

Test report no.: 158254570a1 001 Page 1 of 10

Client: ROYAL CRYSTAL JOINT STOCK COMPANY

Contact information: Street No. 8, Nhon Trach Industrial Zone II – Nhon Phu, Hiep Phuoc

Town, NhonTrach District, Dong Nai Province, Vietnam

Contact name: Luu Thu Hoa
Phone number: 84 769909266

Manufacturer's name: Royal Crystal Joint Stock Company

Manufacturer ID: --

**Product name:** SPC Flooring

**Product category:** Plank flooring for cover floor

Product commercial part no.: -Product item no.: --

 Date manufactured:
 2022-06-10

 Date collected:
 2022-06-10

 Date shipped:
 2022-06-11

 Date received:
 2022-06-20

 Sample no.:
 A003284425

Condition at delivery:Test item complete and undamagedPlace of testing:Chemical laboratory Hong Kong

Conditioning period start & duration: 2022-06-23, 10 days
Test period start & duration: 2022-07-03, 96 hours

Test specification: Test result:

CDPH/ EHLB/ Standard Method Version 1.2 – California Specification 01350 PASS

Other information:

Sample package: Sample packed with/ in Aluminium, Mylar Bag

Sample preparation: 5 pieces of specimen of 0.235 m by 0.30 m were tested with back and

sides sealed by aluminum foil.

For on and behalf of

TÜV Rheinland (Hong Kong) Ltd.

2022-07-12 Gary Choi / Senior Project Coordinator

Date Name/ Position

Sample information is provided by customer. Test result is drawn according to the kind and extent of tests performed. This test report relates to the above mentioned 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. 'Decision Rule" document announced in our website (https://www.tuv.com/landingpage/en/qm-gcn/) describes the statement of conformity and its rule of enforcement for test results are applicable throughout this test report.

TÜV Rheinland Hong Kong Ltd. 3-4/F.,Fou Wah Industrial Building,10-16 Pun Shan Street,Tsuen Wan,New Territories,Hong Kong Tel.: (852) 2192 1000 Fax: (852) 2192 1003 Mail: <a href="mailto:service-gc@tuv.com">service-gc@tuv.com</a> Web: <a href="mailto:www.tuv.com">www.tuv.com</a>



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## **Material list**

Item:

Material No.	Material	Color	Location
M001	Whole product	Multicolor	Refer to Photo

## Test method

CDPH/ EHLB/ Standard Method Version 1.2 – California Specification 01350:

Standard Method For the Testing and Evaluation of Volatile Organic Chemical Emissions From Indoor Sources Using Environmental Chambers

ISO 16000-3:2011 Indoor air – Part 3: Determination of formaldehyde and other carbonyl compounds in indoor air and test chamber air – Active sampling method

ISO 16000-6:2011 Indoor air – Part 6: Determination of volatile organic compounds in indoor and test chamber air by active sampling on Tenax TA® sorbent, thermal desorption and gas chromatography using MS/FID

ISO 16000-9:2006 Indoor air – Part 9: Determination of the emission of volatile organic compounds from building products and furnishing – Emission test chamber method

ASTM D 5116-10 Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions From Indoor Materials/ Products



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# **Conditions**

The sample was conditioned for 10 days in the same test chamber where the analysis was performed during 96h. The same conditions during conditioning and test were kept and are described in table 1.

Table 1. Chamber conditions during the 10 days conditioning and 96-h test period

Parameter	Symbol	Units	Value
Product exposed area	Ac	m <sup>2</sup>	0.35
Chamber Volume	Vc	$m^3$	1.0
Loading factor	Lc	m <sup>2</sup> /m <sup>3</sup>	0.35
Air change rate	ac	h <sup>-1</sup>	1.00
Inlet flow rate	Q	m³/h	1.00
Area specific flow rate	qА	m/h	2.84
Temperature	Т	°C	23 ± 1
Relative humidity	RH	%	50 ± 5

VOC and aldehydes active sampling were performed in duplicate by pumping air through respective sorbent just before loading the chamber, then at 24h, 48h and 96 h after initiating the chamber test (without counting the previous 10 days conditioning). Sampling conditions are represented in table 2.

Table 2. Sampling conditions

<u> </u>		
Sampling conditions	VOC	Aldehydes (C <sub>1</sub> -C <sub>6</sub> )
Number of sampled tubes	2	2
Sorbent type	Tenax TA	DNPH
Sampling duration	50 min	60 min
Sampling air flow rate	75 ml/min	1.5 l/min
Sampled air volume	3.8 L	90 L

The chemical analysis was performed following internal test methods QMA 36.035.538 HKG and QMA 36.035.524HKG for the analysis of respectively aldehydes in DNPH cartridges by HPLC-UV and VOCs/TVOCs in Tenax tubes by TD-GC-MS. These internal tests methods are based on standards BS ISO 16000-3:2011 and ASTM D5116-10.



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# **Test Result**

Table 3. 24-h and 48-h chamber concentrations and emission factors

Parameter	CAS no.	Chamber concentration (µg/m³)			on factor *1 /m <sup>2</sup> h)
		24h	, 48h	24h	, 48h
TVOC		2	1	5.67	2.84
Formaldehyde	50-00-00	n.d.	n.d.		

