CC-7

中国化学工程第七建设公司技术文件资料

道康宁（张家港）有限公司 19 万吨/年有机硅聚硅氧烷项目（1 期）

防腐环氧内衬施工方案

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中国化学工程第七建设公司
China National Chem.Engg.No.7Construction Co.Ltd.

METHOD STATEMENT
施工组织设计

Project: Corrosion Resistant Epoxy Lining, Dow Corning (Zhangjiagang) DCSS Project
项目：防腐环氧内衬，道康宁（张家港）硅烷/硅氧烷项目

Subcontractor: ThyssenKrupp Xervon Co., Ltd.
分包商：上海百利加防腐工程有限公司

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中国化学工程第七建设公司
China National Chem.Engg.No.7Construction Co.Ltd.

2007-06-28

1 In General 工程概况

1.1 Project 项目：
Corrosion Resistant Epoxy Lining, Dow Corning (Zhangjiagang) DCSS Project
项目：防腐环氧内衬，道康宁(张家港)硅烷/硅氧烷项目

1.2 Working Place 施工部位：
Pits and Trenches
池槽和沟渠

1.3 Purchaser 采购方：
China National Chem. Engg. No.7 Construction Co. Ltd.
中国化学工程第七建设公司

1.4 Owner 业主：
Dow Corning (Zhangjiagang) Silicone Co., Ltd.
道康宁（张家港）有机硅有限公司

1.5 Location 项目地点：
Yangtz River International Chemical Industrial Park, Zhangjiagang
张家港扬子江国际化学工业园区

1.6 Work Summary 工作概况：

No. 序号	AREA 区域	PIT NAME (NO.) 池槽名称（编号）	PROPOSED PRODUCT & SPEC. 技术方案	B/Q (m^2) 工作量
1	11	UNLOADING PIT (1104)	NOT APPLICABLE	NOT APPLICABLE
2	11	CHEMICAL SEWER COLLECTION PIT (1137)	Temporary moisture barrier: Sikafloor 81 EpoCem for floor; Sikagard 720 Epocern for wall. Primer & Laminate: Sikafloor 156 + Glassmat Topcoat: Sikafloor 261	6
3	51	CHEMICAL SEWER COLLECTION PIT (5101)	Temporary moisture barrier: Sikafloor 81 EpoCem for floor; Sikagard 720 Epocern for wall. Primer & Laminate: Sikafloor 156 + Glassmat Topcoat: Sikafloor 261	9
4	51	COLLECTION PIT (under the Spent Silicon Loading Bay)	Temporary moisture barrier: Sikafloor 81 EpoCem for floor; Sikagard 720 Epocern for wall. Primer & Laminate: Sikafloor 156 + Glassmat Topcoat: Sikafloor 261	Included in ITEM 14
5	52	WASTE WATER COLLECTION PIT Z3111	Temporary moisture barrier: Sikafloor 81 EpoCem for floor; Sikagard 720 Epocern for wall. Primer & Laminate: Sikafloor 156 + Glassmat Topcoat: Sikafloor 261	37
6	55Q	GEL BASIN NO.1 (5536)	Temporary moisture barrier: Sikafloor 81 EpoCem for floor; Sikagard 720 Epocern for wall. Primer & Laminate: Sikafloor 156 + Glassmat Topcoat: Sikafloor 261	174
7	55Q	GEL BASIN NO.2 (5537)		
8	55Q	BRINE BASIN (5538)		
9	70	VENT SCRUBBER PIT (7045)	Temporary moisture barrier: Sikafloor 81 EpoCem for floor; Sikagard 720 Epocern for wall. Primer & Laminate: Sikafloor 156 + Glassmat Topcoat: Sikafloor 261	120
10	70	CHEMICAL SEWER COLLECTION PIT (7090)	Temporary moisture barrier: Sikafloor 81 EpoCem for floor; Sikagard 720 Epocern for wall. Primer & Laminate: Sikafloor 156 + Glassmat Topcoat: Sikafloor 261	9
14	49	DRAINAGE TRENCHES from PROCESS AREAS to Z3111	Temporary moisture barrier: Sikafloor 81 EpoCem for floor; Sikagard 720 Epocern for wall. Primer & Laminate: Sikafloor 156 + Glassmat Topcoat: Sikafloor 261	812
15	44	DRAINAGE TRENCH	Temporary moisture barrier: Sikafloor 81 EpoCem for floor; Sikagard 720 Epocern for wall.	3

			Primer & Laminate: Sikafloor 156 + Glassmat Topcoat: Sikafloor 261	
16	44	VALVE PIT	Temporary moisture barrier: Sikafloor 81 EpoCem for floor; Sikagard 720 Epocern for wall. Primer & Laminate: Sikafloor 156 + Glassmat Topcoat: Sikafloor 261	57
			Grand Total 总计	**1,227**

