

# DGNB: SELECTION OF INTERIOR MATERIALS

## **SusBuild Training and Business Networking Event:**

**Sustainable building materials/components manufacture**

**Sustainable interior design training and business networking**

27. June – 1. July 2016, Chongqing, Kunming

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## What is DGNB?

The DGNB (Deutsche Gesellschaft für nachhaltiges Bauen; German Sustainable Building Council) was founded in Germany.

- It assesses buildings and urban districts which demonstrate commitment to meet sustainability objectives.
- The DGNB System covers the key aspects of sustainable buildings: Environmental, economic, sociocultural and functional aspects, technology, processes and site.
- The assessments are based on the entire life-cycle of a building, but especially on the wellbeing of the users.
- The DGNB system does not assess individual measures, but instead the overall performance of a building or urban district.



- 40 criteria for office buildings
- Minimum requirements:
  - **SOC1.2 Indoor Air Quality: Measurement of TVOC emissions**
  - **SOC2.1 Design for All: Meets current building regulations to include access for staff and visitors**
  - **TEC1.1 Fire Safety: Complies with current building regulations and approval procedure**

Office - Version 2014					
topic	criteria group	criteria no.	criteria	reference factor	share of total score
Environmental quality (ENV)	Effects on the global and local environment (ENV10)	ENV1.1	Life cycle impact assessment	1	1.0%
		ENV1.2	Local environmental impact	2	2.4%
		ENV1.3	Resource procurement	1	1.1%
	Resource consumption and waste generation (ENV20)	ENV2.1	Life cycle assessment - primary energy	3	3.6%
		ENV2.2	During - site demand and waste volume	2	2.2%
		ENV2.3	Land use	2	2.2%
Economic quality (ECG)	Life Cycle Cost (ECG10)	ECG1.1	Life Cycle Cost	3	3.6%
	Economic development (ECG20)	ECG2.1	Flexibility and adaptability	3	3.6%
		ECG2.2	Commercial viability	1	1.2%
Sociocultural and functional quality (SOC)	Health, comfort and user satisfaction (SOC10)	SOC1.1	Thermal comfort	3	4.0%
		SOC1.2	Indoor air quality	3	3.8%
		SOC1.3	Acoustic comfort	1	0.9%
		SOC1.4	Visual comfort	3	3.8%
		SOC1.5	User control	2	1.1%
		SOC1.6	Quality of outdoor spaces	1	0.9%
		SOC1.7	Safety and security	1	0.9%
		SOC2.1	Design for All	2	1.1%
	Functionality (SOC20)	SOC2.2	Public access	2	1.1%
		SOC2.3	Cycle facilities	1	0.9%
		SOC3.1	Design and urban quality	3	3.8%
	Design quality (SOC30)	SOC3.2	Integrated public art	1	0.9%
		SOC3.3	Landscape quality	1	0.9%
		SOC3.4	Fire safety	2	4.1%
Technical quality (TEC)	Technical quality (TEC10)	TEC1.1	Sound insulation	2	4.1%
		TEC1.2	Building envelope quality	2	4.1%
		TEC1.3	Adaptability of technical systems	1	2.0%
		TEC1.4	Cleaning and maintenance	2	4.1%
		TEC1.5	Decoration and assembly	2	4.1%
		TEC1.6	Sound emissions	0	0.0%
		TEC1.7	Comprehensive project level	3	1.4%
		TEC1.8	Integrated design	3	1.4%
Process quality (PRO)	Planning quality (PRO10)	PRO1.1	Design concept	3	1.4%
		PRO1.2	Sustainability Aspects in Tender Phase	2	1.0%
		PRO1.3	Documentation for facility management	2	1.0%
		PRO1.4	Environmental impact of construction	2	1.0%
	Construction quality (PRO20)	PRO2.1	Construction quality assurance	3	1.4%
		PRO2.2	Systematic commissioning	3	1.4%
Site quality (SIL)	Site quality (SIL10)	SIL1.1	Local Environment	2	0.0%
		SIL1.2	Public image and social conditions	2	0.0%
		SIL1.3	Managed access	3	0.0%
		SIL1.4	Access to amenities	2	0.0%

- The DGNB Certification System can be applied internationally.
- More than 700 registered and certified projects worldwide
- About 500 auditors worldwide; about 250 consultants worldwide



