NO.251 Wenji RD, Songjiang District, 201600 Shanghai, P.R. China*			
Prüfgegenstand: *Test item:*	PV Silicone sealant			
Bezeichnung / Typ-Nr.: *Identification / Type no.:*	HT906Z			
Auftrags-Inhalt: *Order content:*	TUV Mark Approval			
Prüfgrundlage: *Test specification:*	2 PfG 2541/02.2022 Sealant Material used in Terrestrial Photovoltaic (PV) Modules Silicone adhesive			
Wareneingangsdatum: *Date of sample receipt:*	12.10.2020	Composition on ingredients for HT906Z. See table 4.2.1 for details.		
Prüfmuster-Nr.: *Test sample no:*	A002919100 001 - 002			
Prüfzeitraum: *Testing period:*	12.10.2020 -19.08.2022			
Ort der Prüfung: *Place of testing:*	TÜV Rheinland (Shanghai) Co., Ltd.			
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland (Shanghai) Co., Ltd.			
Prüfergebnis*: *Test result*:*	Pass			

geprüft von: *created by:*		**genehmigt von:** *authorized by:*	
Datum: *Date:* 08.09.2022	John Tie	**Ausstellatum:** *Issue date:* 08.09.2022	Zoe Zhao
Stellung / Position:	Project Engineer	**Stellung** / Position:	Technical Certifier

Sonstiges / *Other:* TUV Mark Approval

All tests have been done with positive results.
Composition on ingredients: See table 4.2.1
Attachment I: CN2232H0 001 (4 pages)
Attachment II: CN2232H0 001 (11 pages)

Zustand des Prüfgegenstandes bei Anlieferung: *Condition of the test item at delivery:*	Prüfmuster vollständig und unbeschädigt *Test item complete and undamaged*

* Legende	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
** Legend:*	*P(ass) = passed a.m. test specification(s)*	*F(ail) = failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.
This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.
V05

Prüfbericht-Nr.: CN2232H0 001
Test report no.:

Anmerkungen
Remarks

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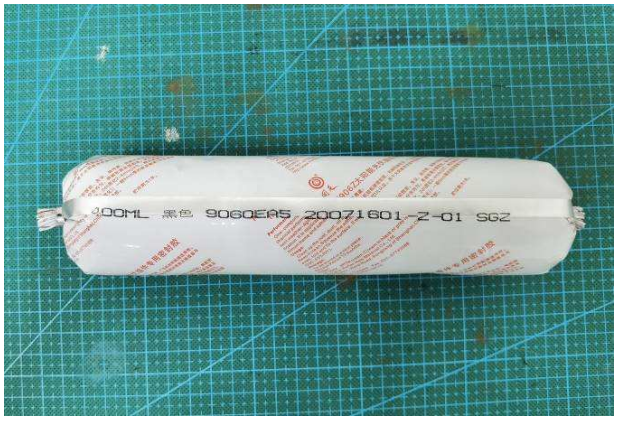
4	Die Messunsicherheit der in diesem Prüfbericht aufgeführten Messverfahren wird nicht in die Einhaltung der jeweiligen Grenzwerte / Betriebsbedingungen mit einbezogen. *The measurement uncertainly of the measurement procedures listed in this test report does not include the compliance of the respective limit values / operating conditions*
5	Sofern mit dem Kunden keine abweichende Regelung getroffen wurde, wird eine Konformitätsbewertung grundsätzlich auf Basis der angewendeten Normen durchgeführt. Auf Kundenwunsch wird die Aussage zur Konformität des in diesem Prüfbericht geprüften Produktes nach den Kriterien / Anforderungen der angewendeten Normen durchgeführt. Davon abweichende Bewertungsbedingungen werden in den jeweiligen Kapiteln gesondert dokumentiert. *Unless oherwise agreed with the customer, a conformity assessment is always carried out based on the applied standards.* *At the customer´s request, the statement on the conformity of the product tested in this test report is carried out according to the criteria / requirements of the applied standards.* *Evaluation conditions deviating from these are documented separately in the respective chapters.*

Produktbeschreibung
Product description

1	**Produktdetails** *Product details*	PV Silicone sealant Type: HT906Z
2	**Maße / Gewicht** *Dimensions / Weight*	N/A
3	**Bedienelemente** *Operating elements*	N/A
4	**Ausstattung / Zubehör** *Equipment / Accessories*	N/A
5	**Verwendete Materialien** *Used materials*	See table 4.2.1
6	**Sonstiges** *Other*	Test sample(s), as well sample information, description, product details and intended usage was provided by customer.
7	**Prüfmusterbereitstellung**: *Test sample obtaining:*	☒ Sending by customer ☐ Sampling by TÜV Rheinland Group ☐ others:

HT906Z(White)



HT906Z(Black)

Remark:

1. Silicone gel HT906Z as PV frame sealing or Adhesive between junction box and backsheet.

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements – Tests* **2PfG 2541/02.2022**	**Messergebnisse – Bemerkungen /** *Measuring results - Remarks*	**Ergebnis** *Result*
4	**Constructional requirements and performance**		
4.1	**General**		
4.2	**Marking and identification**		
4.2.1	The following information has been provided by the manufacturer:		
	a) manufacturer's name, trademark or mark of origin (including address and contact information of the manufacturers)	Shanghai Huitian New Material Co., Ltd. TD:	P ☒ F ☐ N/A ☐ N/T ☐
	b) type identification	HT906Z	P ☒ F ☐ N/A ☐ N/T ☐
	c) mixing ratio (for multi- component)		P ☐ F ☐ N/A ☒ N/T ☐
	d) color	White or Black	P ☒ F ☐ N/A ☐ N/T ☐
	e) curing type	Deoximation	P ☒ F ☐ N/A ☐ N/T ☐
	f) rang of temperature (lowest and upper ambient temperature)	(-40 - +85)°C	P ☒ F ☐ N/A ☐ N/T ☐
	g) production date and guaranteed shelf live	Shelf life is 12 months under dry and cool place.	P ☒ F ☐ N/A ☐ N/T ☐
	h) reference to this standard	2PfG 2541/02.2022	P ☒ F ☐ N/A ☐ N/T ☐
4.2.2	The marking (or label) is indelible and easily legible. items a), b), g) of 4.2.1 are on the package	Conformity	P ☒ F ☐ N/A ☐ N/T ☐

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements – Tests* **2PfG 2541/02.2022**	**Messergebnisse – Bemerkungen /** *Measuring results - Remarks*	**Ergebnis** *Result*
4.2.3	All information of 4.2.1 not marked on the package are given in the technical documentation of the manufacturer:	Conformity	P ☒ F ☐ N/A ☐ N/T ☐
	a) Information on curing process regarding the mixing method, application time and the shape of thoroughly curing, if applicable.	Conformity	P ☒ F ☐ N/A ☐ N/T ☐
	b) Information on contact medium (e.g. backsheet material, Al-alloy material, junction box housing material, conductive parts), if applicable.	Conformity	P ☒ F ☐ N/A ☐ N/T ☐
	c) Information on product relevant technical information (e.g. flammability class, comparative tracking index (CTI), high-current arc ignition (HAI), thermal conductivity etc.), if applicable.	Conformity	P ☒ F ☐ N/A ☐ N/T ☐
	d) Handing precaution (product safety information), or ROHS and REACH report for silicone sealant product, if applicable.	See Attachment I: CN2232H0 001 and Attachment II: CN2232H0 001.	P ☒ F ☐ N/A ☐ N/T ☐
	e) Usable lift and storage condition, if applicable.	Conformity	P ☒ F ☐ N/A ☐ N/T ☐
5	**TESTS**		
5.3.1	**COLOR AND APPEARANCE**		
	Uncured specimen are the fine and uniform viscous liquid, without caking, crust and precipitate phenomenon appears.	Conformity	P ☒ F ☐ N/A ☐ N/T ☐
	The colour of one-component is uniform and homogeneous.	White or Black	P ☒ F ☐ N/A ☐ N/T ☐
	The colour of multi-components are easy to identify for each other.		P ☐ F ☐ N/A ☒ N/T ☐
5.3.2	**COMPARATIVE TRACKING INDEX (CTI)**		
	The CTI value of testing specimen……:	CTI 600	—
	Sample stack preparation (stacked sheets or 3 mm plate like specimen).	3mm	—