2 Condition of Corrosive Media 腐蚀介质性能

2.1 Media Description
介质要求

No. 序号	AREA 位置	Media 介质	PH Value PH 值	Temperature 温度
1	UNLOADING PIT (1104)	None 无		
2	CHEMICAL SEWER COLLECTION PIT (1137)	Dilute Hydrochloric Acid, max concentration 0.1%, at ambient temperature 稀释后的盐酸，最高浓度 0.1%，常温		
3	CHEMICAL SEWER COLLECTION PIT (5101)	As item 2 同 2		
4	COLLECTION PIT (under the Spent Silicon Loading Bay)	As item 2 同 2		
5	WASTE WATER COLLECTION PIT Z3111	Collected water from other sources (7045, 5101, 5538) and other water including process pad. Will contain Dilute Hydrochloric Acid, max concentration 0.1%, at ambient temperature 其他区域(7045, 5101, 5538)收集来的废水和包括工艺台出来的废水，会含有稀释后的盐酸，最高浓度 0.1%，常温		
6	GEL BASIN NO.1 (5536)	Continuous service with 15% CaCl2 solution. Needs to operate for three years before demolition 长期盛有 15%氯化钙溶液，三年更换。		
7	GEL BASIN NO.2 (5537)			
8	BRINE BASIN (5538)			
9	VENT SCRUBBER PIT (7045)	Periodic weak Hydrochloric acid (pH 3) once or twice per year, normally clean water and boiler blowdown 每年 1-2 次弱盐酸（pH 3），通常为清水和锅炉排放水		
10	CHEMICAL SEWER COLLECTION PIT (7090)	Dilute Hydrochloric Acid, max concentration 0.1%, at ambient temperature 稀释后的盐酸，最高浓度 0.1%，常温		
14	DRAINAGE TRENCHES from PROCESS AREAS to Z3111	Dilute Hydrochloric Acid, max concentration 0.1%, at ambient temperature 稀释后的盐酸，最高浓度 0.1%，常温		
15	DRAINAGE TRENCH	0.5%w HCl at maintenance 维修时 0.1%盐酸		
16	VALVE PIT	0.5%w HCl at maintenance 维修时 0.1%盐酸		

2.2 Media Performance
介质性能

Not applicable 不适用

3 Recommended Material 材料选择

We recommend high quality epoxy top-coat material Sikafloor-261, produced by world famous construction chemical supplier Sika. When used as fibre glass mat laminating binder, the whole system will provide excellent performance to a variety of chemical media. For its chemical resistance, please refer to attached “Chemical Resistance Table” in Part 10.
我们推荐高质量的环氧面层材料 Sikafloor-261，由世界著名的化学建材生产厂家西卡公司出品。用作玻璃纤维布粘结料时，整个体系对于多种化学介质有非常好的防护作用。其化学耐性，请参看第 10 章所附的“化学耐性表”

3.1 Features 特点

Sikafloor-261 is a two part multi purpose binder based on epoxy resin with following advantages:
- Multi-purpose
- Good chemical and mechanical resistance
- Easy application
- Economical
- Liquid proof
- Solvent-free
- Tight, glossy surface

Sikafloor-261 是一种双组份、多用途的环氧树脂粘合剂，具有如下特点：
- 用途广
- 良好的抗化学侵蚀和抗机械磨损能力
- 施工简便
- 经济
- 不渗透
- 不含溶剂
- 表面致密光亮

3.2 适用场合和适用范围

When used as lamination system, it can be lined inside tank, trench and sump pit ect.
当使用贴布体系时，可用作池槽、沟渠和集水坑等内表面内衬。

3.3 Mechanical / Physical Properties 质量指标

Item 项目	Testing Standard 测试标准	Characteristic Value 特征值
Compressive strength 抗压强度	EN 196-128 days/23˚C	Resin 树脂：~ 60 N /mm^2
Flexural strength 抗折强度	EN 196-128 days/23˚C	Resin 树脂：~30 N/mm^2
Bond Strength 附着强度	ISO 4624	> 1.5 N/mm^2 （failure in concrete 混凝土被拉断）
Shore hardness, D 肖氏硬度	DIN 53 5057 days/23˚C	76
Abrasion Resistance 耐磨性	DIN 53 1098 days/23˚C	70 mg

3.4 Mix Ratio (by weight)使用配比（重量比）

Resin (part A) : Hardener (part B) = 20 : 6
树脂（A 组）：固化剂（B 组）= 20：6

3.5 包装与贮存

Packaging
Part A, 20 kg container
Part B, 6 kg container

Storage
24 months from date of production if stored properly in original, unopened and undamaged sealed packaging in dry conditions at temperatures between +5° C and +30° C.

包装
A 组：20 公斤桶装
B 组：6 公斤桶装

储存条件
原装密封，贮存在+5℃至+30℃之间，干燥的条件下，自生产日期起保质期为 24 个月。

3.6 Precautions 注意事项

Protective Measures	During application and curing in closed rooms, pits and shafts etc., adequate fresh air ventilation must be provided. Keep away from open flames including welding. Use of basic principles of industrial hygiene and protective clothing such as gloves and goggles etc. will enable this product to be used safely. Change soiled work clothes and wash hands before eating and after finishing work. Local regulations and health and safety advice on packaging labels must be observed.
Important Notes	Residues of material must be removed according to local regulations. Fully cured material can be disposed of as household waste under agreement with the responsible local authorities. Detailed health and safety information as well as detailed precautionary measures e.g. physical, toxicological and ecological data can be obtained from the material safety data sheet.
保护措施	在密封的室内、沟洼和竖井内施工时，必须有充足的通风，严禁明火，包括焊接。 应用基本工业原则的卫生防护衣，如手套、护目镜等，确保安全使用本产品。 进食前和完工后更换沾污的工作服并洗手。 必须遵守当地的法则和包装标签所指示的健康和安全信息。
重要信息	残留物料根据当地的规定处理，完全固化的物料可经当地管理部门同意后，可作为家庭垃圾处理。具体的健康和安全信息以及预防措施，如：物理学，毒物学的和生态学数据可参照安全说明书。