Table 4. 96-h chamber concentrations and emission factors of all target VOCs and most abundant – Only detected compounds have been listed

Compound Name	CAS No.	Chamber concentration (µg/m³)	Emission Factor *1 (µg/m²h)	Remark *2
Benzene, 1,4-dichloro-	106-46-7	1	2.84	CREL / C / TAC
TVOC		1	2.84	

Table 5. Estimated concentrations for the different scenarios and evaluation of the requirements

Compound Name	CAS No.	Allowable concentration  *3 (µg/m³)	Standard class room estimated concentration *1 (µg/m³)	Private office estimated concentration *1 (µg/m³)	Pass/Fail
Benzene, 1,4-dichloro-	106-46-7	400	1.32	1.52	Pass
TVOC			1.32	1.52	

# Abbreviation:

VOC = Volatile Organic Compound

TVOC = Total Volatile Organic Compound

 $C = chamber concentration, \mu g/m^3$ 

 $A_c$  = exposed projected surface area,  $m^2$ 

 $V_c$  = chamber volume

 $L_c$  = Loading factor

 $Q = inlet flow rate, m^3/h$ 

 $q_A$  = area specific flow rate, m/h (m<sup>3</sup>/m<sup>2</sup>h)

n.d. = not detected (< 1  $\mu$ g/m<sup>3</sup>)

m<sup>2</sup> = square meter

m<sup>3</sup> = cubic meter

m<sup>2</sup>/m<sup>3</sup> = square meter per cubic meter

 $h^{-1}$  = per hour

m³/h = cubic meter per hour

L = liter

ml/min = mililiter per minute

L/min = Liter per minute

μg/m³ = micrograms per cubic meter

μg/m<sup>2</sup>h = micrograms per square meter per hour



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### Remark:

## \*1 Data Analysis Procedure

### **Emission Factors**

Emission factors were calculated from chamber concentrations then by using the emission factors the estimated building concentrations were calculated.

The emission factor,  $EF_{Ai}(\mu g/m^2h)$ , at a given time, t (h), after placing a test specimen in the chamber is calculated using Equation 1:

$$EF_{Ai} = (Q (C_{it} - C_{i0})) / A_C$$

Equation 1

The inlet flow rate, Q (m³/h), is the measured flow rate of air into the chamber. The chamber concentration,  $C_{it}$  (µg/m³), is the concentration of a target VOC<sub>i</sub>, formaldehyde and other carbonyl compounds measured at time t. The chamber background concentration,  $C_{i0}$  (µg/m³), is the corresponding concentration measured with the chamber operating without a test specimen or with an appropriate substrate. The exposed projected surface area of the test specimen in the chamber,  $A_C$  (m2), is determined from the measurements made at the time of specimen preparation.

Volume, length, mass or unit specific emission rates or emission factors,  $EF_V$ ,  $EF_L$  or  $EF_M$  ( $\mu$ g/m³h,  $\mu$ g/mh,  $\mu$ g/kgh or  $\mu$ g/h per unit), can be calculated using Equation 1 by substituting the appropriate parameter used to quantify the material specimen (i.e., volume in cubic meters, length in meters, mass in kilograms or number of products tested).

## **Estimated Building Concentrations**

Building concentrations can be calculated on a case-by-case basis using input parameters for the amount of installed product, the size of the space and the air change rate (or air flow rate) that are specific to the architectural project under consideration. In order to evaluate and compare products for use in a wide range of building products, concentrations also can be calculated for selected building scenarios. Building concentrations are estimated based on the measured VOC emission factors, the amount of material to be installed in the building and flow rate of outside air used for ventilation. Steady state conditions with respect to emission rates and building ventilation shall be assumed in making the prediction. Additional assumptions are zero outdoor concentrations, perfect mixing within the building and no net losses of VOC from air due to other effects such as irreversible or net sorption on surfaces (i.e., net sink effects) and chemical reactions. The projected surface area of installed flooring and the building parameters to be used in the calculation of estimated VOC concentrations are established for a school classroom and an office and have been described in table 6.

Table 6. The projected surface area of installed flooring and the building parameters to be used in the calculation of estimated VOC concentrations

Scenario	Outdoor ventilation air (m³/h)	Exposed flooring surface area (m <sup>2</sup> )	Area specific air flow rate (m/h)
Standard School Classroom	191	89.2	2.14
Private Office	20.7	11.1	1.86

The estimated building concentration,  $C_{Bi}$  (µg/m³), of a target VOC<sub>i</sub> is calculated using equation 2a or 2b. For products that have the area specific emission factor, EF<sub>A</sub> (µg/m²h), Equation 2a is used:

$$C_{Bi} = (EF_{Ai} \times A_B) / Q_B = EF_{Ai} / (Q_B / A_B) = EF_{Ai} / q_A$$
 Equation 2a

The area specific emission rate  $EF_A$  at 336 hours (14 days) total exposure time is divided by the area specific flow rate, qA (m/h). The area specific flow rate, qA, is calculated as the ratio of the flow rate of outside ventilation air,  $Q_B$  (m³/h), to the exposed surface area of the installed material in the building,  $A_B$  (m²).

For products that only have the unit specific emission factor, EF<sub>P</sub> (µg/h per unit), Equation 2b is used:

$$CBi = (EFPi \times NB) / QB = EFPi / (QB / NB) = EFPi / qP$$
 Equation 2b

The unit specific emission rate  $EF_P$  at 336 hours (14 days) total exposure time is divided by the unit specific flow rate,  $q_P$  (m³/h per unit). The unit specific flow rate,  $q_P$ , is calculated as the ratio of the flow rate of outside ventilation air, QB (m3 h-1), to the number of the installed products in the building,  $N_B$ .

In some cases, it may be necessary to calculate the results using the volume, length or mass of a product to be installed in a building and the corresponding volume, length or mass specific emission rate.

TÜV Rheinland Hong Kong Ltd. 3-4/F.,Fou Wah Industrial Building,10-16 Pun Shan Street,Tsuen Wan,New Territories,Hong Kong Tel.: (852) 2192 1000 Fax: (852) 2192 1003 Mail: <a href="mailto:service-gc@tuv.com">service-gc@tuv.com</a> Web: <a href="www.tuv.com">www.tuv.com</a>



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\*2 CREL – Chronic Reference Exposure Levels: this substance has a CREL value. Refer to <a href="http://www.oehha.ca.gov/air/allrels.html">http://www.oehha.ca.gov/air/allrels.html</a>.