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements – Tests* **2PfG 2541/02.2022**	**Messergebnisse – Bemerkungen /** *Measuring results - Remarks*	**Ergebnis** *Result*
	Resulting material group ……..…..:	See table 5.3.2 Material group I	—
5.3.3	**FLAMMABILITY CLASSIFICATION**		
	The flammability class of adhesive material or frame sealing is…….……..…..:	V-0	—
	The adhesive material or frame sealing performed in accordance of IEC 60695-11-10 and meet the requirement of table 1.	Conformity	P ☒ F ☐ N/A ☐ N/T ☐
	The flammability class of potting material is……..…..:	N/A	—
	The potting material performed in accordance of IEC 60695-11-10 and meet the requirement of table 1.		P ☐ F ☐ N/A ☒ N/T ☐
5.3.4	**Glow wire test**		
	Glow wire temperature during test acc. to IEC 60695-2-11 for non- contact with electric parts…….: [650°C]		P ☒ F ☐ N/A ☐ N/T ☐
	Glow wire temperature during test acc. to IEC 60695-2-11 for contact with electric parts ……..…..: [750°C]		P ☐ F ☐ N/A ☒ N/T ☐
	No ignition of the material	See table 5.3.4	P ☒ F ☐ N/A ☐ N/T ☐
5.3.5	**SHEAR STRENGTH**		
	The sealing material is distribution uniform between two plate aluminum foils (or sheets), and thickness of sealing material is at least for 0,5mm.		—
	The tensile tester set to test condition accordingly, - Initial distance between the grips; - Grip test speed	Initial distance: 100 mm; Grip test speed: 50 mm/min.	—
	CP: Clear Panel; PS: Panel stain; CF: Cohesive Failure; AT: Adhesive Transfer The codes for failure of each test piece:	Sample 1: CF Sampel 2: CF Sample 3: CF Sampel 4: CF Sample 5: CF	—
	The average shear strength is…….....: [N/10mm]	See table 5.3.7	—

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements – Tests* **2PfG 2541/02.2022**	**Messergebnisse – Bemerkungen /** *Measuring results - Remarks*	**Ergebnis** *Result*
	After ageing testing, the reduce rate of share strength is meet the requirement of table 1.	Conformity	P ☒ F ☐ N/A ☐ N/T ☐
5.3.6	**Volume resistivity**		
	The dimenstion and thickness of specimen……..:	1mm	—
	The test method is acc. to IEC 62631-3-1, method A or Method B……:	Method A	—
	The minimum volume resistivity is ……:	Dry: 5,27 x 10E15 Ω·cm; Wet: 1,15 x 10E15 Ω·cm	P ☒ F ☐ N/A ☐ N/T ☐
5.3.7	**TENSILE STRENGTH / ELONGATION AT BREAK**		
	Dumb-bell specimen prepared according to ISO 37, test specimen model type 2.		—
	The tensile tester set to test condition accordingly, - Initial distance between the grips; - Grip test speed;	Initial distance: 50 mm; Grip test speed: 500 mm/min.	—
	Any test specimen that break outside the narrow portion or yields outside the test length are discarded and a repeat test conducted on an additional test specimen.		—
	Tensile strength is……: [MPa]	See table 5.3.7	—
	After ageing testing, the reduce rate of Tensile strength is meet the requirement of table 1.	Conformity	P ☒ F ☐ N/A ☐ N/T ☐
	Elongation at break is ……: [%]	See table 5.3.7	—
	After ageing testing, the reduce rate of Elongation at break is meet the requirement of table 1.	Conformity	P ☒ F ☐ N/A ☐ N/T ☐
5.3.8	**TACK-FREE TIME (APPLICATION TIME)**		
	The time, which a adhesives sealant to develop a non-tacky surface based on adhesion to the finger. [min.]	≤ 30 min	—
	The test result is ……:	22,47 min for HT906Z(White); 24,30 min for HT906Z(Black)	P ☒ F ☐ N/A ☐ N/T ☐

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements – Tests* **2PfG 2541/02.2022**	**Messergebnisse – Bemerkungen /** *Measuring results - Remarks*	**Ergebnis** *Result*
5.3.9	**CURING SPEED**		
	After 24hours curing under standard conditions. The cured distance between two points is……:	23,70 mm for HT906Z(White); 17,50 mm for HT906Z(Black)	—
	Requirement for Calculation the curing speed in 24 hours.	≥ 2	—
	The test result is ……:	7,90 mm/ 24h @ 25ºC for HT906Z(White); 5,83 mm/ 24h @ 25ºC for HT906Z(Black)	P ☒ F ☐ N/A ☐ N/T ☐
5.3.10	**BREAKDOWN VOLTAGE**		
	The DC breakdown voltage test is performed according to IEC 60243-2.		—
	Requirement for Breakdown voltage (DC) [kV].	≥ 15 kV	—
	Compare the reduce rate which the result shall be not less than 50% initial value. The test result is ……:	Initial: 18,58 kV for HT906Z(White); 18,94 kV for HT906Z(Black) After DH1000: 13,39 kV for HT906Z(White); 14,26 kV for HT906Z(Black) After TC200: 15,36 kV for HT906Z(White); 17,66 kV for HT906Z(Black) After TC50+HF10: 16,22 kV for HT906Z(White); 15,67 kV for HT906Z(Black)	P ☒ F ☐ N/A ☐ N/T ☐
5.3.11	**VISCOSITY TEST**		
	The viscosity test in this standard is performed refer to rotational viscometer method.		—
	Requirement for viscosity test…….. :	≤ 15000 mPa·s	—
	The viscosity test is……..: (mPa · s)		P ☐ F ☐ N/A ☒ N/T ☐
5.3.12	**THERMAL CONDUCTIVITY**		
	Requirement for viscosity test…….. :	≥ 0,2 W/(m·K)	—
	The thermal conductive is…….. : [W/(m·K)]		P ☐ F ☐ N/A ☒ N/T ☐

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements – Tests* **2PfG 2541/02.2022**	**Messergebnisse – Bemerkungen /** *Measuring results - Remarks*	**Ergebnis** *Result*
5.3.13	**RESTRICTION OF HAZARDOUS SUBSTANCES (ROHS) AND REGISTRATION, EVALUATION AND AUTHORIZATION OF CHEMICALS (REACH) DIRECTIVE**		
	The chemical composition of sealant or potting material should meet the ROHS Directive.	See Attachment I: CN2232H0 001.	P ☒ F ☐ N/A ☐ N/T ☐
	The chemical composition of sealant or potting material should meet the REACH Directive.	See Attachment II: CN2232H0 001.	P ☒ F ☐ N/A ☐ N/T ☐
5.3.14	**ACCELERATED AGEING TESTS**		
5.3.14.3	**THERMAL CYCLE TEST**		
	– transfer duation: ≤100°C/h; – the temperature at the limit values must be constant for minimum 10min.; – cycle number: 200; – highest test temperature: (+85 +- 2)°C; – lowest test temperature: (-40 +- 2)°C;	TC200	—
	– transfer duation: ≤100°C/h; – the temperature at the limit values must be constant for minimum 10min.; – cycle number: 50; – highest test temperature: (+85 +- 2)°C; – lowest test temperature: (-40 +- 2)°C;	TC50	—
	– Tensile strength and elongation at break according to clause 5.3.7.	See Clause 5.3.7	P ☒ F ☐ N/A ☐ N/T ☐
	– Shear strength according to 5.3.7.	See Clause 5.3.7	P ☒ F ☐ N/A ☐ N/T ☐
	– Breakdown voltage according to 5.3.10.	See Clause 5.3.10	P ☒ F ☐ N/A ☐ N/T ☐
5.3.14.4	**HUMIDITY FREEZE TEST**		
	– Number of cycle……10; – Temperature range……-40°C - +85°C; – Humidity……85%; – Cycle time……24 hours;	HF10	—