4 Technical Proposal and Application Description 施工工艺及施工程序

As per drawings and chemical media list provided by Toyo Engineering and your company, We and Sika recommend corrosion resistant epoxy lining using high quality products from Sika
根据东洋工程和贵方提供的设计图纸和化学介质，我们和材料商西卡公司推荐采用 Sikafloor 系列防腐蚀环氧树脂贴玻璃纤维布的技术方案。

4.1 Corrosion Resistant Lining 防腐蚀内衬

Used in:
应用区域：

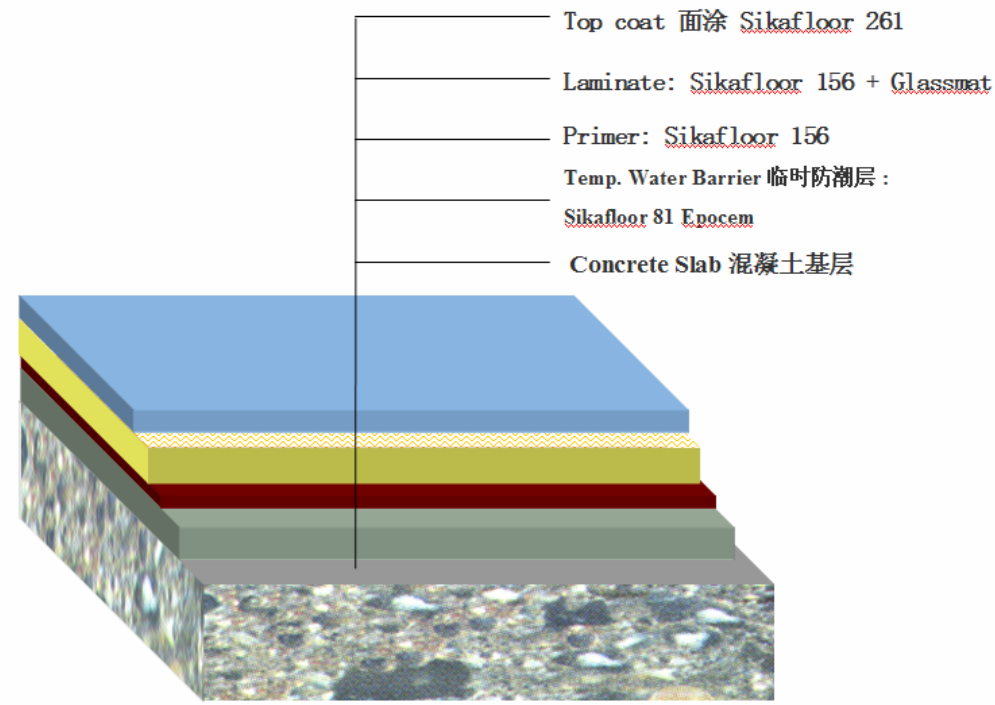
- **Floor in the pits and trenches**
  水池、沟槽地面

Special concerns (if any):
特殊关注（如有）：

- Coving treatment:
  Make coving at every corner and connecting edge with Sikafloor epoxy mortar.

  弧角处理：
  所有的立面和平面交接处都要用 Sikafloor 环氧砂浆处理成圆弧过渡。

Structure Profile:
示意图：



System Description:
系统组成：

Step 步骤	Product & Consumption 产品和用量	Application Method 施工方法
Surface Preparation 基层处理	Steel shot blasting & Vacuum cleaning 钢丸喷砂并真空吸尘	
Moisture Barrier 临时防潮层	Sikafloor 81 Epocem A+B @ 0.3 kg/m^2 Sikafloor 81 Epocem A+B+C @ 4.50kg/m^2	Roller 滚涂 Trowel 镘涂
Primer/Scratch coat 底漆/批补层	Sikafloor-156 @ 0.3 kg/m^2 + Quartz sand 石英砂	Roller 滚涂 Trowel 镘涂
Laminate layer 玻璃纤维压层	Sikafloor 156 @ 2.5 kg/m^2 + 2 x450g Glassmat @ 2.2 m^2/m^2 + 1 x30g Surface Fleece @ 1.1 m^2/m^2	Roller & Lay 滚涂并铺设
Top-coat	1-2 x Sikafloor-261 @ 1.0 kg/m^2	Trowel or Roller

面涂		镘涂或滚涂

Detailed information please refer to attached datasheet of Sikafloor 81 Epocem, Skiafloor 156, Sikafloor 261.
详细信息请参看所附的产品说明书 Sikafloor 81 Epocem, Sikafloor 156 和 Sikafloor 261。