C – Safe Drinking Water and Toxic Enforcement Act of 1986: classified as known or probable human carcinogens and reproductive/ developmental toxins.

Refer to <a href="http://www.oehha.ca.gov/prop65/prop65\_list/newlist.html">http://www.oehha.ca.gov/prop65/prop65\_list/newlist.html</a>.

TAC – Toxic Air Contaminants: classified as Hazardous Air Pollutants plus additional compounds. Refer to <a href="http://www.arb.ca.gov/toxics/id/taclist.htm">http://www.arb.ca.gov/toxics/id/taclist.htm</a>.

\*3 Refer to <a href="http://www.oehha.ca.gov/air/allrels.html">http://www.oehha.ca.gov/air/allrels.html</a>. All maximum allowable concentrations are one-half the corresponding CREL adopted by Cal/EPA OEHHA with the exception of formaldehyde.



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# **Chain of Custody**

TUV Rheinland Hong Kong Ltd Member of TUV Rheinland Group in Greater China 香港德國萊內技術監護顧問股份有限公司 德國萊因集團大中華區成員



VOC EMISSION TESTING APPLICATION FORM AND CHAIN OF CUSTODY 揮發性及有機化合物釋放測試申請表

Please fill out one form per sample and return it to us. Thanks. 請為每份測試樣辦填寫一份申請表, 然後將填妥的申請表回傳到我司。謝謝。

Internal use only / TÜV 莱茵内部使用 Order No: [58254570 Reviewed by (date):

# Please ship sample to/ 請把樣品寄送到:

3/F., Fou Wah Industrial Building, 10-16 Pun Shan Street, Tsuen Wan, Hong Kong (Sample Reception)/香港荃灣半山街 10-16 號富華工業大廈 3 樓 (收辦部)

Please fill in by computer - send with sample, and per email/ 請使用電腦填寫 – 並連同樣品 及 透過電郵交回

Client/ 客戶	Report to be sent to/ 報告送到	Invoice to be sent to/ 發票送到	Copy of report to be sent to 報告副本送到		
Company/ 公司	Royal Crystal Joint Stock Company	Royal Crystal Joint Stock Company	SCS Global		
Contact person/聯絡人	Luu Thu Hoa	Luu Thu Hoa	Todd Frank		
E-mail/ 電子郵件	Hoa.lt@royalceramic.vn	Hoa.lt@royalceramic.vn	TFrank@scsglobalservices.co		
Address/ 地址	Street No. 8, Nhon Trach Industrial Zone II – Nhon Phu, Hiep Phuoc Town, NhonTrach District, Dong Nai Province, Vietnam	Street No. 8, Nhon Trach Industrial Zone II – Nhon Phu, Hiep Phuoc Town, NhonTrach District, Dong Nai Province, Vietnam			
Postcode/town/ 郵編/ 鎮	76000 DONG NAI	76000 DONG NAI			
Country/ 國家	VIET NAM	VIET NAM			
Telephone no./ 電話號碼	84 769909266	84 769909266			
Fax no./ 傳真號碼	84 251 3569 879	84 251 3569 879			
Your reference/ 您的參考	Todd Frank, Director, So	Fodd Frank, Director, Southeast Asia SCS Global			

Tes	st Method(s) ordered:					
1.	AgBB/DIBt (full test, inc	I. aldehydes)		8.	LGA Tested Safety & Contamin	ation:
	Without aldehydes test a	after 28 days			VOC/ 揮發性及有機化合物	
	AgBB/DIBt (only 7 days	)			Formaldehyde/ 甲醛	
	Without aldehydes after	7 days			Odour/ 氣味	
2.	French mandatory VOO regulated CMR)	Clabel (including 4		9.	Formaldehyde/ 甲醛 :	
3.	CDPH Section 01350				EN 717-1	
4.	FloorScore		$\boxtimes$		ISO 16000-3 (DNPH)	
5.	ANSI/BIFMA M7.1-2011				ASTM D6007	
6.	Indoor Advantage		□ 10. VOC emission/ 揮發性及有核		VOC emission/ 揮發性及有機化物	<b>今物釋放</b>
7.	Indoor Advantage GOL	.D			ISO 16000-6,9	
					ASTM 5116	
Fur	ther information - Please	fill in only if neces	sary			
Typ	e of Chamber:	Length of	testing:		Reporting of results:	
Mid	-scale □	24h□ 72	h □ 168h	336	n ⊠ Emission Factors only ⊠	
Small-scale ⊠ Other:			Room concentrations modeling		odeling 🗵	
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# **Chain of Custody**

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VOC EMISSION TESTING APPLICATION FORM AND CHAIN OF CUSTODY 揮發性及有機化合物釋放測試申請表

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Internal us	e only / TÜV 莱茵内部使用
Order No:	58254570
Reviewed b	y (date):

Other test/information	:		, , , , , , , , , , , , , , , , , , ,
Report format:	PDF ⊠	Printed □	Printed & PDF □

Product Commercial Name:	SPC Flooring	Product Commercial Part No.:	
Product Dimensions: (height × width × thickness)	300x 230x6.5, IXPE underlayment 1.0 mm	Product item No.:	
Manufacturer Sample Tracking ID:		Date Manufactured:	June, 10, 2022
Product Category and Use:	Category: Plank flooring for cover floor	Sample Construction Material:	CaCO3, PVC,
Plant Name & Location:	Royal Crystal Joint Stock Company, Street No. 8, Nhon Trach Industrial Zone II – Nhon Phu, Hiep Phuoc Town, NhonTrach District, Dong Nai Province, Vietnam	Collection Location in Plant:	Underlayment attaching machine
Date and Time of collection:	June, 10,2022	Sample Collected by:	Luu Thu Hoa
Storage of Sample after Sampling:	8 8	Packing Material:	heavy-duty aluminum foil and packing tape
Packed and Shipped by:	Luu Thu Hoa	Shipping Date:	June, 11 2022
Carrier:		Airbill Number:	