- If a performance requirement is met, the DGNB system awards the DGNB certificate in silver, gold or platinum.
- In addition, there is the option of a simple pre-certification in the planning phase.
- ***In China***, the DGNB System is increasingly recognized as a project management tool that allows to fill the gap of lower national standards in fields that are significant to the building users.
- First DGNB project in China: Zhangjiang Science & Culture Exchange Centre (2012)



- Benefits for occupants and users:
  - Lower operating costs
  - Higher user satisfaction
  - Higher employee productivity
  - Incorporation of buildings and facilities into marketing strategies
  - Documentation for CSR Reports
  - Voluntary commitment through corporate governance
  
- Benefits for investors:
  - Transparent and independent quality label
  - International applicability and comparability
  - Planning security and clear definition of objectives from the beginning
  - Risk minimization
  - Increased market potential with growing demand
  - Documentation for CSR Reports
  - Future-proof buildings

## DGNB: Selection of Interior Materials

### Topics covered

- I. Approach on interior material selection
- II. Methodology
- III. Feasibility analysis
- IV. Use on actual construction projects
- V. Conclusion and future perspectives
- VI. Questions/Discussion



# INTRODUCTION



# **I. Approach on interior material selection**

II. Methodology

III. Feasibility analysis

IV. Use on actual construction projects

V. Conclusion and future perspectives

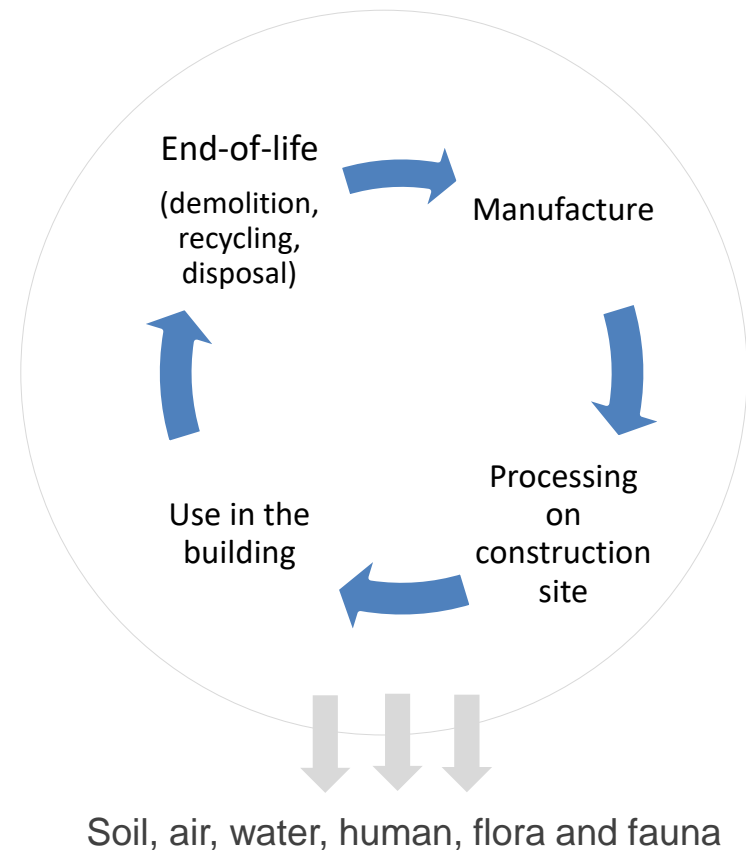
VI. Questions/Discussion

DGNB: Selection of Interior Materials

## WHY? Introduction of incentives for material selection

- There are tons of interior building materials available: Some of these materials, products and methods are hazardous to soil, air, ground- and surface water and can also affect the health of humans, flora and fauna negatively.
- To reduce and avoid the influence of such materials on soil, air, ground- and surface water, DGNB invented an approach to reduce risks to humans and the local environment.
- The material selection approach refers mainly to materials, products and methods that cause short-, medium,- and long-term damage to soil, air, ground- and surface water as well as humans, flora and fauna.

Considers the total life-cycle of building materials



## WHY? Introduction of incentives for material selection

- The specific aim is to reduce and limit the VOC (volatile organic compounds) and formaldehyde content in materials, products and methods.
- This leads to reduce the emissions and out gassing of such VOCs inside offices, residential buildings and other (building) objects and ensure users and environments health.
- → Indoor air quality testing



I. Approach on interior material selection

## **II. Methodology**

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DGNB: Selection of Interior Materials

## Planning procedure

- Beginning with the early planning stage of a construction project, the critical substances of certain materials, products and methods must be considered and verified according to DGNB requirements.
- A careful selection of building materials, products and methods can avoid hazardous substances and materials being used.
- The following building components need to be considered:
  - Floor structure including foundations
  - External wall structure
  - Internal wall structure
  - Ceiling structure
  - Roof structure
  - Underground car parks (are considered separately)

## Quality classes

- All materials and components that have to be considered are specified and explained in DGNBs material catalogue.
- There are 4 quality classes for each material or components with different threshold requirements.