4.2 Corrosion Resistant Lining 防腐蚀内衬

Used in:
应用区域：

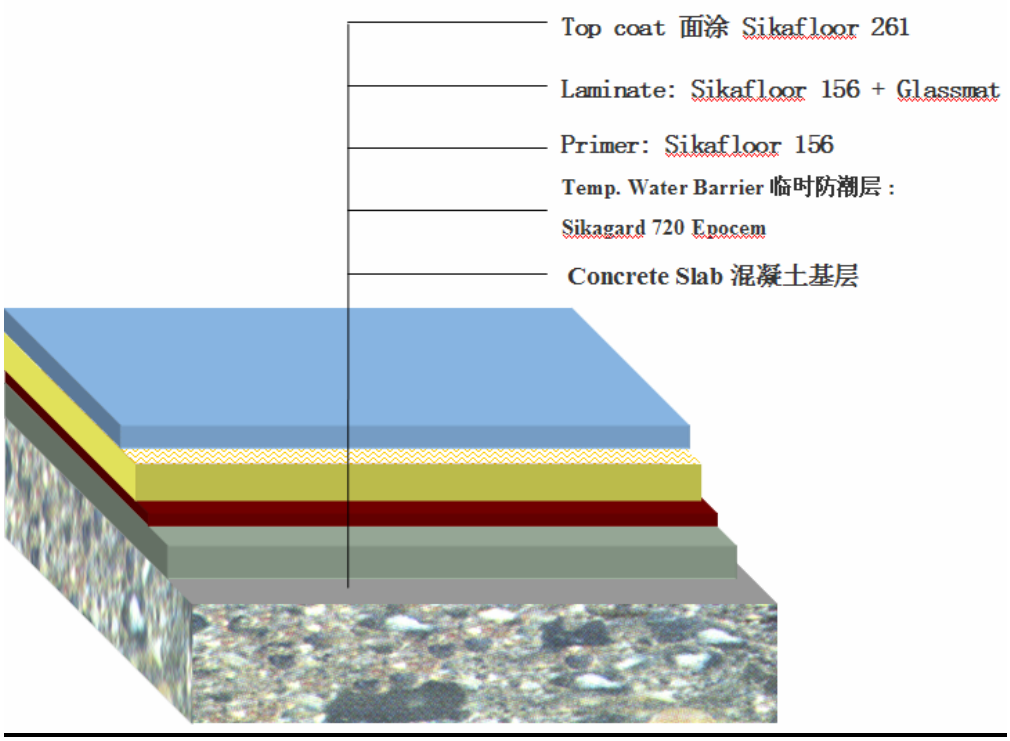
- **Wall in the pits and trenches**
  水池、沟槽立面

Special concerns (if any):
特殊关注（如有）：

- Coving treatment:
  Make coving at every corner and connecting edge with Sikafloor epoxy mortar.

  弧角处理：
  所有的立面和平面交接处都要用 Sikafloor 环氧砂浆处理成圆弧过渡。

Structure Profile:
示意图：



System Description:
系统组成：

Step 步骤	Product & Consumption 产品和用量	Application Method 施工方法
Surface Preparation 基层处理	Steel shot blasting & Vacuum cleaning 钢丸喷砂并真空吸尘	
Moisture Barrier 临时防潮层	Prewet Sikagard 720 Epocem A+B+C @ 4.0kg/m^2	Roller 滚涂 Trowel 镘涂
Primer/Scratch coat 底漆/批补层	Sikafloor-156 @ 0.3 kg/m^2 + Quartz sand 石英砂	Roller 滚涂 Trowel 镘涂
Laminate layer 玻璃纤维压层	Sikafloor 156 @ 2.5 kg/m^2 + 2 x450g Glassmat @ 2.2 m^2/m^2 + 1 x30g Surface Fleece @ 1.1 m^2/m^2	Roller & Lay 滚涂并铺设
Top-coat 面涂	1-2 x Sikafloor-261 @ 1.0 kg/m^2	Trowel or Roller 镘涂或滚涂

Detailed information please refer to attached datasheet of Sikagard 720 Epocem, Skiafloor 156, Sikafloor 261.
详细信息请参看所附的产品说明书 Sikagard 720 Epocem, Sikafloor 156 和 Sikafloor 261。

5 Working Method 施工方法

5.1 Demand of Material 材料要求

Epoxy application requires the following conditions. Time schedules will be affected if those conditions cannot be fulfilled. Substrate and ambience conditions are assurance of quality epoxy coating work.
环氧施工要求如下施工条件，如果不能满足，进度计划将受影响。基层和环境状况要求是高质量环氧涂装工程的保证。

1) Substrate 基层

- Compression strength 抗压强度 > 25N/mm^2
- Pull-off strength 抗拉强度 > 1.5 N/mm^2
- Moisture content 含水率 < 4%
- The surface must be even (better 3mm over 2m or as per owner's demand), fine grinding, clean, dense, dry, free from oil, grease, crack, cavities, damages and other contaminants
  基层必须平整（最好 2 米靠尺误差小于 3mm 或根据业主要求），表面收光，清洁，密实，干燥，无油脂、裂缝、空鼓、损坏或其他污染物。
- Moisture barrier layer provided under groundfloor slab
  底层楼板下做了防潮处理。

2) Ambience 环境

- Temperature and humidity 温度与湿度

  Min. +10˚C (but at least 3˚C above the dew point)
  最低 +10˚C（但高于露点至少 3˚C）

  Max. +35˚C
  最高 +35˚C

  Relative air humidity max. 80%
  空气相对湿度最高 80%

5.2 Concrete substrate preparation 混凝土基面处理

Clean the substrate free from garbage, foreign matters etc. Carry out surface preparation for the floor with steel shot blasting machine for the trench and wall with grinding machine to remove surface laitance and to provide sound and rough surface. Then clean off the dust by vacuum cleaning.
首先对基层进行初步清理，去除垃圾、杂物等，然后对地面使用钢丸喷砂机，对沟槽、墙面使用角磨机对基面进行表面处理，去除水泥浮浆层并提供坚实粗糙的表面。然后进行真空除尘。

We will take care of treatment of small and local substrate defects, typically are grinding of extruded mortar at formwork connection, closing of pinholes, local irregular and coarse surface etc. It's noted,
对于基层的一些小的和局部的缺陷，我们将进行处理，主要包括模板拼缝处多余砂浆的打磨，气孔的封闭，基层局部小范围粗糙等。需要指出的是，对于平整度超标的区域，拟采用经业主确认的打磨或环氧砂浆进行找平处理。