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements – Tests* **2PfG 2541/02.2022**	**Messergebnisse – Bemerkungen /** *Measuring results - Remarks*	**Ergebnis** *Result*
	– Tensile strength and elongation at break according to clause 5.3.7.	See Clause 5.3.7	P ☒ F ☐ N/A ☐ N/T ☐
	– Shear strength according to 5.3.7.	See Clause 5.3.7	P ☒ F ☐ N/A ☐ N/T ☐
	– Breakdown voltage according to 5.3.10.	See Clause 5.3.10	P ☒ F ☐ N/A ☐ N/T ☐
5.3.14.5	**Damp-Heat (DH) testing at elevated heat and moisture**		
	– test temperature: (+85 +- 2)°C; – relative humidity: (+85 +- 5)%; – duration: 1000h±48h;	DH1000	—
	– Tensile strength and elongation at break according to clause 5.3.7.	See Clause 5.3.7	P ☒ F ☐ N/A ☐ N/T ☐
	– Shear strength according to 5.3.7.	See Clause 5.3.7	P ☒ F ☐ N/A ☐ N/T ☐
	– Breakdown voltage according to 5.3.10.	See Clause 5.3.10	P ☒ F ☐ N/A ☐ N/T ☐
5.3.15	**Matching test with PV component (Optional test)**		
	The tests according to the standard IEC 62790, the test group E 3, group F2, group G1+G2 and Table B.1		—
	Used to test the material name or type of Backsheet and Junction Box, which contact with the adhesive and potting material.	Housing material of Junction box: PPE+PS,PX9406P(C)(f1)(IT), manufactured by SABIC JAPAN L L C. and material of Base is PA66, A 50H1(r3)(f1), manufactured by BASF Engineering Plastics (Shanghai) Co., Ltd. Air side material of Backsheet: PVDF foil	—

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements – Tests* **2PfG 2541/02.2022**	**Messergebnisse – Bemerkungen /** *Measuring results - Remarks*	**Ergebnis** *Result*
	There is no displacement of the junction box at the mounting surface after aging test.	Conformity	P ☒ F ☐ N/A ☐ N/T ☐
	The potting material is without blistering, cracks and voids, separation from base material after aging test.	Conformity	P ☐ F ☐ N/A ☒ N/T ☐
	No displacement of box after applying pull and pressure force parallel to mounting surface with a force of 80N for 30min.	Conformity	P ☒ F ☐ N/A ☐ N/T ☐
	No displacement of box after applying pull force perpendicular to mounting surface with a force of 80N for 30min.	Conformity	P ☒ F ☐ N/A ☐ N/T ☐

ZUSATZ-DOKUMENTATION
ADDITIONAL DOCUMENTATION

Table 4.2.1 Composition on ingredients			
Object / Part No.	Manufacturer	Catalog/Type	CAS Code
Aminopropyl triethoxy silane	Hubei Jianghan New MATERIALS Co., Ltd.	A-112	919-30-2
Polydimethyl siloxane	Jiangxi Xinghuo Organic Silicone Plant	2W107	63148-60-7
Calcium carbonate	Guangxi Huana New Material Technology Co., Ltd.	CCS-18	471-34-1
Vinyltris(methylethyl ketoxime) silane	Hubei Blue Sky New Material Inc.	D32	2224-33-1

Table 5.3.2	**COMPARATIVE TRACKING INDEX (CTI) test**				
Voltage (V)	300	400	500	575	600
Number of samples	3	3	3	5	5
Pass / Fail	Pass	Pass	Pass	Pass	Pass
Drops	/	/	/	/	/
Failure Reason *	/	/	/	/	/
Drops to Fail	/	/	/	/	/

*1) O.C. = Over current
2) Flame > 2 s

Table 5.3.3	**IEC 60695-11-10 / Flammability test HB, V-0, V-1, V-2**						
Specimen				Flame			
Part	Material	Material-thickness [mm]	Colour	After burning time	After glowing time	Ignition of the cotton wool	Result
HT906Z(White)	Sealant	3	White	0	11,12s	No	V-0
HT906Z(Black)	Sealant	3	Black	0	17,34s	No	V-0

Table 5.3.4	**IEC 60695-2-10 / Glow-wire-test [30 s]**								
Specimen				Flame					
Part	Material	Martial-thickness [mm]	Colour	[°C]	Start [s]	End [s]	Height [mm]	Ignition of tissue paper	Result
HT906Z(White)	Sealant	3	White	650	0	0	0	No	Pass
HT906Z(Black)	Sealant	3	Black	650	0	0	0	No	Pass

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ADDITIONAL DOCUMENTATION

Table 5.3.7 a) MECHANICAL CHARACTERISTICS for HT906Z(White)						
	Values of tensile strength [MPa]:					Median [MPa]
Before ageing	3,52	3,48	3,48	2,82	3,49	3,48
After TC200	2,60	2,70	2,41	2,68	2,64	2,64
After Damp heat	1,78	1,82	1,81	1,71	1,80	1,80
After TC50+HF10	2,28	2,31	2,38	2,30	2,27	2,30
	Values of elongation at break [%]:					Median [%]
Before ageing	477,42	475,75	470,66	386,63	485,49	475,75
After TC200	611,16	617,02	615,44	614,40	617,91	615,44
After Damp heat	611,16	617,02	615,44	614,40	617,91	615,44
After TC50+HF10	593,71	606,39	600,07	582,96	596,23	596,23
	Values of shear strength [MPa]:					Median [MPa]
Before ageing	3,38	3,28	3,23	2,72	3,66	3,28
After TC200	2,94	3,48	3,32	3,38	3,18	3,32
After Damp heat	2,20	2,12	2,07	1,91	2,01	2,07
After TC50+HF10	2,08	2,00	2,30	2,45	2,33	2,30

Table 5.3.7 b) MECHANICAL CHARACTERISTICS for HT906Z(Black)						
	Values of tensile strength [MPa]:					Median [MPa]
Before ageing	3,42	3,28	3,28	3,24	3,02	3,28
After TC200	2,94	2,82	3,06	2,69	3,31	2,94
After Damp heat	2,12	2,12	2,10	2,11	2,11	2,11
After TC50+HF10	2,53	2,58	2,55	2,54	2,55	2,55
	Values of elongation at break [%]:					Median [%]
Before ageing	423,10	411,06	408,51	405,12	384,10	408,51
After TC200	333,24	317,92	354,35	313,59	391,13	333,24
After Damp heat	604,53	598,11	607,05	603,11	595,30	603,11
After TC50+HF10	598,71	607,07	573,37	592,15	603,99	598,71
	Values of shear strength [MPa]:					Median [MPa]
Before ageing	3,52	3,49	3,49	3,48	3,69	3,49
After TC200	3,70	3,49	3,67	3,60	3,06	3,60
After Damp heat	1,98	1,89	2,09	2,30	2,13	2,09
After TC50+HF10	2,68	2,57	2,66	2,22	2,47	2,57

ZUSATZ-DOKUMENTATION
ADDITIONAL DOCUMENTATION

Table 5.3.1 a) IR test for HT906Z (White)

