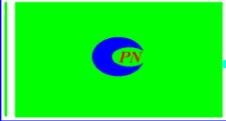


# **Brief Introduction to Refractories for Alumimium Industry**

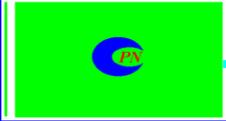
“Universal Exports FZE” Co., Ltd

OFFICIAL REPRESENTATIVE

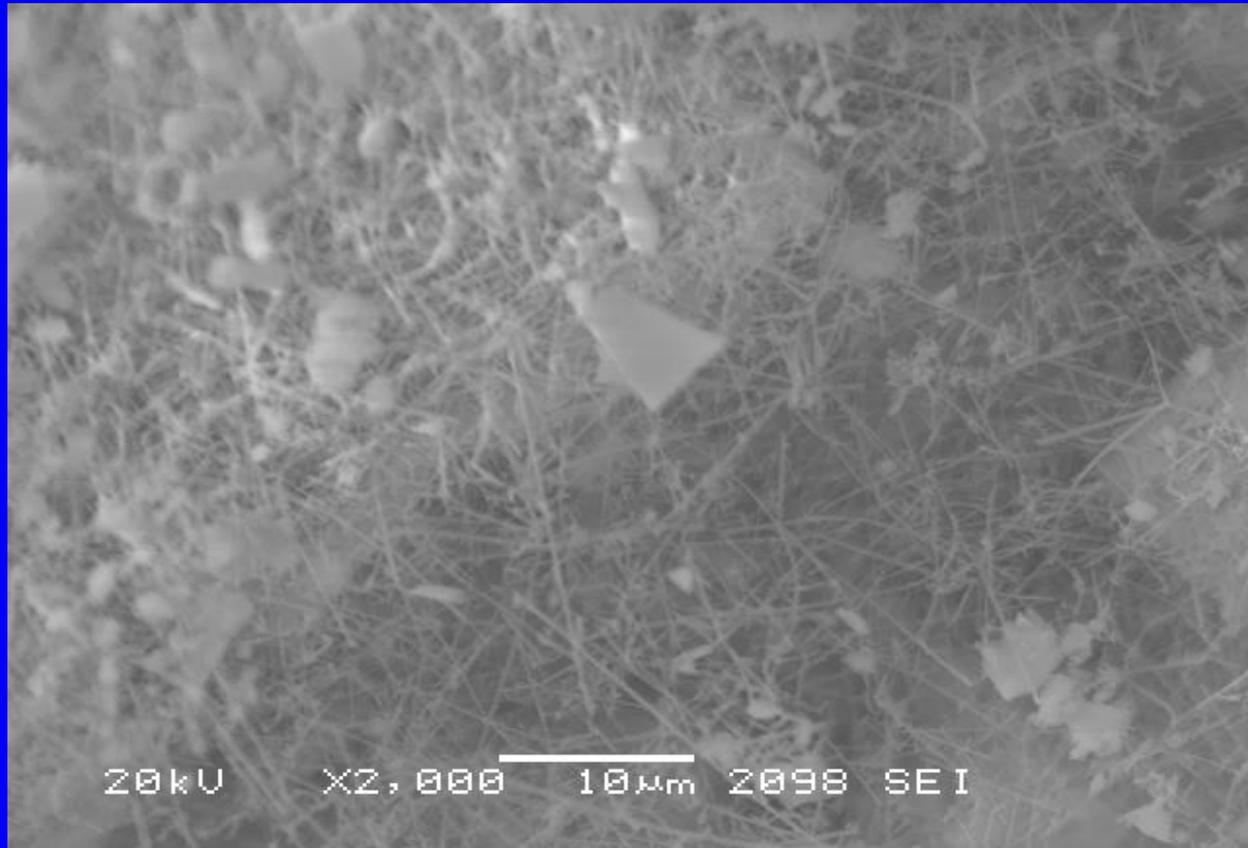
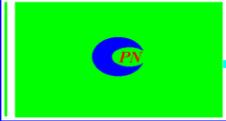
# Production plant