FOR LABORATORY USE ONLY:			
Received by:	Gary Chei	Received date:	20 Jun 2022
Conditions of package:	FINE	Conditions of Sample:	FENE
Received by:	Georg Cho:	Signature:	bony
Company:	Til V Rheinford Hong Kong Ltd.	Laboratory:	Chemical Laboratory Hong Kom
Sample Number:	A003284425	Report Number:	158254570a 001

TUV Rheinland Hong Kong Ltd 香港德國莱奥技術監護顧問股份有限公司 SAMPLE PICK-UP SERVICE HOTLINE: +852 2192-1900 EMAIL: samplepickup@hk.chn.tuv.com 3. 4, 11/F., Fou Wah Industrial Building, 10-16 Pun Sha Street, Tsuen Wan, Hong Kong 脊港至海半山街 10-16 號南華工業大廈 3. 4, 11 模 TEL: +852 2192 1000 FAX: +852 2192 1003

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# **Chain of Custody**

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VOC EMISSION TESTING APPLICATION FORM AND CHAIN OF CUSTODY 揮發性及有機化合物釋放測試申請表

Please fill out one form per sample and return it to us. Thanks. 請為每份測試樣辦填寫一份申請表, 然後將填妥的申請表回傳到我司。謝謝。



Internal use only / TÜV 莱茵内部使用 Order No: 「58 25 45 7o Reviewed by (date):



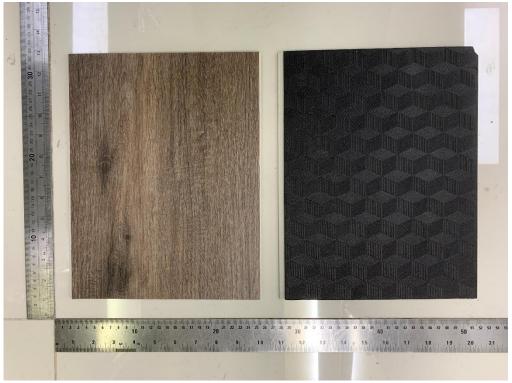
德國萊因關注環境並且施行紙張節省方案。其中一項努力是鼓勵我們客戶接受電子版報告並且即時起只會廳客戶要求而頒發紙質報告。任何疑問請隨時聯緊我們,謹對您的大力

審職系包剛に正視などに表現しません。 支持表示教章 TÜV Rheinland cares about our environment and implements a paper saving strategy. As part of it, we encourage our customers to accept electronic versions of reports and will, from now on, only send paper versions upon request. Please contact us for any concerns. We appreciate your support



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# Sample photo(s)



-- END ---

## General Terms and Conditions of Business of TÜV Rheinland in Greater China

- These General Terms and Conditions of Business of TÜV Rheinland in Greater China ("GTCB") is made between the client and one or more member entities of TÜV Rheinland in Greater China as applicable case may be ("TÜV Rheinland"). The Greater China hereof refers to Mainland China, Hong Kong and Talwan. The Client hereof includes: 1.1
- Taiwan. The client hereof include: :

  A natural person capable to form legislyl binding contracts under the applicable laws who concludes the contract not for the purpose of a daily use;

  (i) the incorporated or unincorporated entity duly organized, validly existing and capable to form legally binding contracts under the applicable law.

  The following terms and conditions apply to agreed services including consultancy services, information, deliveries and similar services as well as ancillary services and other secondary obligations provided within the scope of contract porformance.

  Any standard terms and conditions of the client of any nature shall not apply and shall hereby be expressly excluded. No standard contractual terms and conditions of the client shall from part of the contract even if TÜV Bheinland does not explicitly object to them.

Unless otherwise agreed, all quotations submitted by TÜV Rheinland can be changed by TÜV Rheinland without notice prior to its acceptance and confirmation by the other party.

### Coming into effect and duration of contracts

- The contract shall come into effect for the agreed term ine contract shall come into elect to the agreed term upon the quotation letter or 10 v inenianto of a separate contractual document being signed by both contracting parties, or upon the works requested by the client being carried out by TÜV Rheinland. If the client instructs TÜV Rheinland without receiving a quotation from TÜV Rheinland (quotation), TÜV Rheinland is, in its sole discretion, entitled to accept the order byte written notice of such acceptance (including notice servi via electronic means) or by performing the requested written notice of such acceptance (including notice servi via electronic means) or by performing the requested
- services. The contract term starts upon the coming into effect of the contract in accordance with article 3.1 and shall continue for the term agreed in the contract. If the contract period is the accordance of the contract term, the contract term will be extended by the term provided for in the contract uncest terminated in writing by either party with a three-month notice prior to the end of the contractual term. 3.3

- The scope and type of the services to be provided by TÜV Rheinland shall be specified in the contractually agreed service scope of TÜV Rheinland by both parties. If no such separate service scope of TÜV Rheinland exists, then the written confirmation of order by TÜV Rheinland shall be decisive for the service to be exists, then the written confirmation of order by TÜV Rheinland shall be decisive for the service to be provided. Unless otherwise greeds, envices beyond the scope of the service descripting leg, checking the correctness and functionality of parts, products, processes, installations, organizations not listed in the service description, as well as the intended use and application of such) are not owed. In particular, no responsibility as assumed for the design, selection of materials, construction or intended use of an examined part, product, process or plant, unless this is expressly stated in the order. The agreed services shall be performed in compliance with the regulations in force at the time the contract is entered into.
- entered into.