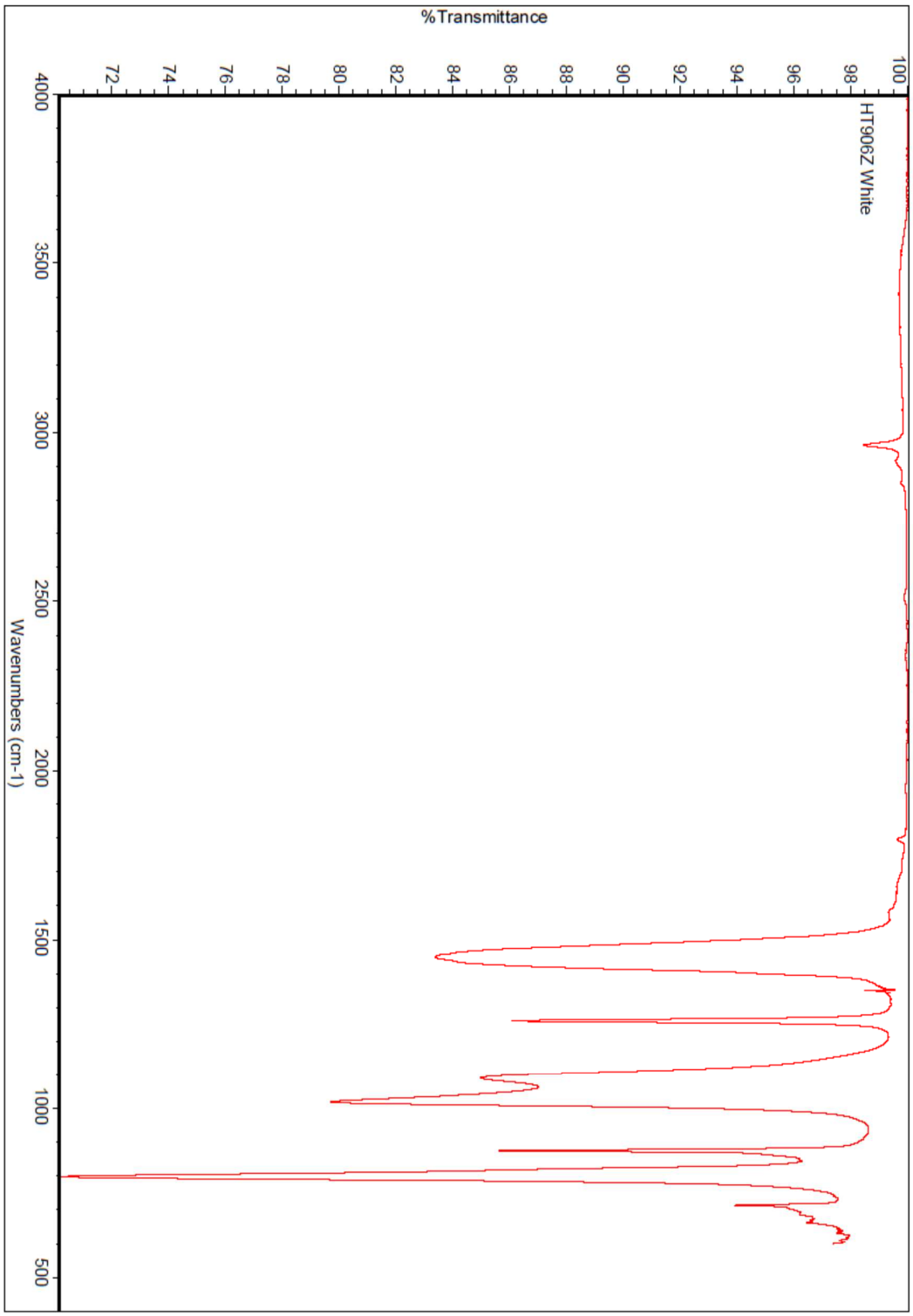
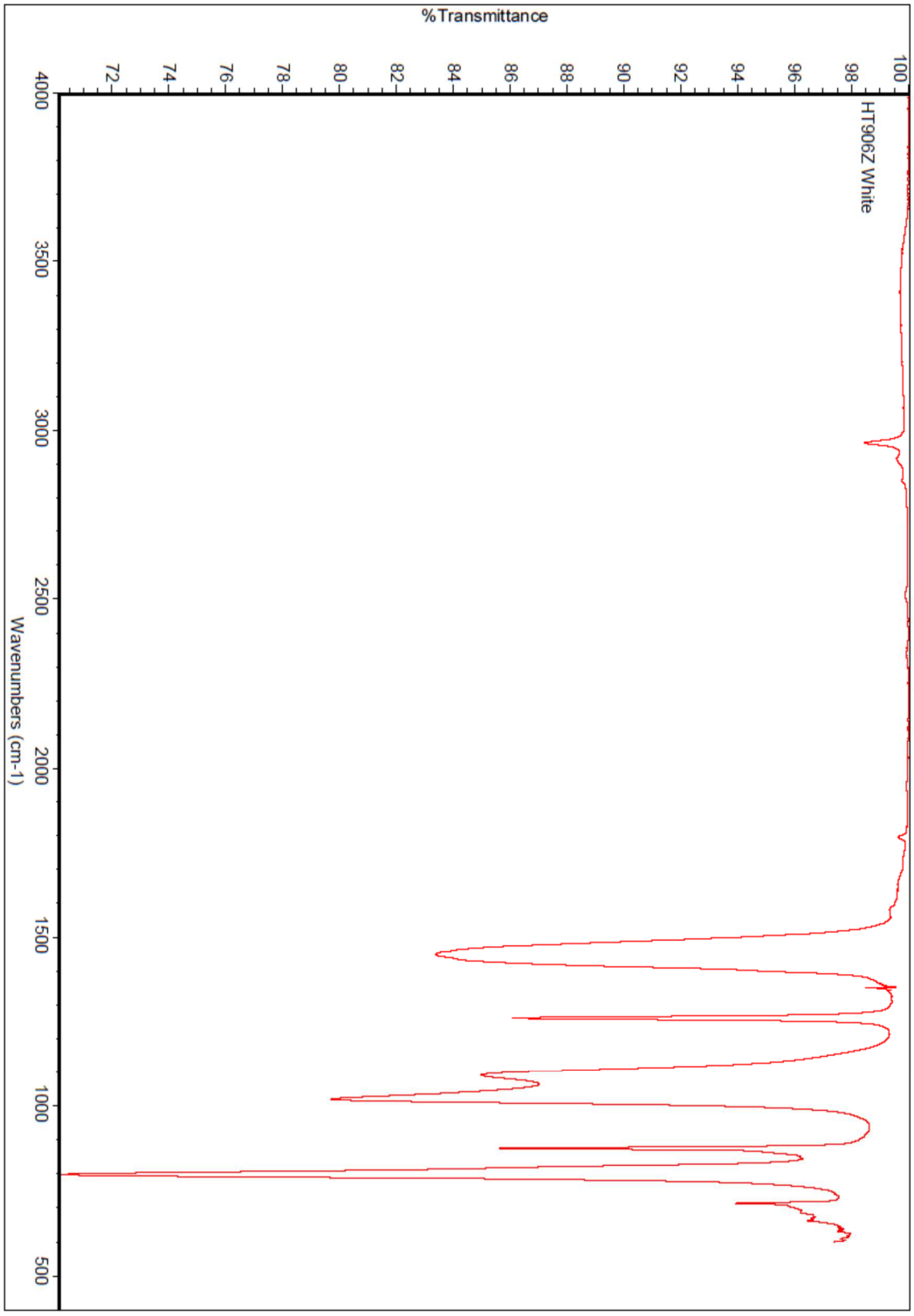


Table 5.3.1 b) IR test for HT906Z (Black)



ZUSATZ-DOKUMENTATION
ADDITIONAL DOCUMENTATION

-- Ende des Prüfberichts / *End of Test Report* ---

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Test Report No.:	Attachment I: CN2232H0 001		*Page 1 of 4*
Client:	**Shanghai Huitian New Material Co., Ltd.**		
Address:	**NO.251 Wenji RD, Songjiang District, 201600 Shanghai, P.R. China**		
Test item(s):	RoHS test	***Material:***	Sealant
Identification/ Model No(s):	HT906Z		
Sample Receiving date:	2022.06.08		
Testing Period:	2022.06.08 – 2022.06.20		

Test specification:	***Test result:***
Overall results according to tests performed	PASS/FAIL
1. Cadmium, Lead, Chromium (VI), Mercury, Polybrominated biphenyls (PBB) and Polybrominated diphenyl ethers (PBDE)	PASS
2. Benzylbutyl phthalate (BBP), Dibutyl phthalate (DBP), Bis(2-ethylhexyl) phthalate (DEHP), Diisobutyl phthalate (DIBP)	PASS

Other Information:
DEHP, BBP and DBP are regulated by entry 51 of Regulation (EC) NO. 1907/2006, Refer to report No. CN2232H0 001

For and on behalf of
TÜV Rheinland (Shanghai) Co., Ltd.

2022-09-08	John Tie/ Section Manager
Date	*Name/Position*

Test result is drawn according to the kind and extent of tests performed.
This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.

Material list

Item:

Material No.	Material	Identification	Color
1	Sealant	HT906Z	White or Black

Remark :

1. Component(s)/ materials(s) with an area of less than 2mm x2 mm will not be selected for testing according to RoHS Directive 2011/65/EU due to technical reason.
2. For the test sample does not have detail materials information provided by client, visually identical materials (e.g. wire insulation, solder points, etc.) will be considered as the same material.
3. Solder points on a printing circuit board will be examined several times based on optical anomalies or discoloration of the solder point(s) unless the solder point(s) is obviously generated automatically during production.
4. All other materials will be sampled and tested at one test point representatively.