### APPENDIX 1

#### Quality classes

A	B	C	D	E	F	G	H	J	K
RELEVANT COMPONENT / BUILDING MATERIAL / SURFACE	AREA	MATERIALS CONSIDERED/ ASPECTS	RELEVANT STANDARD (SEE FOOTNOTE)	QUALITY CLASS 1	QUALITY CLASS 2	QUALITY CLASS 3	QUALITY CLASS 4	DOCUMENTATION TYPE	SCOPE
WHERE IS THIS SPECIFICALLY APPLICABLE?	PRODUCT TYPE	EXPLANATION		LIMIT VALUE – 10 CLP	REFERENCE – 50 CLP	PARTIAL OBJECTIVE – 75 CLP	TARGET VALUE – 100 CLP	EVIDENCE REQUIRED FOR EACH ASPECT	THE REQUIREMENT APPLIES TO THE FOLLOWING ITEMS
Legally valid evidence of equivalence with any of the listed standards, references, or labels will be recognised in relation to the relevant substance (column a)									
1 Coatings on non-mineral backgrounds: Metals, wood, plastics	Liquid coating materials are meant: Decorative lacquers/glazes with primer coatings. Effect coatings (e.g. metallic paints) are an exception to this	VOC	VOC-definition according to Directive 2004/42/EC	< 300 g/l - category D according to RL 2004/42/EC	Water soluble products in accordance with the current Decopaint Directive	< 100 g/l or RAL-UZ 12a	RAL-UZ 12a	TM + SDB + manufacturer declaration/test certificate	All relevant components and building products
2 Coatings on primarily mineral backgrounds such as concrete, masonry work, mortar and putty (including open pore putty), plasters and wallpapers, tiles, plasterboard etc. Floor surfaces with special resistance requirements (such as OS systems) and traffic routes such as underground car parks, access roads etc. are not taken into consideration.	Decorative paints, decorative fillers, dust-laying coatings, ground coatings (e.g. deep ground) floor coatings without special resistance requirements, concrete protective coatings	VOC/ SVOC	VOC-definition according to Directive 2004/42/EC	Water soluble products in accordance with the current Decopaint Directive	< 30 g/l	free of solvents and plasticisers in accordance with VdL-RL01 or RAL-UZ 102 (SVOC)	free of solvents and plasticisers in accordance with VdL-RL01 or RAL-UZ 102 (SVOC)	TM + SDB + Manufacturer declaration/test certificate	All relevant components and building products.  No documentation is required for max. 5% of the GFA according to DIN 277.



## Quality classes

Nr.	Material type energydesign (Shanghai) Co., Ltd. 材料用途 All material docs should include sample acceptance sheet and MSDS	GB50325-2010 limit OR test following local GB/T standard with DGNB limit or _LEED	quality level 1 质量等级1	quality level 2 质量等级2	quality level 3 质量等级3	quality level 4 质量等级4 energydesign (Shanghai) Co., Ltd.
1	室内涂料：用于非矿物表面，如金属、木器、塑料等（不包括特效漆） Indoor coating on non-mineral surfaces (metal, woods, plastic), not include effect coating  Wood laquer	Test for TVOC / Formaldehyde emissions after 24h, 72h	VOC < 300g/l  Dulux wood laquer, water-based: 160RMB/L	水稀释型产品 water dilutable products	VOC < 100g/l  _LEED	达到蓝天使RAL UZ 12a认证等级的产品 Product with the Blue Angel Label (RAL UZ 12a*) or equivalent  Water based acrylic laquer Schulz Farben: 300RMB/L 
2	室内涂料：用于矿物表面，如混凝土、砌块、砂浆、抹灰以及墙纸、织物、石膏板等 Indoor coating on mineral surfaces (concrete, masonry, mortar, plaster and wallpaper, textile, plasterboard etc.)  Interior coating		水稀释型产品 water dilutable products  Dulux: 20-40 RMB/L 	VOC < 30g/l  _LEED	达到蓝天使RAL UZ 102认证等级的产品 Product with the Blue Angel Label (RAL UZ 102)	达到蓝天使RAL UZ 102认证等级的产品 Product with the Blue Angel Label (RAL UZ 102) or equivalent  Interior Wall Paint PS143 Schulz: 100-150 RMB/L 
3	室外涂料：用于矿物表面，如混凝土、砌块、砂浆、保温层，立面墙纸，石膏板等 Outdoor coating on mineral surfaces (concrete, masonry, mortar, thermal insulation, façade wallpaper, plasterboard etc.)	HJ/T 201-2005 GB24408-2009 JG/T210-2007 water-based primer: VOC<120g/L water-based coating: VOC<150g/L	water dilutable products with VOC < 40g/L  水稀释性产品，VOC < 40g/L	water dilutable products with VOC < 40g/L  水稀释性产品，VOC < 40g/L	water dilutable products with VOC < 40g/L  水稀释性产品，VOC < 40g/L	water dilutable products with VOC < 40g/L  水稀释性产品，VOC < 40g/L