  TVM Reinland is entitled to determine, in its sole discretion, the method and nature of the assessment unless otherwise agreed in writing or if mandatory provisions require a specific procedure to be followed. On execution of the work there shall be no simultaneous assumption of any guarantee of the correctness (proper quality) and working order of either tested or examined parts nor of the installation as a whole and its upstream and/or downstream processor, cognisations, use and application in accordance with regulations nor of the systems on which the installation is based, in particular, TUV Rheinland shall assume no responsibility for the construction, selection of materials and assembly of installation seamined, nor for their use and application in accordance with regulations, unless these questions are expressly covered by the contract.
- 4.5 In the case of inspection work, TÜV Rheinland shall not be responsible for the accuracy or checking of the safety programmes or safety regulations on which the inspections are based, unless otherwise expressly
- onclusion of the contract, with a written notice to the client, TUV Rheinland shall be entitled to additu-national contractions of the provided by TUV Rheinland under the contract are agreed exclusively with the client. International contracts of third parties with the services contract of third parties with the services of TUV Rheinland, as well as making available of and justify-onfidence in the work results (test reports, test results, expert reports, etc.) is not part of the agreed reviews. This also against if the client passes on work results in full or in extracts to third parties in ccordance with clause 11.4.

- 5.3
- Performance periodisdistes

  The contractually agreed periodis/distes of performance are based on estimates of the work involved which are prepared in line with the details provided by the client. They shall only be binding if being confirmed as binding by TDW behindand in writing.

  If binding periods of performance have been agreed, these periods shall not commence until the client has submitted all required documents to 10° Menhand.

  Articles 5.1 and 5.2 also apply, even without express approval by the client, to all extensions of agreed periods/distes of performance has completely TDW Rehindand.

  TDW Rehindand is not responsible for a delay in performance, in particular if the client has not fulfilled his duties to cooperate in accordance with clause 6.1 or has not done on inteme and, in particular, has not provided TDW Rehindand with all documents and information required for the performance of the service as specified in the contract.
- contract.

  the performance of TDV Rheinland is delayed due to unforeseable circumstances such as force majeure, strikes, business disruptions, governmental regulations, transport obstacles, etc., TDV Rheinland is entitled to postoone performance for a reasonable period of time which corresponds at least to the duration of the hindrance plus any time period which may be required to resume performance. the client is oblighed to comply with legal, officially precribed and/of by the accreditor prescribed deadlines, it is the client's responsibility to agree on performance dates with TDV Rheinland, which enable the client to comply with the legal and/of officially precribed and/or strike the precribed deadlines, it is the client's responsibility to garee on performance dates with TDV Rheinland switch enable the client to comply with the legal and/or officially precribed deadlines. It TDV Rheinland switch enable the client to responsibility to this respect unless TDV Rheinland seven for responsibility to this respect unless TDV Rheinland seven for propositions. ontractual obligation of TÜV Rheinland

# The client's obligation to cooperate

- The client shall guarantee that all cooperation required on its part, its agents or third parties will be provided in good time and at no cost to TÜV Rheinland.
- Design documents, supplies, auxiliary staff, etc. necessary for performance of the services si made available free of charge by the client. Moreover, collaborative action of the client m undertaken in accordance with legal provisions, standards, safety regulations and accident prev instructions. And the client represents and warrants that:
- The product, service or management system to be certified complies with applicable laws and regulations; and
- It doesn't have any illegal and dishonest behaviours or is not included in the list of Enterprises with Serious Illegal and Dishonest Acts of People's Republic of China.
- If the client breaches the aforesaid representations and warranties, TÜV Rheinland is entitled to i) immediately terminate the contract/order without prior notice; and ii) withdraw the issued testing report/certificates if any.
- The client shall bear any additional cost incurred on account of work having to be redone or being delayed as a result of late, incorrect or incomplete information provided by or lack of proper cooperation from the client. Even where a faxed or maximum price is agreed, TÜV Rheinland shall be entitled to charge extra fees for such additional expense.

- If the scope of performance is not laid down in writing when the order is placed, invoicing shall be based on costs actually incurred. If no price is agreed in writing, invoicing shall be made in accordance with the price list of TÜV Rheinland valid at the time of performance. Unless otherwise agreed, work shall be invoiced according to the progress of the work. If the execution of an order extends over more than one month and the value of the contract or the agreed fixed price exceeds 25,000.00 or equivalent value in local currency, TÜV Rheinland may demand payments on account or in instalments. 7.1

- 8.1 All invoice amounts shall be due for payment within 30 days of the invoice date without deduction on receipt of the invoice. No discounts and rebates shall be granted. Payments shall be made to the bank account of TÜV Rheinland as indicated on the invoice, stating the invoice
- 8.2
- and client numbers.

  Crosses of default of payment, TÜV Rheinland shall be entitled to claim default interest at the applicable hort term loan interest rate publicly amounced by a reputable commercial bank in the country where TÜV Rheinland reserved. At the same time, TÜV Rheinland reserved here fight to claim further damages. Brood the client default in payment of the invoice despite being granted a reasonable grace period, TÜV Rheinland shall be entitle to cancel the contract, withdraw the certificate, claim damages for non-performance and refuse to contract to the contract.