1. Cadmium, Lead, Chromium (VI), Mercury, Polybrominated biphenyls (PBB) and Polybrominated diphenyl ethers (PBDE)

Test method : Total Cadmium, Lead, Mercury, Chromium
- Ref. to IEC 62321-4:2013+AMD1:2017 and IEC 62321-5:2013

Chromium (VI)
- For Metal material - Ref. to IEC 62321-7-1:2015
- For Plastic or Electronic material - Ref. to IEC 62321-7-2:2017
- For Leather material - Ref. to EN ISO 17075-1:2017

PBBs, PBDEs – Ref. to IEC 62321-6:2015

BBP, DBP, DEHP, DIBP - Ref. to IEC 62321-8:2017
Organic solvent extraction, analyzed by GCMS

Test result:
HT906Z(White and Black)

Test Item	Unit	MDL	Result
Pb	mg/kg	2	N.D.
Cd	mg/kg	2	N.D.
Hg	mg/kg	2	N.D.
Cr (VI)	mg/kg	8	N.D.
PBBs	mg/kg	5	N.D.
PBDEs	mg/kg	5	N.D.
DBP	mg/kg	50	N.D.
BBP	mg/kg	50	N.D.
DEHP	mg/kg	50	N.D.
DIBP	mg/kg	50	N.D.

Abbreviation:
Pb = Lead
Cd = Cadmium
Hg = Mercury
Cr = Chromium
Cr (VI) = Chromium (VI)
PBBs = Total Polybrominated Biphenyls
PBDEs = Total Polybrominated Diphenyl Ethers
n.a. = Not Applicable
^ = The total Chromium have been determined.
BBP = Benzylbutyl phthalate
DBP = Dibutyl phthalate
DEHP = Bis(2-ethylhexyl) phthalate
DIBP = Diisobutyl phthalate
RL = Reporting Limit
% = percentage
N.D. = Not detected

Sample Photo:

HT906Z(White)

HT906Z(Black)

-- END ---

Test Report No.:	Attachment II: CN2232H0 001	*Page 1 of 11*	
Client:	**Shanghai Huitian New Material Co., Ltd.**		
Address:	**NO.251 Wenji RD, Songjiang District, 201600 Shanghai, P.R. China**		
Test item(s):	Reach test	***Material:***	Sealant
Identification/ Model No(s):	HT906Z		
Sample Receiving date:	2022.06.08		
Testing Period:	2022.06.08 – 2022.06.20		

Test specification:	***Test result:***
Customer Requirement: 1. Risk Assessment of Articles: Screening of substances of very high concern (SVHC) subject to the candidate list by European Chemical Agency (ECHA) according to Regulation (EC) No. 1907/2006 of REACH and its amendments	SVHC concentration(s) ≤ 0.1%

For and on behalf of
TÜV Rheinland (Shanghai) Co., Ltd.

2022-09-08	John Tie/ Section Manager
Date	*Name/Position*

Test result is drawn according to the kind and extent of tests performed.
This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.

Material list

Item:

Material No.	Material	Identification	Color
1	Sealant	HT906Z	White or Black

1. Screening of substances of very high concern (SVHC) subject to the candidate list by European Chemical Agency (ECHA) according to Regulation (EC) No. 1907/2006 of REACH and its amendments

Obligation of Importer is necessary if the detected SVHC concentration in article level is >0.1%:
To communicate information down the supply chain according to article. 33 of REACH. **OR**

1. Notification to ECHA, if the quantities of SVHC in the produced/imported articles are above 1 ton in total per year per company.
2. Provide sufficient information to ensure safe use of the article and, as a minimum, include the name of the substance, to their customers and on request to consumers within 45 days of the receipt of this request.

Test Method: 1) SVOC: organic solvent extraction, determination by GC-MS/ECD
2) VOC: organic solvent extraction, determination by GC-MS
3) VVOC: headspace-GC/MS analysis
4) non-VOC: organic solvent extraction, determination by LC-MS/MS.
5) inorganics: acid digestion, determination by ICP-OES

Test Results:

HT906Z(White)

Test No.	Material No.	CAS No.	MDL (%)	Result (%)
1	Octamethylcyclotetrasiloxane (D4)	556-67-2	0.01	N/A
2	Decamethylcyclopentasiloxane (D5)	541-02-6	0.01	N/A
3	Dodecamethylcyclohexasiloxane (D6)	540-97-6	0.01	0.03

HT906Z(Black)

Test No.	Material No.	CAS No.	MDL (%)	Result (%)
1	Octamethylcyclotetrasiloxane (D4)	556-67-2	0.01	0.011
2	Decamethylcyclopentasiloxane (D5)	541-02-6	0.01	0.03
3	Dodecamethylcyclohexasiloxane (D6)	540-97-6	0.01	0.06

2. 2-Butanone oxime

Test method : determination by GC-MS

HT906Z(White)

Test Item	CAS No.	MDL(mg/kg)	Result(mg/kg)
2-Butanone oxime*	96-29-7	10	2469

HT906Z(Black)

Test Item	CAS No.	MDL(mg/kg)	Result(mg/kg)
2-Butanone oxime*	96-29-7	10	2301

Abbreviation: N.D. = Not detected

Remark:

(*1) The reporting limit for each individual SVHC in Candidate List by ECHA:

	Substances	CAS No.	Reporting Limit
1	4,4'- Diaminodiphenylmethane (MDA)	101-77-9	0.01%
2	Benzyl butyl phthalate (BBP)	85-68-7	0.01%
3	Bis (2-ethylhexyl)phthalate (DEHP)	117-81-7	0.01%
4	Dibutyl phthalate (DBP)	84-74-2	0.01%
5	Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified: Alpha-hexabromocyclododecane Beta-hexabromocyclododecane Gamma-hexabromocyclododecane	25637-99-4 / 3194-55-6 / 134237-50-6 / 134237-51-7 / 134237-52-8	0.01%
6	5-tert-butyl-2,4,6-trinitro-m-xylene (Musk xylene)	81-15-2	0.01%
7	2,4-Dinitrotoluene (2,4-DNT)	121-14-2	0.01%
8	Diisobutyl phthalate (DIBP)	84-69-5	0.01%
9	Tris(2-chloroethyl)phosphate	115-96-8	0.01%
10	Diarsenic pentaoxide (*2)	1303-28-2	0.01%
11	Diarsenic trioxide (*2)	1327-53-3	0.01%
12	Lead chromate (*2) (*3)	7758-97-6	0.01%
13	Lead chromate molybdate sulphate red (C.I. Pigment Red 104) (*2) (*3)	12656-85-8	0.01%
14	Lead sulfochromate yellow (C.I. Pigment Yellow 34) (*2)	1344-37-2	0.01%
15	Trichloroethylene	79-01-6	0.01%
16	Chromium trioxide (*2)	1333-82-0	0.01%
17	Acids generated from chromium trioxide and their oligomers. Names of the acids and their oligomers: Chromic acid, Dichromic acid, Oligomers of chromic acid and dichromic acid. (*2)	7738-94-5 / 13530-68-2	0.01%
18	Sodium dichromate) (*2) (*3)	7789-12-0 / 10588-01-9	0.01%
19	Potassium dichromate (*2) (*3)	7778-50-9	0.01%
20	Ammonium dichromate (*2) (*3)	7789-09-5	0.01%
21	Potassium chromate (*2) (*3)	7789-00-6	0.01%
22	Sodium chromate (*2) (*3)	7775-11-3	0.01%
23	Formaldehyde, oligomeric reaction products with aniline (technical MDA) (*10)	25214-70-4	0.01%
24	1,2-Dichloroethane	107-06-2	0.01%
25	Bis(2-methoxyethyl) ether	111-96-6	0.01%
26	Arsenic acid (*2)	7778-39-4	0.01%
27	2,2'-dichloro-4,4'-methylenedianiline (MOCA)	101-14-4	0.01%
28	Dichromium tris(chromate) (*2) (*3)	24613-89-6	0.01%
29	Strontium chromate (*2) (*3)	7789-06-2	0.01%
30	Potassium hydroxyoctaoxodizincatedichromate (*2) (*3)	11103-86-9	0.01%
31	Pentazinc chromate octahydroxide (*2) (*3)	49663-84-5	0.01%
32	1-bromopropane (n-propyl bromide)	106-94-5	0.01%
33	Diisopentylphthalate	605-50-5	0.01%
34	1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP)	71888-89-6	0.01%
35	1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters (DHNUP)	68515-42-4	0.01%
36	1,2-Benzenedicarboxylic acid, dipentylester, branched and linear	84777-06-0	0.01%