## Quality classes

- General requirements for products painted or applied on-site:
  - VOC/formaldehyde content of indoor-/outdoor paints according RAL-UZ-guideline (“Blue Angel Label”)
  - VOC/formaldehyde content of adhesives such as silicones, carpet glues, epoxy products, etc. according RAL-UZ-, GEV-EMICODE- or GISCODE-guideline
  
- Materials that are prepared off-site require need to follow additional requirements:
  - Requirements for VOC and heavy metal relating to components painted, varnished or lacquered off-site (e.g. steel structures, doors, frames, radiators etc.)
  - Requirements for halogenated propellants relating to foam insulating materials
  - Requirements for VOC and biocide agents for pre-treated timber components
  - Requirements for treatment with Cr(VI) compounds relating to aluminum and stainless steel components
  - Lead, cadmium and zinc stabilizers relating to plastic windows, floor- and wall coverings

## Quality classes

- Example on “Blue Angel RAL-UZ 102” for indoor decoration paints:

- Very low solvent and formaldehyde content
- Amount of softeners under 0.1 %
- Preservatives reduced to a minimum
- Offers detailed information for allergy sufferers



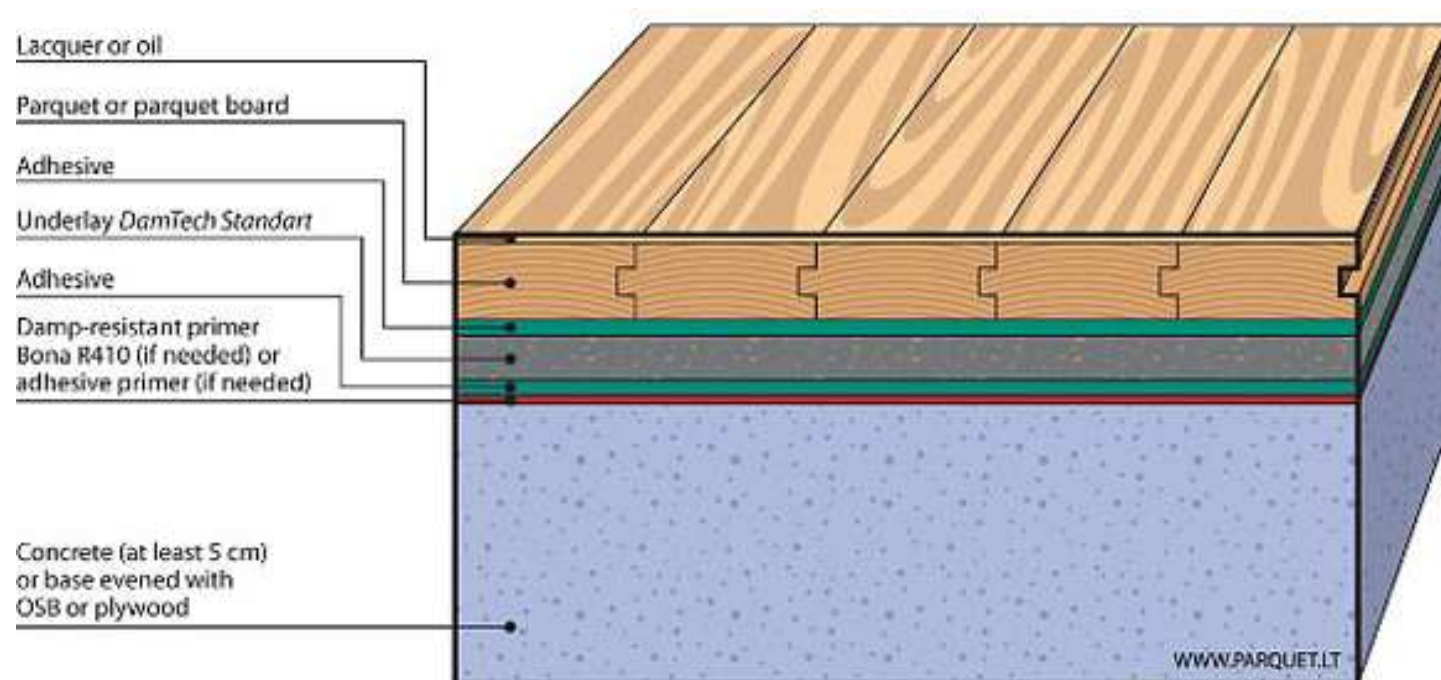
- Example on “GEV-EMICODE” for flooring adhesives:



$\mu\text{g}/\text{m}^3$	EC1 <sup>PLUS</sup>	EC1	EC2
TVOC after 3 days	$\leq 750$	$\leq 1000$	$\leq 3000$
TVOC after 28 days	$\leq 60$	$\leq 100$	$\leq 300$
TSVOC after 28 days	$\leq 40$	$\leq 50$	$\leq 100$
R value based on German AgBB LCI (NIK) after 28 days	1	-	-
Sum of non-assessable VOC	$\leq 40$	-	-
Formaldehyde after 3 days	$\leq 50$	$\leq 50$	$\leq 50$
Acetaldehyde after 3 days	$\leq 50$	$\leq 50$	$\leq 50$
Sum of form- and acetaldehyde	$\leq 0.05$ ppm	$\leq 0.05$ ppm	$\leq 0.05$ ppm
Sum of C1A/C1B VOCs after 3 days	$\leq 10$	$\leq 10$	$\leq 10$
Any C1A/C1B VOC after 28 days	$\leq 1$	$\leq 1$	$\leq 1$

## Material Tracking

- A comprehensive layer diagram including auxiliary materials such as adhesives, primers etc. needs to be provided for each of the building components.



## Material Tracking

General Information					DGNB要求	DGNB认证 DGNB Verification							
序号	样品编号	材料名称	合同品牌										
No.	Project unified code	Material Name	Brand In Contract	Status Green: OK Red: re/submittal require	DGNB requirement	评论/Comments	阈值/Threshold value	DGNB质量水平/DGNB quality level	样品 Sample (Y/N)	EDS批准日期 EDS Approval Date	Idealsun批准日期 Idealsun Approval Date	业主确认日期 German Centre Approval Date	德建批准日期 VA Approval Date
12	MA_ID_012	Bamboo veneer 竹木贴皮	WV-01 Da Zhuang 大庄			Please include all auxiliary in material protocol according to sample 150806_GCT_1.6_Material Tracking Table_0X. Provided.		-	Need to prepare	10/12/2015	9/18/2015	10/14/2015	9/17/2015
12.1	MA_ID_012.1	Bamboo Veneer Glue 竹木贴皮胶水	Mapei 马贝		certified environmental label: EmiCode (EC1/EC1plus), Der blaue Engel (RAL-UZ 113)  环保认证标签: E miCode (EC1级或EC1plus级)、德国蓝天使 (RAL-UZ 113类别)	Provided.		4		11/17/2015	11/25/2015	11/25/2015	11/25/2015
	MA_ID_012.2	Lacquer paint 清水木器漆	Schulz 舒尔茨		达到蓝天使RAL UZ 12a认证等级的产品 Product with the Blue Angel Label (RAL UZ 12a*) or equivalent	Provided.		4		11/17/2015	11/25/2015	11/25/2015	11/25/2015

## Data basis

- For each material, product and method used, comprehensive and verifiable evidence must be collected.
- Suitable sources to find such data:
  - Technical information
  - Safety data sheets (MSDS)
  - Environmental product declarations and manufacturer declarations on contents and formulation components
  - Manufacturer declarations

Report Date: 24/11/2008 9 / 4

### RONSEAL ONE COAT BLACKBOARD PAINT

#### 6 ACCIDENTAL RELEASE MEASURES

**SPILL CLEAN UP METHODS**  
Contain and collect spillage with non-combustible absorbent materials, e.g. sand, earth or vermiculite, and place in a suitable container for disposal in accordance with the waste regulations (see Section 13). Wash spillage site with suitable detergent, avoid use of solvents. Do not allow to enter drains or watercourses. If the product enters drains or sewers, immediately contact the local water company; in the case of contamination of streams, rivers or lakes, the relevant environment agency.