  The provisions set forth narticle &14 shall also apply in cases involving returned cheques, cessation of payment, commencement of insolvency proceedings against the client's assets or cases in which the commencement of insolvency proceedings against the client's assets or cases in which the 8.3 8.4
- 8.5
- encement of insolvency proceedings has been dismissed due to lack of assets. tions to the invoices of TÜV Rheinland shall be submitted in writing within two weeks of receipt of the
- invoice. TUV Rheinland shall be entitled to demand appropriate advance payments. TUV Rheinland shall be entitled to ale its fees at the beginning of a month if overheads and/or purchase costs have increased, in this case, TUV Rheinland shall notify the client in writing of the rise in fees. This notification shall be issued one month prior to the date on which the rise in fees shall come into effect (perior of notice of changes in fees.) If the rise in fees remains under Sep ex contractual year, the client shall not have the right to terminate the contract. If the rise in fees exceeds 5% per contractual year, the client shall be entitled to terminate the contract by the end of the period of notice of changes in fees. If the contract is not terminated, the changed fees shall be deemed to have been agreed upon by the time of the epriry of the
- Only legally established and undisputed claims may be offset against claims by TÜV Rheinland. TÜV Rheinland shall have the right at all times to setoff any amount due or payable by the client, not limited to setoff against any fees paid by the client under any contracts, agreement and/or orders/quotations reached with TÜV Rheinland.

- Any part of the work result ordered which is complete in itself may be presented by TÜV Rheinland for acceptance as an instalment. The client shall be obliged to accept it immediately. If acceptance is required or contractually speed in an individual case, this shall be deemed to have taken if acceptance is required or contractually speed in an individual case, this shall be deemed to have taken place two (2) weeks after completion and handower of the work, unless the client refuses acceptance within this period stating a less tone fundmental breach of contract by TÜV Rheinland, the client is not entitled to refuse acceptance due to insignificant breach of contract by TÜV Rheinland, the completion or acceptance security acceptance is accurate of the work performance of TÜV Rheinland, the completion or

- facespiance is excluded according to the nature of the work performance of TUV Rheinland, the completion the work shall task to place. Unring the Follow-Audit stage, if the client was unable to make use of the time windows provided for within scope of a certification procedure for auditing/performance by TUV Rheinland and the certificate is therefor to be withfrawn (e.g. performance of surveillance audits), or if the client cancels or postpones a confirmed audit date within to DJ weeks before agreed date, TUV sheinland is entitled to immediately charge lump-surr compensation of 10% of the order amount as compensation for expenses. The client reserves th right to prove that the TUV Rheinland has incurred no dismage whatsoever or only a considerably lower damage than the above lump surr.
- using the control of the control of the control of the control to accept services, TÜV Rheinland shall also be entitled to charge lump-sum damages in the annount of 10% of the order amount as compensation for expenses if the service is not called within one year after the order has been placed. The client reserves the right to prove that the TÜV Rheinland has incurred no damage whatsoever or only a considerably lower damage than the

### Confidentiality

- For the purpose of these terms and conditions, "confidential information" means all know-how, trade secrets, documents, image, drawings, expertise, information, data, test results, reports, samples, project documents, pricing and financial information, continued and the project documents, pricing and financial information, colours and supplier information, and materials, tangible or intangible, that are supplied, transferred or otherwise disclosed by one Party (the "disclosing party") to the other Party, the "receiving party," in writing or orally, by intrided or electronic format. Confidential information is expressly not the data and know-how collected, compiled or otherwise obtained by TOV Rehelandan, TDV Rheinland in sentitled to store, use, further develop and pass on the data obtained in connection with the prosonial on deep reportage to the college green seven services in the provision of services by TDV Rheinland. TDV Rheinland is settled to store, use, further develop and pass on the data obtained in connection with the provision of services 120.2" The disclosing party shall mark all confidential information discoded in writter forms a confidential before passing it not the receiving party. The same applies to confidential information transmitted by e-mail. If confidential information is disclosed orally, the receiving party hall confirm in writing the confidentiality value of the information within the working days of oral disclosure. Where the disclosing party falls to do swith the studylated period, the receiving party hall confirm in writing the confidentiality value of the information. The client shall avoid using any thrid party platform and providential party falls to do swith the studylated period, the receiving party to use any confidentialish projection is considered to the providence of the confidential information to the company email of TDV Rheinland mylors through the company email of TDV Rheinland information which the disclosing party runawhork or the coverage and with the tree-time par

- reasonably required.

  The receiving party may disclose any confidential information received from the disclosing party only to the of its employees who need this information to perform the services required for the contract. The receiving party undertakes to oblige these employees to observe the same level of secrecy as set forth in this confidentiality clause.

- 10.6
- of its employees who need this intormance or any expensive property understate to oblige these employees to observe the same level of secrecy as security and party understates to oblige these employees to observe the same level of secrecy as security and confidentially clause.

  Information for which the receiving party, can furnish proof that:
  It was generally known at the time of disclosure or has become general knowledge without violation of this confidentially clause by the receiving party and party the students of the confidentially disclosure by the receiving and the receiving party by a third party entitled to disclosure by the disclosing party, and the receiving party developed it tackly respective of disclosure by the disclosing party, and in the receiving party developed it tackly respective of disclosure by the disclosing party, and in the receiving party and the second party of the receiving party and party developed it tackly respective of disclosure party. The receiving party heady all confidents for confidents in confidential party, and party party heady, and respectively of the disclosing party, and party heady and respectively of the disclosing party heady and respectively only the disclosing party heady and party party heady and respectively only the disclosing party heady and party heady

### 11. Copyrights and rights of use, publications

- Copyrights and rights of use, pubmications

  I''DV Rheinland shift retain all exclusive copyrights in the reports, expert reports/opinions, test
  reports/results, results, calculations, presentations etc. prepared by TiV Rheinland, unless otherwise agreed
  by the parties in a separate agreement. As the owner of the copyrights, TiV Rheinland is free to grant others
  the right to use the work results for individual or all types of use ("right of use")

  The client receives a simple, unlimited, non-transferable, non-sublicensable right of use to the contents of the
  work results produced within the scope of the contract, unless otherwise agreed by the parties in a separate
  agreement. The client may only use such reports, expert reports/opinions, test reports/results, results
  calculations, presentations etc. prepared within the scope of the contract for the contractually agreed
  purpose.
- 11.3
- The transfer of right of use of the generated work results regulated in clause 11.2. of the GTCB is subject to full payment of the remuneration agreed in favour of TUV Rheinland.