	Substances	CAS No.	Reporting Limit
37	Bis(2-methoxyethyl) phthalate	117-82-8	0.01%
38	Dipentyl phthalate (DPP)	131-18-0	0.01%
39	N-pentyl-isopentylphthalate	776297-69-9	0.01%
40	Anthracene oil (*6)	90640-80-5	0.01%(*7)
41	Pitch, coal tar, high temperature (*6)	65996-93-2	0.01%(*7)
42	4-(1,1,3,3-tetramethylbutyl)phenol, ethoxylated (OPEO) *[covering well-defined substances and UVCB substances, polymers and homologues]*	-	0.01%
43	4-Nonylphenol, branched and linear *[substances with a linear and/or branched alkyl chain with a carbon number of 9 covalently bound in position 4 to phenol, covering also UVCB- and well-defined substances which include any of the individual isomers or a combination thereof]*	-	0.01%
44	1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear	68515-50-4	0.01%
45	Dihexyl phthalate	84-75-3	0.01%
46	1,2-benzenedicarboxylic acid, di-C6-10-alkyl esters; 1,2-benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters with ≥ 0.3% of dihexyl phthalate (EC No. 201-559-5)	68515-51-5 / 68648-93-1	0.01%
47	Trixylyl phosphate	25155-23-1	0.01%
48	Sodium perborate,perboric acid, sodium salt (*2) (*5)	-	0.01%
49	Sodium peroxometaborate (*2) (*5)	7632-04-4	0.01%
50	5-sec-butyl-2-(2,4-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane [1], 5-sec-butyl-2-(4,6-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane [2] [covering any of the individual stereoisomers of [1] and [2] or any combination thereof]	-	0.01%
51	2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol (UV-328)	25973-55-1	0.01%
52	2,4-di-tert-butyl-6-(5-chlorobenzotriazol-2-yl)phenol (UV-327)	3864-99-1	0.01%
53	2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl)phenol (UV-350)	36437-37-3	0.01%
54	2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320)	3846-71-7	0.01%
55	Anthracene	120-12-7	0.01%
56	Bis(tributyltin) oxide (TBTO) (*4)	56-35-9	0.01%
57	Triethyl arsenate (*2)	15606-95-8	0.01%
58	Lead hydrogen arsenate (*2)	7784-40-9	0.01%
59	Cobalt dichloride (*2)	7646-79-9	0.01%
60	Acrylamide	79-06-1	0.01%
61	Anthracene oil, anthracene paste, distn. lights (*6)	91995-17-4	0.01% (*7)
62	Anthracene oil, anthracene paste, anthracene fraction (*6)	91995-15-2	
63	Anthracene oil, anthracene-low (*6)	90640-82-7	
64	Anthracene oil, anthracene paste (*6)	90640-81-6	
65	Boric acid (*2) (*5)	10043-35-3 / 11113-50-1	0.01%
66	Disodium tetraborate, anhydrous (*2) (*5)	1303-96-4 / 1330-43-4 / 12179-04-3	0.01%
67	Tetraboron disodium heptaoxide, hydrate (*2) (*5)	12267-73-1	0.01%
68	2-Methoxyethanol	109-86-4	0.01%
69	2-Ethoxyethanol	110-80-5	0.01%
70	Cobalt(II) sulphate (*2)	10124-43-3	0.01%
71	Cobalt(II) dinitrate (*2)	10141-05-6	0.01%
72	Cobalt(II) carbonate (*2)	513-79-1	0.01%
73	Cobalt(II) diacetate (*2)	71-48-7	0.01%
74	Alkanes C10-C13, chloro (Short Chain Chlorinated Paraffins) (SCCP)	85535-84-8	0.01%

	Substances	CAS No.	Reporting Limit
75	2-Ethoxyethyl acetate	111-15-9	0.01%
76	Hydrazine	302-01-2 / 7803-57-8	0.01%
77	1-Methyl-2-pyrrolidone (NMP)	872-50-4	0.01%
78	1,2,3-Trichloropropane	96-18-4	0.01%
79	Aluminosilicate Refractory Ceramic Fibres (RCF) (*8)	-	0.01%
80	Zirconia Aluminosilicate Refractory Ceramic Fibres (Zr-RCF) (*8)	-	0.01%
81	2-Methoxyaniline,o-Anisidine	90-04-0	0.01%
82	4-(1,1,3,3-tetramethylbutyl)phenol	140-66-9	0.01%
83	Calcium arsenate (*2)	7778-44-1	0.01%
84	Trilead diarsenate (*2)	3687-31-8	0.01%
85	N,N-dimethylacetamide (DMAC)	127-19-5	0.01%
86	Phenolphthalein	77-09-8	0.01%
87	Lead dipicrate (*2)	6477-64-1	0.01%
88	Lead diazide, Lead azide (*2)	13424-46-9	0.01%
89	Lead styphnate (*2)	15245-44-0	0.01%
90	1,2-bis(2-methoxyethoxy)ethane (TEGDME,triglyme)	112-49-2	0.01%
91	1,2-dimethoxyethane,ethylene glycol dimethyl ether (EGDME)	110-71-4	0.01%
92	Diboron trioxide (*2) (*5)	1303-86-2	0.01%
93	Formamide	75-12-7	0.01%
94	Lead(II) bis(methanesulfonate) (*2)	17570-76-2	0.01%
95	1,3,5-Tris(oxiran-2-ylmethyl)-1,3,5-triazinane-2,4,6-trione (TGIC)	2451-62-9	0.01%
96	1,3,5-tris[(2S and 2R)-2,3-epoxypropyl]-1,3,5-triazine-2,4,6-(1H,3H,5H)-trione (β-TGIC)	59653-74-6	
97	4,4'-bis(dimethylamino)benzophenone (Michler's ketone), MK	90-94-8	0.01%
98	N,N,N',N'-tetramethyl-4,4'-methylenedianiline (Michler's base), RMK	101-61-1	0.01%
99	[4-[[4-anilino-1-naphthyl][4-(dimethylamino)phenyl]methylene] cyclohexa-2,5-dien-1-ylidene] dimethylammonium chloride (C.I. Basic Blue 26) [with ≥ 0.1% of Michler's ketone (EC No. 202-027-5) or Michler's base (EC No. 202-959-2)] (*2)	2580-56-5	0.01%
100	[4-[4,4'-bis(dimethylamino) benzhydrylidene]cyclohexa-2,5-dien-1-ylidene]dimethylammonium chloride (C.I. Basic Violet 3) [with ≥ 0.1% of Michler's ketone (EC No. 202-027-5) or Michler's base (EC No. 202-959-2)] (*9)	548-62-9	
101	4,4'-bis(dimethylamino)-4''-(methylamino)trityl alcohol [with ≥ 0.1% of Michler's ketone (EC No. 202-027-5) or Michler's base (EC No. 202-959-2)] (*9)	561-41-1	
102	α,α-Bis[4-(dimethylamino)phenyl]-4 (phenylamino)naphthalene-1-methanol (C.I. Solvent Blue 4) [with ≥ 0.1% of Michler's ketone (EC No. 202-027-5) or Michler's base (EC No. 202-959-2)] (*9)	6786-83-0	
103	Bis(pentabromophenyl) ether (decabromodiphenyl ether) (DecaBDE)	1163-19-5	0.01%
104	Pentacosafluorotridecanoic acid	72629-94-8	0.01%
105	Tricosafluorododecanoic acid	307-55-1	0.01%
106	Henicosafluoroundecanoic acid	2058-94-8	0.01%
107	Heptacosafluorotetradecanoic acid	376-06-7	0.01%
108	Diazene-1,2-dicarboxamide (C,C'-azodi(formamide)) (ADCA) (*11)	123-77-3	0.05%
109	Cyclohexane-1,2-dicarboxylic anhydride [1], cis-cyclohexane-1,2-dicarboxylic anhydride [2], trans-cyclohexane-1,2-dicarboxylic anhydride [3] [The individual cis- [2] and trans- [3] isomer substances and all possible combinations of the cis- and trans-isomers [1] are covered by this entry]	85-42-7 / 13149-00-3 / 14166-21-3	0.01%