#### 7 HANDLING AND STORAGE

**USAGE PRECAUTIONS**  
Keep away from heat, sparks and open flame. Avoid spilling, skin and eye contact. Ventilate well, avoid breathing vapours. Use approved respirator if air contamination is above accepted level. Smoking, eating and drinking should be prohibited in areas of storage and use. Avoid breathing dust. Always use wet flaring methods whenever possible. The Manual Handling Operations Regulations may apply to the handling of containers/packages of this product.

**STORAGE PRECAUTIONS**  
Observe the label precautions. Store between 5°C and 25°C. Protect from frost. Keep in a cool, dry, well ventilated place, away from sources of heat, ignition and direct sunlight. No smoking. Containers which are opened should be properly resealed and kept upright to prevent leakage. Store separately from oxidising agents and strongly alkaline and strongly acidic materials. Always keep in containers made of the same material as the supply container.

#### 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Name	SEL	TWA - 8 hrs	STEL - 15 min	Notes
PROPANE-1, 2-DIOL	WEL	150 ppm	474 mg/m <sup>3</sup>	

WEL = Workplace Exposure Limit

**ENGINEERING MEASURES**  
Provide adequate ventilation. Where reasonably practicable, this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and/or solvent vapours below the relevant occupational exposure limits, suitable respiratory protective equipment should be worn.

**RESPIRATORY EQUIPMENT**  
If exposure to hazardous substances identified above cannot be controlled by the provision of local exhaust ventilation and good general extraction, suitable respiratory protective equipment should be worn.

**HAND PROTECTION**  
When skin exposure may occur, advice should be sought from glove suppliers on appropriate types. Barrier creams may help to protect exposed areas of skin but are not substitutes for full physical protection. They should not be applied once exposure has occurred.

**EYE PROTECTION**  
Eye protection designed to protect against liquid splashes should be worn.

**OTHER PROTECTION**  
Cotton or cotton/synthetic overalls or coveralls are normally suitable. Grossly contaminated clothing should be removed and the skin washed with soap and water or a proprietary skin cleanser.  
All personal protective equipment, including respiratory protective equipment, used to control exposure to hazardous substances must be selected to meet the requirements of the COSHH Regulations.

#### 9 PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	Low to medium viscosity liquid.		
COLOUR	Black		
ODOUR	Characteristic sweet odour.		
SOLUBILITY	Miscible with water.		
BOILING POINT (°C)	> 100	RELATIVE DENSITY	1.174 @ 20
FLASH POINT (°C)	> 60 CC (Closed cup)	VOLATILE ORGANIC COMPOUND (VOC)	75 g/litre