5.3 Material Using Instruction 施工用料配制工艺

5.3.1 Mix ratio 配合比

Item **项目**	**Name of Material** **材料名称**		
	Sikafloor-81 EpoCem	**Sikagard 720 Epocem**	
Usage **用途**	Temporary moisture barrier for floor 临时防潮层（地面）	Temporary moisture barrier for Wall 临时防潮层（墙面）	
Form **形态**	Part A: resin Part B: hardener Part C: filler A 组：树脂 B 组：固化剂 C 组：骨料	Part A: resin Part B: hardener A 组：树脂 B 组：固化剂 C 组：骨料	
Mix ratio **配比**	Part A: 1.14 kg Part B: 2.86 kg Part C: 19 kg A 组：1.14 kg B 组：2.86 kg C 组：19 kg	Part A: 1.14 kg Part B: 2.86 kg Part C: 17 kg A 组：1.14 kg B 组：2.86 kg C 组：17 kg	
Mixing method **搅拌方式**	Collomixer 进口强制式搅拌机	Collomixer 进口强制式搅拌机	
Application method **施工方式**	Trowelling 镘涂	Trowelling 镘涂	

Item **项目**	**Name of Material** **材料名称**		
	Sikafloor-156	**Sikafloor-261**	
Usage **用途**	Primer, Binder for mortar and Laminate 底漆，环氧砂浆及玻纤布压层粘结料	Top-coat 面层	
Form **形态**	Part A: resin Part B: hardener A 组：树脂 B 组：固化剂	Part A: resin Part B: hardener A 组：树脂 B 组：固化剂	
Mix ratio **配比**	Part A: 15 kg Part B: 5 kg A 组：15 kg B 组：5 kg	Part A: 20 kg Part B: 6 kg A 组：20 kg B 组：6 kg	
Mixing method **搅拌方式**	Drilling Mixer 手提搅漆枪	Drilling Mixer 手提搅漆枪	
Application method **施工方式**	Rolling, Brushing, trowelling 滚涂，刷涂，镘涂	Rolling, trowelling 滚涂，镘涂	

5.3.2 Preparing epoxy binder 树脂胶料的配制

Prior to mixing stir part A mechanically. When all of part B has been added to part A, continuously mix for 3 minutes until a uniform mix has been achieved. To ensure thorough mixing pour materials into another container and mix again to achieve a consistent mix.

混合前用机械方法搅 A 组份。加入全部组份后，继续搅拌至少 3 分钟直到混合物均匀一致。之后将材料倒入另一容器再搅拌至调和以确保完全混合。

5.3.3 Preparing epoxy mortar 树脂砂浆的配制

Epoxy mortar mix ratio = (part A + part B) : quartz powder = approx. 1 : 10
环氧砂浆配比： = （A 组 + B 组）：石英砂 = 约 1：10

Prior to mixing stir part A mechanically. When all of part B has been added to part A, continuously mix for 3 minutes until a uniform mix has been achieved. When parts A and B have been mixed, the quartz sand must be mixed with part A and B for a further 2 minutes until a uniform mix has been achieved. To ensure thorough mixing pour materials into another container and mix again to achieve a consistent mix.
混合前用机械方法搅组份。加入全部组份后，继续搅拌至少 3 分钟直到混合物均匀一致。A+B 组份混合后，加入石英砂，再搅拌至少两分钟直到混合物均匀一致。之后将材料倒入另一容器再搅拌至调和以确保完全混合。

5.3.4 Preparing epoxy resurfacer 树脂胶泥的配制

Epoxy mortar mix ratio = (part A + part B) : quartz powder = approx. 1 : 2-3
环氧砂浆配比： = （A 组 + B 组）：石英粉 = 约 1：2-3

Prior to mixing stir part A mechanically. When all of part B has been added to part A, continuously mix for 3 minutes until a uniform mix has been achieved. When parts A and B have been mixed, the quartz sand must be mixed with part A and B for a further 2 minutes until a uniform mix has been achieved. To ensure thorough mixing pour materials into another container and mix again to achieve a consistent mix.
混合前用机械方法搅组份。加入全部组份后，继续搅拌至少 3 分钟直到混合物均匀一致。A+B 组份混合后，加入石英砂，再搅拌至少两分钟直到混合物均匀一致。之后将材料倒入另一容器再搅拌至调和以确保完全混合。

5.3.5 Notes 注意事项

- Strictly observe mix ratio and mixing time
  应严格遵守搅拌配比和搅拌时间
- Over mixing must be avoided to minimize air entrainment.
  避免过度搅拌降低产生气泡

5.4 Application Details 具体施工工艺

5.4.1 Temporary moisture barrier to floor 地面临时防潮层

- Priming 底漆施工
  Mix Sikafloor-81 EpoCem Part A and Part B to get primer, apply primer onto the substrate by rolling.
  将 Sikafloor-81 EpoCem A+B 组分混合搅拌均匀，然后将该底漆滚涂在基面上。
- Applying temporary moisture barrier 临时防潮层施工
  2-3 hours later when the primer is tacky, mix Sikafloor-81 EpoCem part A+B+C, then apply the mixture onto the floor by means of tooth trowel and immediately roll it by spike roller to remove any entrapped air.
  待 2-3 小时底漆表干后，将 Sikafloor-81 EpoCem A+B+C 组分混合搅拌均匀，然后将其用锯齿刮板施工在地面上，并随即用消泡滚筒消泡以排出混入的空气。