	Substances	CAS No.	Reporting Limit
110	Hexahydromethylphthalic anhydride (MHHPA) [1], Hexahydro-4-methylphthalic anhydride [2], Hexahydro-1-methylphthalic anhydride [3], Hexahydro-3-methylphthalic anhydride [4] [The individual isomers [2], [3] and [4] (including their cis- and trans-stereo isomeric forms) and all possible combinations of the isomers [1] are covered by this entry]	25550-51-0 / 19438-60-9 / 48122-14-1 / 57110-29-9	0.01%
111	N,N-dimethylformamide	68-12-2	0.01%
112	1,2-Diethoxyethane	629-14-1	0.01%
113	Diethyl sulphate	64-67-5	0.01%
114	Methoxyacetic acid (MAA)	625-45-6	0.01%
115	Dimethyl sulphate	77-78-1	0.01%
116	N-methylacetamide	79-16-3	0.01%
117	Furan	110-00-9	0.01%
118	Methyloxirane (Propylene oxide)	75-56-9	0.01%
119	3-ethyl-2-methyl-2-(3-methylbutyl)-1,3-oxazolidine	143860-04-2	0.01%
120	Dibutyltin dichloride (DBTC) (*15)	683-18-1	0.01%
121	Dinoseb (6-sec-butyl-2,4-dinitrophenol)	88-85-7	0.01%
122	4,4'-methylenedi-o-toluidine	838-88-0	0.01%
123	4,4'-oxydianiline and its salts	101-80-4	0.01%
124	4-Aminoazobenzene	60-09-3	0.01%
125	4-methyl-m-phenylenediamine (toluene-2,4-diamine)	95-80-7	0.01%
126	6-methoxy-m-toluidine (p-cresidine)	120-71-8	0.01%
127	Biphenyl-4-ylamine	92-67-1	0.01%
128	o-aminoazotoluene	97-56-3	0.01%
129	o-Toluidine	95-53-4	0.01%
130	Acetic acid, lead salt, basic (*2)	51404-69-4	0.01%
131	Trilead bis(carbonate) dihydroxide (*2)	1319-46-6	0.01%
132	Lead oxide sulfate (*2)	12036-76-9	0.01%
133	[Phthalato(2-)]dioxotrilead (*2)	69011-06-9	0.01%
134	Dioxobis(stearato)trilead (*2)	12578-12-0	0.01%
135	Fatty acids, C16-18, lead salts (*2)	91031-62-8	0.01%
136	Lead bis(tetrafluoroborate) (*2)	13814-96-5	0.01%
137	Lead cyanamidate (*2)	20837-86-9	0.01%
138	Lead dinitrate (*2)	10099-74-8	0.01%
139	Lead monoxide (lead oxide) (*2)	1317-36-8	0.01%
140	Orange lead (lead tetroxide) (*2)	1314-41-6	0.01%
141	Lead titanium trioxide (*2)	12060-00-3	0.01%
142	Lead titanium zirconium oxide (*2)	12626-81-2	0.01%
143	Pyrochlore, antimony lead yellow (*2)	8012-00-8	0.01%
144	Pentalead tetraoxide sulphate (*2)	12065-90-6	0.01%
145	Silicic acid ($H_2Si_2O_5$), barium salt (1:1), lead-doped *[with lead (Pb) content above the applicable generic concentration limit for 'toxicity for reproduction' Repr. 1A (CLP) or category 1 (DSD),the substance is a member of the group entry of lead compounds, with index number 082-001-00-6 in Regulation (EC) No 1272/2008]* (*2)	68784-75-8	0.01%
146	Silicic acid, lead salt (*2)	11120-22-2	0.01%
147	Sulfurous acid, lead salt, dibasic (*2)	62229-08-7	0.01%
148	Tetraethyllead (*2)	78-00-2	0.01%

	Substances	CAS No.	Reporting Limit
149	Tetralead trioxide sulphate (*2)	12202-17-4	0.01%
150	Trilead dioxide phosphonate (*2)	12141-20-7	0.01%
151	Ammonium pentadecafluorooctanoate (APFO) (*12)	3825-26-1	0.01%
152	Pentadecafluorooctanoic acid (PFOA)	335-67-1	0.01%
153	Cadmium (*2)	7440-43-9	0.01%
154	Cadmium oxide (*2)	1306-19-0	0.01%
155	4-Nonylphenol, branched and linear, ethoxylated (NPEO) [*substances with a linear and/or branched alkyl chain with a carbon number of 9 covalently bound in position 4 to phenol, ethoxylated covering UVCB- and well-defined substances, polymers and homologues, which include any of the individual isomers and/or combinations thereof*]	-	0.01%
156	Imidazolidine-2-thione; (2-imidazoline-2-thiol)	96-45-7	0.01%
157	Disodium 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(azo)]bis(4-aminonaphthalene-1-sulphonate) (C.I. Direct Red 28)	573-58-0	0.01%
158	Disodium 4-amino-3-[[4'-[(2,4-diaminophenyl)azo][1,1'-biphenyl]-4-yl]azo]-5-hydroxy-6-(phenylazo)naphthalene-2,7-disulphonate (C.I. Direct Black 38)	1937-37-7	0.01%
159	Lead di(acetate) (*2)	301-04-2	0.01%
160	Cadmium sulphide (*2)	1306-23-6	0.01%
161	Cadmium chloride (*2)	10108-64-2	0.01%
162	Cadmium fluoride (*2)	7790-79-6	0.01%
163	Cadmium sulphate (*2)	10124-36-4 / 31119-53-6	0.01%
164	2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (DOTE) (*13)	15571-58-1	0.01%
165	Reaction mass of 2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate and 2-ethylhexyl 10-ethyl-4-[[2-[(2-ethylhexyl)oxy]-2-oxoethyl]thio]-4-octyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (reaction mass of DOTE and MOTE) (*14)	-	0.01%
166	1,3-propanesultone	1120-71-4	0.01%
167	Nitrobenzene	98-95-3	0.01%
168	Perfluorononan-1-oic-acid and its sodium and ammonium salts	375-95-1 / 21049-39-8 / 4149-60-4 /	0.01%
169	Benzo[def]chrysene (Benzo[a]pyrene)	50-32-8	0.01%
170	4,4'-isopropylidenediphenol (bisphenol A)	80-05-7	0.01%
171	Nonadecafluorodecanoic acid (PFDA) and its sodium and ammonium salts	335-76-2 / 3830-45-3 / 3108-42-7	0.01%
172	4-heptylphenol, branched and linear [substances with a linear and/or branched alkyl chain with a carbon number of 7 covalently bound predominantly in position 4 to phenol, covering also UVCB- and well-defined substances which include any of the individual isomers or a combination thereof]	-	0.01%
173	*p*-(1,1-dimethylpropyl)phenol	80-46-6	0.01%
174	Perfluorohexane-1-sulfonic acid and its salts (PFHxS)	-	0.01%
175	Chrysene	218-01-9	0.01%
176	Benzo[a]anthracene	56-55-3	0.01%
177	Cadmium nitrate(*2)	10325-94-7	0.01%
178	Cadmium hydroxide(*2)	21041-95-2	0.01%
179	Cadmium carbonate(*2)	513-78-0	0.01%
	Substances	**CAS No.**	**Reporting Limit**