  The client may use work results only complete and unshortened. The client may only pass on the work results in full unless 10 Webmishands has given its prior written consent to the partial passing on of work results. Any publication or duplication of the work results for advertising purposes or any further use of the work results beyond the expore regulated in clause 11.2, and any quotion of the introduction of TUV Rheinland need the prior written approval of TUV Rheinland need the prior written approval of TUV Rheinland need the prior written approval of TUV Rheinland need to specific applicable testing and certification rules, etc.).

  TUV Rheinland may revoke a cone given approval according to clause 11.5 at any time without stating reasons. In this case, the client is obliged to stop the transfer of the work results immediately at his own expense and, as far as possible, to withdraw publication of the work results insendiately at his own expense and, as far as possible, to withdraw publication of the work results idensited some certified the client to use the corporate logic, corporate elseign or test/Certification mark of TUV Rheinland.
- 11.6
  - rate logo, corporate design or test/certification mark of TÜV Rheinland

11.4

12.1

- Liability of TÜV Rheinland

  Irrespective of the legal basis, to the fullest extent permitted by applicable law, in the event of a breach of contractacl adolygations or tort, the liability of TÜV Rheinland for all damages, losses and reimbursement of expenses caused by TÜV Rheinland, its legal representatives and/or employees shall be limited to: (i) in the case of a contract draw this flade oberallie, either testimes to evental fee for the emitor contract, (ii) his the case of a contract for annually recurring services, the agreed annual fee (iii) in the case of a contract expressly charged on as time and material basis, a maximum of 2000 Coll our or equivalent amount in local corrency, and (iv) in the case of a framework agreement that provides for the possibility of placing individual orders, three times of the fee for the individual order or under which the damages of losses have coursed. Notivithistanding the above, in the event that the total and accumulated liability calculated according to the foregoing provisions exceeds 2.5 Million turn or equivalent amount in local corrency. The collar and accumulated liability of TÜV Rheinland shall be only limited to and shall not exceed the said 2.5 Million turn or equivalent amount in local corrency. The collar and accumulated liability of TÜV Rheinland shall be only limited to and shall not exceed the said 2.5 Million turn or equivalent amount in local corrency. The collar and accumulated liability of TÜV Rheinland shall be only to damages and/or losses caused by malice, intent or gors snegligence on the part of TÜV Rheinland or its vicarious agents. Such limitation shall not as opply to damage for a person's destruptive and the said of the said of the part of the said of the part
- 12.4

- 12.6 12.7 The limitation periods for claims for damages shall be based on statutory provisions.

  None of the provisions of this article 12 changes the burden of proof to the disadvantage of the client.

13.

13.1

13.2

- When passing on the services provided by TÜV Rhenland or parts thereof to third parties in Greater China or other regions, the client must comply with the respectively applicable regulations of national and international export control law.

  The performance of a contract with the client is subject to the proviso that there are no obstacles to performanc due to national or international foreign trade legislations or embargos and/or sanctions. In the event of a violation, TÜV Rhenland shall be entitled to terminate the contract with immediate effect and the client shall compensate for the losses incured thereof by TÜV Rhenland.

Data protection notice

The client understands and agrees that TÜV Rheinland processes personal data (including but not limited to personal information) of the client and its related parties (including but not limited to the supplier of the client) for the purpose of fulfilling his contract. The client confirms that it has obtained by the client of the client of the purpose of fulfilling his contract. The client confirms that it has obtained personal data that the client collection of processes by the land stransferred to TÜV Rheinland. For certain services, we may also process sensitive personal data. TÜV Rheinland will use and processes of transferred to any third party or any overseas party outside of the district in which he personal data was collected, the client also confirms that it has obtained the prior consent of the data subject. TÜV Rheinland will use and processes of transferred to any third party or any overseas party outside of the district in which he personal data. The personal data security related laws and regulations in China and the local country. TÜV Rheinland will take measures to avoid any leakage, abuse, manipulation, change or unauthority of decision, right of recellication, right of decision, right of processing limitation, right of decision, right of recellication, right of deletion, right of the data protection information. You can contact the Group Data Protection Officer of TÜV Rheinland by e-mail at dataprotection information. You can contact the Group Data Protection Officer of TÜV Rheinland dby e-mail at dataprotection officer. Am Grauen Stein, \$110.00 clong, Germany.

### Retention of test material and documentation

- 15.2
- Retention of test material and documentation

  The test samples subsuited by the defect to 10V Bheinland for testing will be scrapped following testing or will be returned to the client at the client's repense. The only exceptions are test samples, which are placed in storage on the basis of statutory regulations or of nother generent with the client.

  Charges apply the lects analyse stored at the promises of TOV Bheinland. The cost of placing a test sample in control of the cost of placing a test sample reduced to the cost of the cost of placing at test sample in control of the cost of placing at test sample in the cost of placing at test sample in the cost of placing at test sample in the cost of placing at test samples and of the cost of the cost of the client to be placed in storage at their premise, the reference samples of documentations are given to the client to be placed in storage at their premise, the reference samples of documentations, and the made available to TOV Bheinland upon request groundly and free of charge. If the client, in response to such a request, is incapable of making available the reference samples and/of documentations, and building claims for natival and pocularly drange residing from the respective testing and certification that is brought forward by the client against TOV Rheinland shall be inclient.
- 15.4
- volues.