5.4.2 Temporary moisture barrier to wall 墙面临时防潮层

- Pre-treatment
  Pre-wet the entire surface by rolling the water onto the surface to saturated surface without ponding water.
  使用滚筒将水滚涂到基层表面，使其吸水饱和，不得有积水。
- Applying temporary moisture barrier 临时防潮层施工
  Mix Sikagard 720 EpoCem part A+B+C, then apply the mixture onto the surface by trowel and finish by brush or sponge to smooth the surface.
  将 Sikagard 720 EpoCem A+B+C 组分混合搅拌均匀，然后将其用金属镘刀施工在表面上，并随即用刷子或海面收平表面。

5.4.3 Corrosion Resistant Lining 防腐蚀内衬

- Substrate preparation 基层处理
  Clean the substrate free from garbage, foreign matters etc. Then carefully grind the substrate with grinding machine to produce a smoothly undulating surface. Then clean off the dust.
  首先对基层进行初步清理，去除垃圾、杂物等，然后用角磨机对基面进行仔细打磨处理，以使基面趋于顺平，然后将

灰尘清理干净。

- Substrate repair 基层修补
  Use epoxy mortar (primer Sikafloor-156 + quartz sand) to repair local substrate defects, like damages, irregularity, etc. In the meantime, make coving at every corner and connecting edge with Sikafloor epoxy mortar.
  采用环氧砂浆（无溶剂环氧底漆+石英砂配制而成）修补混凝土的局部缺陷，如破损、粗糙表面等。与此同时，将所有的立面和平面交接处都用环氧砂浆处理成圆弧过渡。

- Priming/scraping layer 底漆/批补施工
  Apply solvent-free epoxy primer Sikafloor-156 by rolling or trowelling. When the primer is cured. Scrape the whole surface with Sikafloor-156 + quartz sand to close pinholes and to produce a smoother surface.
  滚涂或刮涂施工无溶剂环氧底漆 Sikafloor-156，底漆固化后，整体批刮 Sikafloor-156 + 石英砂配制成的环氧腻子，以封闭气孔并使基面更为光滑。

- Lamination layer 贴布层
  When the scrape layer is cured, grind the surface to remove burrs and imperfections, and then start application of lamination layer. Lamination bind solvent-free epoxy Sikafloor-156 (filled) is trowelled on the substrate, the fiber glass mat is then placed into the wet filled Sikafloor-156 and then rolled firmly. Each piece of mat should have a minimum 10cm overlap. The lamination layer has 2 plies of fiber glass mat.
  批补层固化后，对其进行打磨以去除毛刺和表面缺陷，然后开始贴补层的施工。首先将贴布粘结料无溶剂环氧 Sikafoor-156（加入填料）批刮在基面上，随即将玻璃纤维布铺贴其上，然后用滚筒压紧。每片玻璃纤维布应至少有 10cm 的搭结。贴补层需用到两层玻璃纤维布。

- Top-coat 面层
  When the lamination layer is cured, grind the surface to remove burrs and imperfections, and then apply top-coat material Sikafloor-261 by roller or trowel for 1-2 coats.
  贴布层固化后，对其进行打磨以去除毛刺和表面缺陷，然后用滚筒或镘刀施工面层材料 Sikafloor-261，共施工 1-2 遍。

6 Quality Control and Acceptance 质量控制和施工验收

We will perform the application in strict accordance to system proposals and product datasheet. Application quality is realized through the following control activities.
我们将严格按照系统方案和产品说明书进行施工，并通过以下控制手段确保施工质量：

1) Staff 人员
We will mobilize our organization with experienced management personnel and skilled operators.
我们将为此项目配备经验丰富的施工管理人员和熟练的施工作业人员。

2) Material 材料
Delivering, storing, handling, mixing and application of material will be carried out as per manufacturer's instructions. Check package, production date, shelf life, regulatory document of each batch of material when they arrive jobsite. Material which fails to comply the above requirement will be rejected. We will use fixed and experienced operators to mix material.
材料的运输、储存、搬运、搅拌和施工将严格按照材料商的指导说明进行。每批材料抵达现场时，均要仔细察看包装、生产日期、储存期和必备的文件资料，如无法满足上述要求，现场将拒绝接收。我们将使用有经验的专人进行材料搅拌。

3) Substrate inspection and preparation 基层检查和处理
Before start of application, the substrate will be thoroughly inspected to make sure that it meets requirement

施工前，彻底检查基层，以确认其满足要求。

4) Ambience inspection 环境检查
Before and during application, the ambient conditions required in ""5.2 scope of work" should be inspected, recorded and observed. We will not proceed the work before ambient conditions are met.
施工前和施工过程中，应检查、记录和遵循"5.2 工作范围"一节，达不到环境要求不能进行施工。

5) Inspection and preparation of each coating layer 每道涂层的检查和准备
Workers are not allowed to apply succeeding coats until the previous coat has cured, prepared, inspected and approved.
在上道涂层未完全固化、准备好、检查和认可前不能进行下道涂层的施工。

6) Application machine and tools 施工器具
Machines and tools are in accordance with manufacturer's directions and maintained in functional status. Some equipment will have back-up.
施工器具符合材料商的要求，并保证处于良好状况，还要准备部分备用的重要器具。

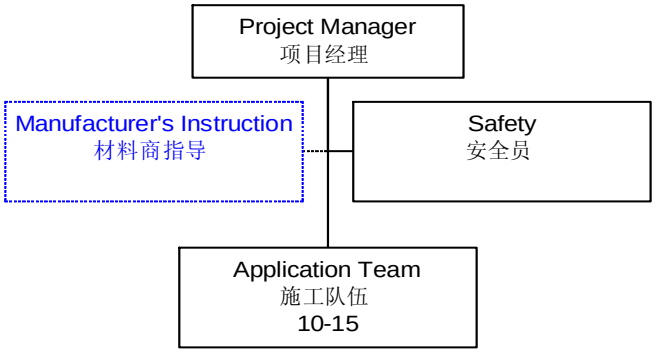
7) Curing 养护
Curing is very important to the end result of epoxy floor. No traffic or operation is allowed before the curing time is due.
养护对环氧涂层的最终效果非常重要，养护时间不到不得承载或进行其他施工。