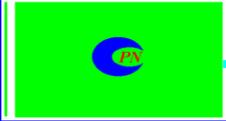
# Facilities and equipments



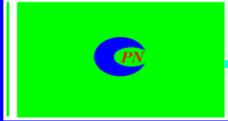
# Microstructure of the SiC brick



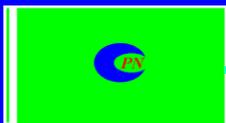
# Facilities and equipments



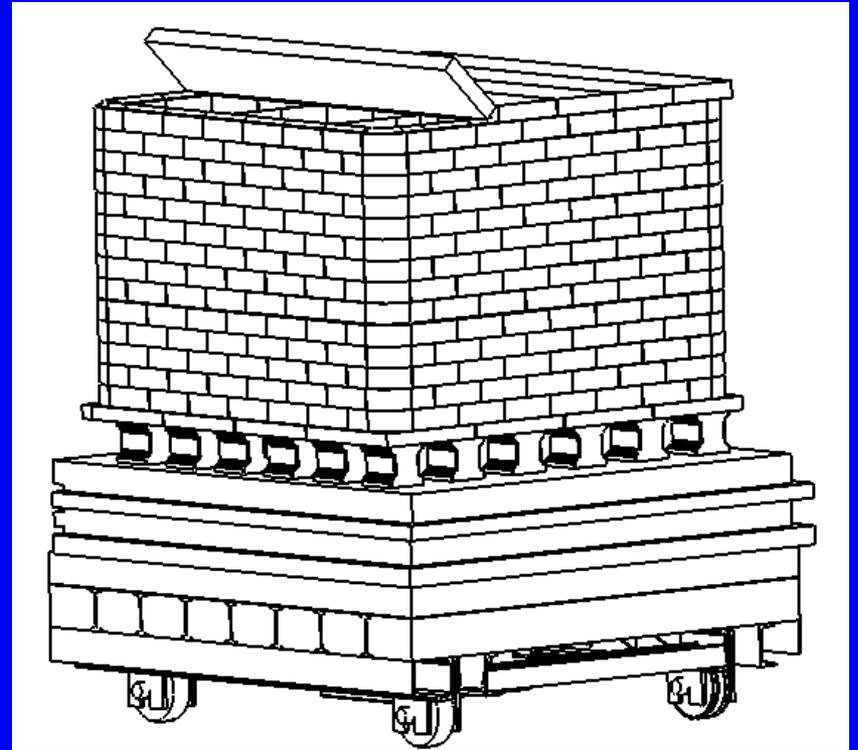
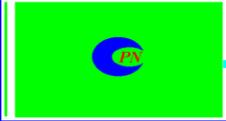
# Production Line