#### 10 STABILITY AND REACTIVITY

Material approval

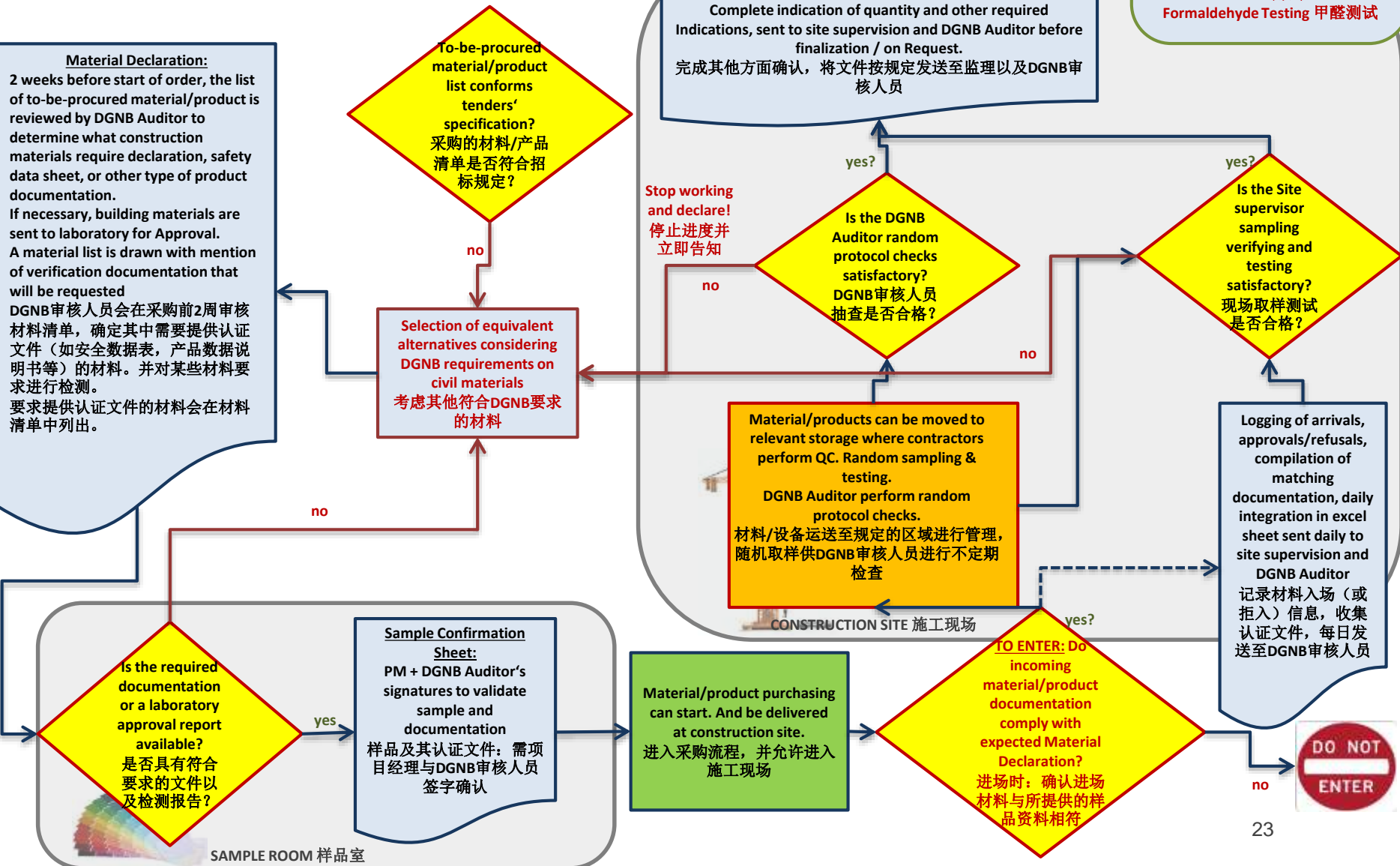
- For each material, product and method a material approval sheet is created, signed by all relevant parties of the project.
- Together with material documentation the documents are comprehensible.

样品确认单

编号	封存日期
样品名称	
颜色	
型号、规格	
厂家名称	
使用方位	
样品照片	
总包工程师签名	
业主工程师签名	
DGNB 代表签名	
业主代表签名	

# METHODOLOGY

**Beginning Test & monitoring procedure for the Material Protocol**  
起始：材料记录的监控流程



I. Approach on interior material selection

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DGNB: Selection of Interior Materials



## Challenges in practical use

- Generally products with the Blue Angel label or EMICODE are not common in China. Except for products that are imported, there are not such local labels that are comparable.
- Local standards cannot contribute directly to the requirements of Blue Angel or EMICODE because the threshold setting that is not based on the same type of results.
- However, in China the main labeling for products such as paints or adhesives is the China Environmental Labeling – 10 circles label.
- The range of products being certified by this label grows and is adapted to the ISO norms.
- More and more products categories are certified according to this label.



NOT common in China



## Challenges in practical use

Standard	Product Group	TVOC-Emission Test	VOC content Test	Formaldehyde content Test	EMICODE Requirement	Blauer Engel Requirement
GB 18582-2008	Indoor refurbishing and decorating materials (interior architectural coatings)	no	yes	yes	-	Formaldehyde /VOC
GB 24410-2009	Indoor refurbishing and decorating materials (waterbased woodenware coatings)	no	yes	yes	-	Formaldehyde /VOC
HJ 2537-2014	Technical requirements for environmental labelling (water based coatings)	no	yes	yes	-	Formaldehyde /VOC
GB 18583-2008	Indoor refurbishing and decorating materials (adhesives)	no	yes	yes	TVOC	TVOC/Formaldehyde
HJ/T 220—2005	Technical requirements for environmental labelling (adhesives)	no	yes	yes	TVOC	TVOC/Formaldehyde
GB18587-2001	Indoor refurbishing and decorating materials (carpets, carpet cushions and adhesives)	Yes (after 24 h)	no	yes	TVOC	TVOC/Formaldehyde
HJ/T 220—2005	Technical requirements for environmental labelling (carpets adhesive)	Yes (after 24 h)	no	yes	TVOC	TVOC/Formaldehyde
GB 18580-2001	Indoor refurbishing and decorating materials (formaldehyde emission of wood based panels and finishing products)	no	no	yes	-	TVOC/Formaldehyde
HJ 571-2010	Technical requirements for environmental labelling (wood based panels and finishing products)	Yes (after 72 h)	no	yes	-	TVOC/Formaldehyde
GB/T 5849-2006	Blockboard	no	no	yes	-	TVOC/Formaldehyde