During application, requirement in Part 4, 5 and quality control in this part should be strictly observed to each step of application
施工中应严格按照第 4 和第 5 章中的要求和本章中的质量控制要求，对每一步进行验收。

7 Qualification 防腐公司资质证明

8 Mobilization and Method Statement 现场施工组织设计

8.1 Organization 组织机构



Project Manager 项目经理	Responsible for project management, labour control, front line coo-ordination, schedule control, and quality assurance 负责整个项目的管理，质量控制，人力控制，现场协调，工作进度，质量管理等。
Manufacturer's Instructor 材料商指导	Responsible for product and application instruction, technical support. 负责材料供应协调，现场施工的技术支持和指导。
Safety Officer 安全	Responsible for safety, security, health and cleaning on site. 负责安全，保卫，现场清洁等做工作。

8.2 Manpower Plan 人力计划

Number of workers in peak time can be 15, and we will adjust manpower according to specific site conditions.
高峰期的施工人数可达 15 人，而且我们会根据现场具体情况调配人员。

8.3 Equipment Input 设备投入

Equipment Type 设备名称	Quantity 数量	Power 功率
Shot Blasting Machine 自动喷砂机	1	15-30 kW
Industrial Vacuum Cleaner 工业吸尘器	1	3-6 kW
Moisture Tester 含水率检测仪	1	---
Ventilation Fan 排风机	2	3-4 kW
Hand grinding machine 手动角磨机	As required 足量	3-4 kW
Collomixer 进口强制式搅拌机	As required 足量	5-8 kW
Hand Tools 手工工具 *(spatula, trowel, roller, etc.刮板/镘刀/滚筒等)*	As required 足量	---

8.4 Site Layout 现场布置

- We need one store room on site for material and equipment storage.
  我们在现场需要一间房间存放材料和设备。
- We need 220V and 380V power supply.
  我们施工需要 220V 和 380V 电力供应。

9 Safety and Housekeeping 安全与文明施工

9.1 Safety 安全计划

Apart from observing safety guidelines of the purchaser and relative government authorities, the following safety plan is developed for this coating work.
除严格遵守发包方和相关政府机构对安全施工的规定之外，针对我们的施工专业，特制定如下计划：

1) General 概述

Prior to execution of the work, “Safety First” must be embedded into everybody’s mind.
施工前应让“安全第一”的意识深入到每个管理和施工人员的脑海中。

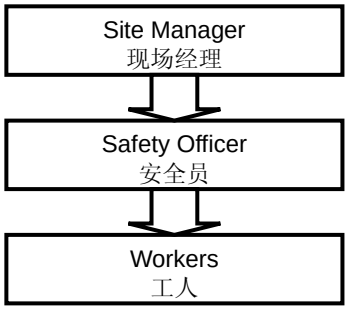
Site manager will take full responsibility for the safety in this project. Everybody has the obligation to observe and remind other people safety plan.
本次施工的安全工作由现场项目经理总体负责，每个人员均负有本人遵守和提醒他人的责任。

Safety officer will work very close with safety department of the purchaser, attending safety meeting and site tour, informing his people general safety situation on the jobsite, reporting any safety problem to the purchaser.
安全员应同发包方安全部门密切合作，参加安全会议和安全巡视，及时向本单位员工通报现场的总体安全状况，并向发包方通报在现场发现的可能导致安全危害的情况。

Safety education should be received by everyone.
各级施工人员应接受三级安全教育。

No people is allowed to work without safety education. Special operator should have relative certificate.
未经安全生产教育培训的人员，不得上岗作业，特种作业人员必须持证上岗。

2) Safety Organization 安全组织结构



3) Safety Actions 安全措施

- Power Handling: all powered equipment and plugs should have good earthing protection.
  用电：所有的用电设备和插头都要有良好的接地保护。
- Fall-down Protection: prior to application, fully inspect the working territory to confirm that appropriate and adequate protection has been made at openings, shafts, staircases, building edges, etc.
  跌落保护：施工前检查本施工区域洞口、井架、楼梯、楼层边缘等处是否安装了有效的防护设施。
- Application in Closed Area: Provide watch people outside closed area, and provide adequate ventilation in closed area:
  密闭空间施工：密闭空间外面要派专人守护，密闭空间内要提供充足的通风。
- Scaffolding: Scaffolding should not be used until accepted.
  脚手架：脚手架不验收不得投入使用。
- Personnel Protection: Safety helmet, shoes, glasses must be weared when entering jobsite. Safety handing guidelines must be observed when transport, loading/unloading, storing, mixing and applying chemical material.
  个人防护：进入施工现场必须佩带安全帽、安全鞋和安全眼镜，化学涂料的运输、装卸、保存、搅拌和使用过程

中还要严格遵守安全使用规定。

- First-Aid: when incident happens, report immediately and seek doctor assistance.
  急救：如出现安全意外，要立刻报告，寻求医生的专业帮助。
- Others: prior to application, check lighting. Adequate fire fighting staff should be equipped beside dangerous, combustive or explosive goods.
  其他：施工前检查本施工区域内的照明是否充足；危险品和易燃易爆品附近配备足量的消防器材。