  The retention period for the documentation shall be 10 (ten) years after the expiry of the test mark certificates or shall meet the applicable legal requirements for INFC certificates of conformity and GS mark certificates. He costs of the handword and dispatch of the test samples for torage on the client's premises are borne by the client. TUV Rheinland will be liable for the loss of test samples or reference samples from the laboratories or warehouses of IVO Rheinland only in case of gross negligates.

- twithstanding clause 3.3 of the GTC3, TÜV Rheinland and the client are entitled to terminate the contract entirely or, in the case of services combined in one contract, each of the combined parts of the contract individually and independently of the continuation of the remaining services with so (ij) montris notice end of the contractually agreed term. The notice period shall be shortened to sic (6) weeks in one STÜV Rheinland is prevented from performing the services due to also or a suspension of its accreditation or the services of the contractually services are contracted to the contractual of the t
- end on the characteristic presents from performing the services due to a log or a suspension of its accreditation or notification.

  For good causes, TIV Rheinland may consider giving a written notice to the client to terminate the contract which includes but not initiated to the following:

  a) the client does not immediately notify TIV Rheinland of changes in the conditions within the company which are relevant for certification or sign of such changes;

  b) the client does not immediately notify TIV Rheinland of changes in the conditions within the company which are relevant for certification or sign of such changes;

  i) in the cent of several consoccutive delay in payment fall text three times);

  d) a substantial destrictation of the financial circumstances of the client cours and as a result the payment claims of TIV Rheinland under the contract are condiderably endangered and TIV Rheinland cannot reasonably be expected to continue the contractual relationship;

  e) in the event of shreinland under the contractual relationship;

  e) in the event of any serious misureperstation, be it by interitoral financial prossyn negligent behavior of the managers, employees or agents of the client;

  i) if TIV Rheinland, for reasons beyond its control, is temporarily or finality not able or entitled to continue or finalities the performance of the service, e.g. in case of force majeure, government interference, sanctions, loss of accreditation or ordification, or office that or other ordifications or office that or other ordifications or office that or other ordifications or other the client if the conditions of a claim for dramage exist. In this case, the client shall one Tifs to prove a considerably higher dramage in individual case.

  TIV Rheinland is also centiles to terminate the crient of the without model for an individual case.

  TIV Rheinland is also centiles to terminate the crient or his one which was not considerably higher dramage in individual case.
- certification procedure and the certificate therefore has to be withdrawn (for example during the performance of monitoring audits). Clause 16.3 applies accordingly.

- Percambigure

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- stress are acounts up perform more contractual duties, even in events have retrained performance more moreous than could reasonably have been anticipated at the time of the conduction of the contract. Notwithstanding paragraph 1 of this Clause, where a Party proves that: continued performance of its contractual duties has become excessively onerous due to an event beyond its reasonable control which it could not reasonably have been expected to have taken into account at the time
- reasonable control which it could not reasonably have been expected to have taken into account at the time of the conduction of the contracts, and that it could not reasonably have avoided or overcome the event or its consequences, the Parties are bound, within a reasonable time of the invocation of this Clause, to negotiate alternative contractual terms which reasonably allow to overcome the consequences of the event.

  Where Clause 18.2 applies, but where the Parties have been unable to agree alternative contractual terms as provided in that paragraph, the Party inworing this Clause is entitled to terminate the contract, but cannot request adaptation by the judge or arbitrator without the agreement of the other Party.

### 19. Partial invalidity, written form, place of jurisdiction and dispute resolution

- All amendments and supplements must be in writing in order to be effective. This also applies to amendments and supplements to this clause 17.1. 19.2
- All amendments and supplements must be in writing in order to be effective. This also applies to a amendments and supplements to this clause 17.1.

  Should one or several of the provisions under the contract and/or these terms and conditions be or become ineffective, the contracting parties shall replace the invalid provision with a legally valid provision that comes closes to the content of the invalid provision in legal and commercial terms.

  Unless otherwise septiable of the contract, the governing law of the contract and these terms and conditions shall be chosen following the rules as before 170 Minimization in question is legally registered and existing in the People's Republic of China. If 170 Minimization in question is legally registered and existing in Talwan, the contracting parties hereby agree that the contract and these terms and conditions shall be governed by the laws of Talwan 170 VM Reinstand in question is legally registered and existing in Talwan, the contracting parties hereby agree that the contract and these terms and conditions shall be governed by the laws of Floring Kong. Any displant in connection with the contract and these terms and conditions shall be governed by the laws of Piong Kong. Any displant in connection with the contract and these terms and conditions shall be severed by the laws of the extension of the negotiation period can be reached within two months of the arising of the dispute, the dispute, the dispute shall be submitted: 193

- in the case of TÜV Rheinland in question being legally registered and existing in the Peopla's Republic of China, to China In alternational Economic and Trade Arbitration Commission (ICETAC) to be settled by arbitration under the Arbitration Rules of CETAC in force when the arbitration is submitted. The arbitration shall take place in Beingin, Stanghal, Shernhane or Chongqing as appropriately chosen by the claiming party, in the case of TÜV Rheinland in question being legally registered and existing in Talwan, to Chinese Arbitrat Ascossion, Tapie to be arbitrated in accordance with its then current Rules of Arbitration. The arbitration shall take place in Taipel. In the case of TÜV Rheinland being legally registered and existing in Hong Kong, to Hong Kong International Arbitration Centre (HKIAC) to be settled by arbitration under the HKIAC. Administered Arbitration Rules in force when the Robiced of Arbitration is submitted in accordance with these rules. The arbitration shall take place in long Kong.
- - edecision of the relevant arbitration tribunal shall be final and binding on both parties. The arbitration fee shall be borne by the losing party.