180	1,6,7,8,9,14,15,16,17,17,18,18-Dodecachloropentacyclo[12.2.1.1^{6,9}.0^{2,13}.0^{5,10}]octadeca-7,15-diene ("Dechlorane Plus"TM) [covering any of its individual anti- and syn-isomers or any combination thereof]	-	0.01%
181	Reaction products of 1,3,4-thiadiazolidine-2,5-dithione, formaldehyde and 4-heptylphenol, branched and linear (RP-HP) [with ≥0.1% w/w 4-heptylphenol, branched and linear]	-	0.01%
182	Benzene-1,2,4-tricarboxylic acid 1,2 anhydride (trimellitic anhydride, TMA)	552-30-7	0.01%
183	Dicyclohexyl phthalate (DCHP)	84-61-7	0.01%
184	Terphenyl, hydrogenated	61788-32-7	0.01%
185	Octamethylcyclotetrasiloxane (D4)	556-67-2	0.01%
186	Decamethylcyclopentasiloxane (D5)	541-02-6	0.01%
187	Dodecamethylcyclohexasiloxane (D6)	540-97-6	0.01%
188	Ethylenediamine (EDA)	107-15-3	0.01%
189	Lead	7439-92-1	0.01%
190	Disodium octaborate(*2) (*5)	12008-41-2	0.01%
191	Benzo[ghi]perylene	191-24-2	0.01%
192	2,2-bis(4'-hydroxyphenyl)-4-methylpentane	6807-17-6	0.01%
193	Benzo[k]fluoranthene	207-08-9	0.01%
194	Fluoranthene	206-44-0	0.01%
195	Phenanthrene	85-01-8	0.01%
196	Pyrene	129-00-0	0.01%
197	1,7,7-trimethyl-3-(phenylmethylene)bicyclo[2.2.1]heptan- 2-one	15087-24-8	0.01%
198	2-methoxyethyl acetate	110-49-6	0.01%
199	Tris(4-nonylphenyl, branched and linear) phosphite (TNPP) with ≥ 0.1% w/w of 4-nonylphenol, branched and linear (4-NP)	-	0.01%
200	2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propionic acid, its salts and its acyl halides (covering any of their individual isomers and combinations thereof)	-	0.01%
201	4-tert-butylphenol	98-54-4	0.01%
202	Diisohexyl phthalate (DiHexP)	71850-09-4	0.01%
203	2-benzyl-2-dimethylamino-4'-morpholinobutyrophenone	119313-12-1	0.01%
204	2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one	71868-10-5	0.01%
205	Perfluorobutane sulfonic acid (PFBS) and its salts	-	0.01%
206	1-vinylimidazole	1072-63-5	0.01%
207	2-methylimidazole	693-98-1	0.01%
208	Butyl 4-hydroxybenzoate	94-26-8	0.01%
209	Dibutylbis(pentane-2,4-dionato-O,O')tin(*15)	22673-19-4	0.01%
210	Bis(2-(2-methoxyethoxy)ethyl)ether	143-24-8	0.01%
211	Dioctyltin dilaurate, stannane, dioctyl-, bis(coco acyloxy) derivs., and any other stannane, dioctyl-, bis(fatty acyloxy) derivs. wherein C12 is the predominant carbon number of the fatty acyloxy moiety (*13)	-	0.01%
212	2-(4-tert-butylbenzyl)propionaldehyde and its individual stereoisomers	-	0.01%
213	Orthoboric acid, sodium salt (*2) (*5)	13840-56-7	0.01%
214	2,2-bis(bromomethyl)propane1,3-diol (BMP) 2,2-dimethylpropan-1-ol, tribromo derivative/3-bromo-2,2-bis(bromomethyl)-1-propanol (TBNPA) 2,3-dibromo-1-propanol (2,3-DBPA)	3296-90-0 / 36483-57-5 / 1522-92-5 / 96-13-9	0.01%
215	Glutaral	111-30-8	0.01%
	Substances	**CAS No.**	**Reporting Limit**

216	Medium-chain chlorinated paraffins (MCCP) [UVCB substances consisting of more than or equal to 80% linear chloroalkanes with carbon chain lengths within the range from C14 to C17]	-	0.01%
217	Phenol, alkylation products (mainly in para position) with C12-rich branched or linear alkyl chains from oligomerisation, covering any individual isomers and/ or combinations thereof (PDDP)	-	0.01%
218	1,4-dioxane	123-91-1	0.01%
219	4,4'-(1-methylpropylidene)bisphenol	77-40-7	0.01%
220	tris(2-methoxyethoxy)vinylsilane	1067-53-4	0.01%
221	S-(tricyclo(5.2.1.0'2,6)deca-3-en-8(or 9)-yl O-(isopropyl or isobutyl or 2-ethylhexyl) O-(isopropyl or isobutyl or 2-ethylhexyl) phosphorodithioate	255881-94-8	0.01%
222	6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol	119-47-1	0.01%
223	(±)-1,7,7-trimethyl-3-[(4-methylphenyl)methylene]bicyclo[2.2.1]heptan-2-one covering any of the individual isomers and/or combinations thereof (4-MBC) (3E)-1,7,7-trimethyl-3-(4-methylbenzylidene)bicyclo[2.2.1]heptan-2-one (1R,3E,4S)-1,7,7-trimethyl-3-(4-methylbenzylidene)bicyclo[2.2.1]heptan-2-one (1S,3Z,4R)-1,7,7-trimethyl-3-(4-methylbenzylidene)bicyclo[2.2.1]heptan-2-one (±)-1,7,7-trimethyl-3-[(4-methylphenyl)methylene]bicyclo[2.2.1]heptan-2-one (1R,4S)-1,7,7-trimethyl-3-(4-methylbenzylidene)bicyclo[2.2.1]heptan-2-one (1S,3E,4R)-1,7,7-trimethyl-3-(4-methylbenzylidene)bicyclo[2.2.1]heptan-2-one (1R,3Z,4S)-1,7,7-trimethyl-3-(4-methylbenzylidene)bicyclo[2.2.1]heptan-2-one	- 1782069-81-1 95342-41-9 852541-25-4 36861-47-9 741687-98-9 852541-30-1 852541-21-0	0.01%
224	N-(hydroxymethyl)acrylamide	924-42-5	0.01%

(*2) The substances are tested and calculated in terms of its respective elements and to the worst-case scenario. The report states the theoretical value of SVHC substances without consideration of the actual occurrence in the article.

(*3) The substances are tested and calculated in terms of Cr (VI).

(*4) The substance is tested and calculated in terms of Tributyl tin.

(*5) The substances are confirmed and tested in terms of borate and the borate may come from the compounds other than SVHCs.

(*6) The substances are UVCB (substance of unknown or variable composition, complex reaction products or biological materials), which are identified by its main constituents.

(*7) Individual concentrations to the constituent of UVCB with an amount of < 0.01% were not considered by the calculation of the sum.

(*8) The test results are based on microscopic and chemical evaluation.

(*9) The substances are quantified in terms of Michler's ketone and Michler's base by LC-MS, as Michler's ketone or Michler's base was found exceeds 0.01%.

(*10) The content oligomer is determined by Py-GC/MS.

(*11) The content of diazene-1,2-dicarboxamide is analyzed in terms of its breakdown product.

(*12) The substance is tested in terms of pentadecafluorooctanoate.

(*13) The substance is tested and calculated in terms of Dioctyl tin.

(*14) The substance is tested and calculated in terms of Monooctyl tin and Dioctyl tin.

(*15) The substance is tested and calculated in terms of Dibutyl tin

(*16) The tested material(s) was screened only for selected SVHCs. Selection of tests refers to the material type and application and the possibility of contamination during production & material specific contamination of the product.

(*17) The other SVHCs which are not mentioned in test result were either not subject to testing according to remark *16 or than report limit.

(*18) The theoretical content of SVHC substances is calculated in terms of its respective elements.This material may contains the mentioned SVHCs, it is suggested to check the respective recipe if the theoretical content of the respective substance >0.1% in each article

(*19) Specific element(s) was/were detected in the sample. Based on the information provided by client, the article may contain the mentioned SVHCs.

(*20) Specific element(s) was/were detected in the sample. Based on the information provided by client, the element(s) in the article may come from the compounds other than SVHCs.

(*21) For battery sample, the anion content is confirmed by oxygen bomb assisted digestion - Ion chromatography.

(*22) For Battery sample, the reporting limit for each individual SVHC in Candidate List by ECHA is <0.1%.

(*23) The concentration sum of detected XXX in an article is less than report limit.

(*24) The theoretical concentration sum of XXX in an article is less than report limit.

(*25) According to customer’s requirement, the maximum permissible limit for each SVHC in an article is <0.1%.

(*26) The test material(s) was analyzed for relevant SVHCs, according to XXX Test Plan No. xxx.

(*27) According to customer’s requirement, glass was analyzed for Boron, Arsenic and Lead. Plastic was analyzed for SCCP and phthalates.

(*28) According to customer’s requirement, The material whose weight is <0.1% of the total weight in an article is neglected for testing.

(*29) For this mixed sample, the result was found to be more than the reporting limit. It’s recommended that individual sample should be tested separately.

Sample Photos:

HT906Z(White)

HT906Z(Black)

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