9.2 Housekeeping plan 文明施工计划

Apart from observing safety guidelines of the purchaser and relative government authorities, the following housekeeping plan is developed for this coating work.
除严格遵守发包方和相关政府机构对文明施工的规定之外，针对我们的施工专业，特制定如下计划：

1) General 概述

Our goal is to offer the purchaser and owner a well-housekept jobist.
我们的目标是为采购方和业主创造一个文明的施工工地。

Housekeeping work is the responsibility of Site Manager. A day-to-day based education, reminding, supervision and disciplining will be carried out.
我们的文明施工管理工作将由现场项目经理总体负责，定期对所有施工人员进行文明施工教育和总结，时时监督，及时纠正与文明施工规定相违背的行为。

2) Application Site 施工现场

- All application people will be uniformly dressed.
  所有施工人员统一着装。
- Material and equipment/tools will be stored and arranged in a tidy manner.
  材料和设备存放场所由专人负责，按照品种和规格布置对方整齐。
- According to application area and time schedule, define appropriate material mixing place. Make proper protection to the mixing place. Separate used and unused material. Empty pails, bags and other scraps should be moved out promptly.
  根据施工区域和施工计划，确定合理的材料搅拌地点。对搅拌点周围进行有效的保护，未用材料，空桶、空袋和废桶、废袋分开摆放，码放整齐，并及时清理。
- Use warning label, rope etc. to identify working area.
  使用标牌、警示绳等对施工区域做出明显的标识。
- Collect and dispose scraps generated during application work.
  及时收集和清理施工过程中产生的垃圾、废料，严禁乱扔乱倒。
- Smoking, alcohol drinking, fighting etc. are forbidden.
  严禁在现场吸烟、饮酒或醉酒和打架等行为。

9.3 HAZARD ANALYSIS PLAN 主要伤害及危险性分析

<table>
<tr><td colspan="5">伤害及危险性分析
日期　　：JUNE. 28, 2007</td></tr>
<tr><td colspan="5">施工单位 ：CC-7
工作地点 ：道康宁有机硅聚硅氧烷项目 Dow Corning DCSS project</td></tr>
<tr><td colspan="5">规范：</td></tr>
<tr><td>分包商工程师</td><td>机具及设备</td><td colspan="3">劳保用品</td><td>伤害等级(RHC)：</td></tr>
<tr><td>姓名</td><td>1</td><td>安全带 ☐</td><td>防护面具 ☐</td><td></td><td>主要伤害-A</td></tr>
<tr><td>校核:</td><td>2</td><td>安全帽 ☐</td><td>手套 ☐</td><td></td><td>次要伤害-B</td></tr>
</table>

姓名	3	安全鞋	□	防护衣	□	
签名	4	防护眼睛	□	防尘用品	□	
日期	5	防护面罩	□	其它	□	
		耳塞	□		□	

工作内容或活动	潜在的伤害与危险	RHC	伤害预防和控制措施
1 材料存放	窒息	A	库存区通风
			设置危险警戒标志
	火灾	A	周围不得有明火
			配备相应数量干粉灭火器
2 小型电动工具使用	手伤	B	佩带手套
- 搅拌枪			专人操作
- 砂轮机	眼伤	B	正确佩带防护眼镜
3 施工用料配制	眼伤	B	正确佩带防护眼镜
			专人操作
	皮肤伤害	B	佩带安全防护用具
			安全培训
			专人操作
4 树脂产品使用施工	人身伤害	B	正确佩带防护眼镜、手套
			佩带安全防护衣
			安全培训
			专业人员操作
	拌倒	B	及时清理垃圾
			材料和工具堆放整齐

HAZARD ANALYSIS PLAN

DATE ： JUNE. 28, 2007

CONTRACTOR ： CC-7

JOB SITE ： 道康宁有机硅聚硅氧烷项目 Dow Corning DCSS project

SPECIFICATION：

Sub-Con Engineer	Equipment Used	PPE Required For The Job				Risk/Hazard Classification
Name	1	Harness/Line	□	Gas Mask	□	Major risks/hazards-A
Approved By: TTCL	2	Safety Helmet	□	Gloves	□	Minor risks/hazards-B
Name	3	Safety Shoes	□	Luminous Vest	□	
Signature	4	Goggles	□	Dust Mask	□	
Date	5	Face Shield	□	Coveralls	□	
		Ear Plugs	□	Others	□	

Activities	Potential Risks & Hazards	RHC	Risk Control Measures
1 Material Storage	Suffocation	A	Ventilation in storage area
			Warning sign board provided
	Fire	A	Naked flame close to the material shall be prohibited.
			The sufficient dry powder extinguisher shall be provided.
2 Mini Type Electrical Tools Usage	Hand Injure	B	Wear gloves.
- Mixing gun			Operation by designated person
- Disc cutting machine	Eyes Injure	B	Proper goggles to be used.
3 Material Confecting	Eyes Injure	B	Proper goggles to be used.
			Operation by designated person
	Skin Injure	B	Proper PPE to be used.
			Safety training
			Operation by designated person
4 Resin Product Usage	Personnel Injure	B	Proper goggles and gloves to be used.
			Proper coverall to be used.
			Safety training
			Operation by designated person
	Trip Over	B	Cleaning the rubbish timely
			Material and tools to be placed in order.

10 Product Datasheet, MSDS, and Chemical Resistance Table
产品说明书，材料安全数据表和材料化学耐性表

- Sikafloor-261
- Sikafloor-156
- Sikafloor-81 EpoCem
- Sikafloor-720 EpoCem