## Proposed adaption for German Centre Qingdao project

- Because of the differences in Chinese testing methods and the requirements by DGNB, an approach to request additional VOC emission testing was proposed for the German Center project in Qingdao.
- The case study is a waterproof coating which could not achieve higher quality level than level 2, due to the missing VOC emission test required according to the EMICODE-guideline.
- Indeed, the guideline which this product relates to is GB 18583-2008 “Indoor decorating and refurbishing materials – Limit of harmful substances of adhesives”.
- → No VOC emission test is implemented here.
- So in order for higher scoring to be achieved in this project, it was proposed that it would be tested according to standards developed for carpets (GB18587-2001 Indoor refurbishing and decorating materials (carpets, carpet cushions and adhesives)), where the necessary method for VOC emission testing is included.

## Testing partner for additional testing

- The company WESSLING CONSULTING SHANGHAI LTD. was consulted for a proposal to conduct additional testing.
- WESSLING can provide testing standards according to international guidelines to make sure the thresholds are comparable with DGNB.
- However, the client decided not to pay additional money for testing, but chose another product that could fit the DGNB requirements.
- The intention to apply the proposed testing method to other Chinese guidelines can also push the development to implement VOC emission testing in Chinese guidelines in a wide range.
- Especially for adhesives from Chinese suppliers this can ensure the comparability to DGNB requirements.

## Proposed adaption for German Centre Taicang project

- If VOC emission testing is existing for related standards of a product, then the evaluation of VOC should be done after the values given by the Chinese test results compared with Blue Angel/EMICODE thresholds.
- In detail:
  - If VOC emission results e.g. after 3 days according to Chinese guidelines are already lower than after 3 days according to EMICODE or Blue Angel, it can be validated as passed according to EMICODE or other related standards.
  - If VOC emission results e.g. after 2 days according to Chinese guidelines are lower than after 3 days according to EMICODE or Blue Angel it can be validated with a conservative scoring of 30%.
- In fact, the project management's approach was to use products that can contribute to a higher quality level as level 1; therefore e.g. the interior paint is a product with the Blue Angel label.



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DGNB: Selection of Interior Materials

- DGNB selection of interior materials has been successfully implemented in the following projects:
  - BASF R&D Centre Shanghai with laboratory and office use (project finished in 2015)
  - German Centre Qingdao with hotel and office use (project ongoing)
  - German Centre Taicang with tenant fit-out office use (project ongoing)





## German Centre Taicang project

- Requirements on paints, adhesives and other fit-out materials have been set in tenants handbook.
- By doing this it can be ensured that the fit-out offices fulfill the requirements needed for DGNB in terms of later VOC emission testing.
- Permanently on-site checks were conducted to ensure material verification and approval.

02.1	Following materials have been spotted on site and should be confirmed by sending material documentation:	03
	<ul style="list-style-type: none"><li>Unknown 'polyvinyl acetate latex white latex'. Please check what this material is used for, provide documentation and include in material list.</li></ul>	036
	<ul style="list-style-type: none"><li>Stone adhesive for marble wall. Please provide documentation and include in material list.</li></ul>	





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DGNB: Selection of Interior Materials

## Conclusion and future perspectives

- DGNB selection of interior materials can ensure building users and environment health!
- The approach on settlement of cooperation partner WESSLING can ensure that missing testing results can be provided and on long-term can push to settle these testing procedures in the Chinese GB-guidelines.
- As DGNB certifies an increasing number of office-, hotel- and other buildings, high standard buildings in China get more and more recognized and important.
- Also the health of building users is considered as a more sensitive topic and low VOC emission building products take a high importance in terms of the health of users.

## Conclusion and future perspectives

- Recommended wall paint manufacturers:



- Recommended adhesive manufacturers:



# QUESTIONS & DISCUSSION



# THANK YOU VERY MUCH!

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