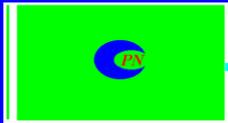


# Production line



# Production facilities



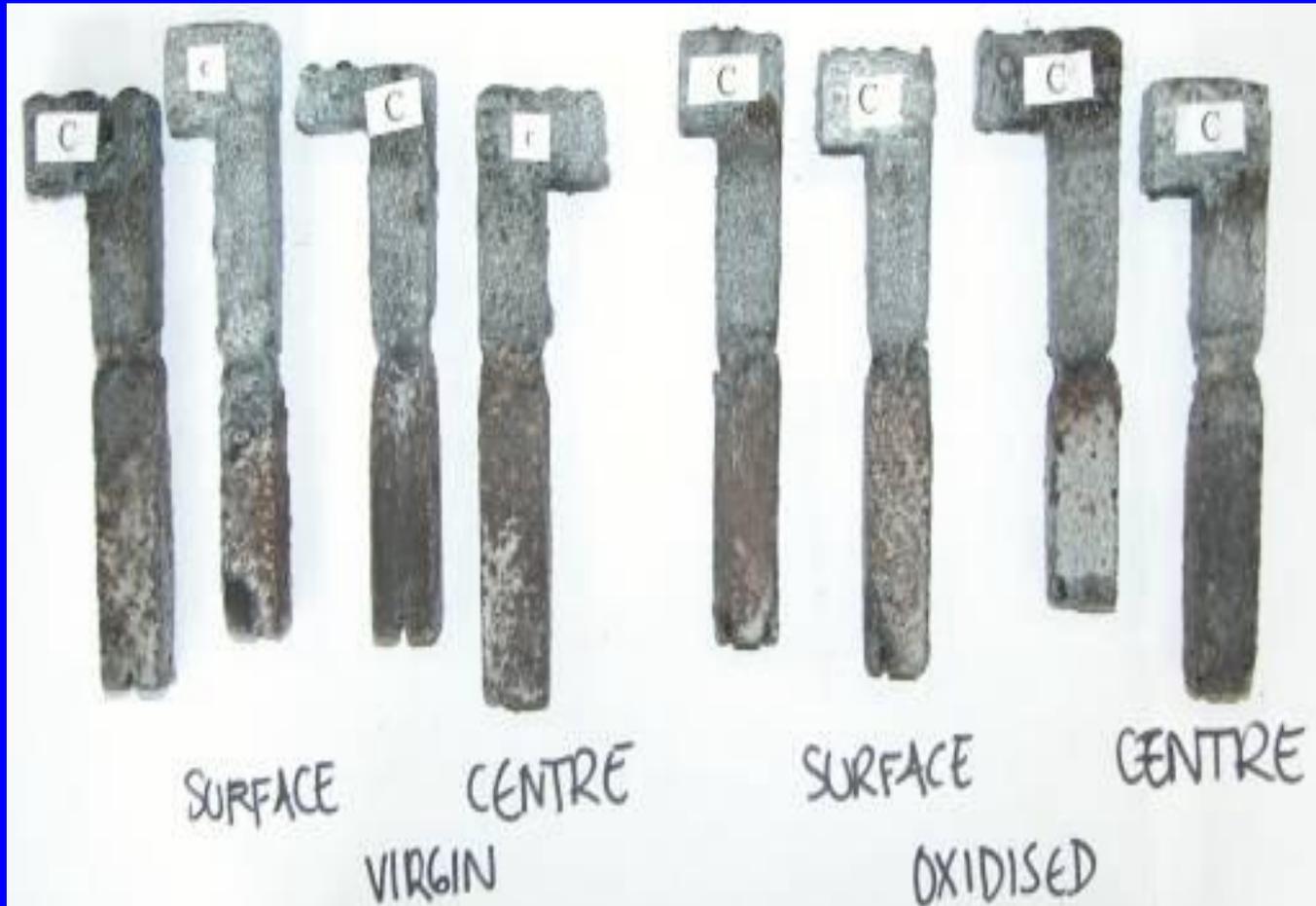
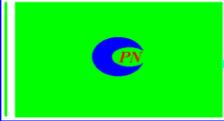


# Performance of the products

## Test report by COMALCO in 2004

Product	“Virgin” product		“Oxidised” product	
	Surface	Centre	Surface	Centre
A	Poor	Very Poor	Poor	Very Poor
B	Very Good - Good	Very Good - Good	Average	Average- Poor
<b>PRCO</b>	<b>Very Good - Good</b>	<b>Good</b>	<b>Good - Average</b>	<b>Good - Average</b>
D	Good	Average	Average	Average - Poor
E	Good - Average	Good	Average	Average
F	Very Good - Good	Very Good	Poor	Very Good

# Cryolite Resistance Photos



# Technical Achievement Report



## 鉴 定 意 见

2007年12月7日，濮阳市科技局组织有关专家在濮阳市对濮阳濮耐高温材料(集团)股份有限公司完成的“氮化硅结合碳化硅制品工艺研究”项目进行了成果鉴定。鉴定委员会听取了课题组的汇报，审查了有关的鉴定资料，经质疑答辩和充分讨论，形成鉴定意见如下：

1. 提供的鉴定资料齐全，数据可靠，符合鉴定要求，达到了濮阳市科技计划项目合同书中规定的目标。
2. 该项目以碳化硅、金属硅等为主要原料，通过颗粒优化级配，使用天然气为燃料、氮化烧成工艺的研究，成功生产出氮化硅结合碳化硅制品。该工艺生产效率高，成本低，产品质量稳定，其技术达到国际先进水平。
3. 该项目所生产的产品经冶金工业工程质量监督总站检测中心检测，各项性能指标达到或超过YB 4035-91的要求。经中孚铝业、包铝股份、俄罗斯铝业、加拿大铝业等国内外多家电解铝企业使用，效果良好。
4. 该项目已实现规模化生产，技术工艺成熟，经济效益和社会效益显著，具有重要推广应用价值。
5. 建议针对不同使用条件，开发系列产品，扩大应用领域。

鉴定委员会主任：

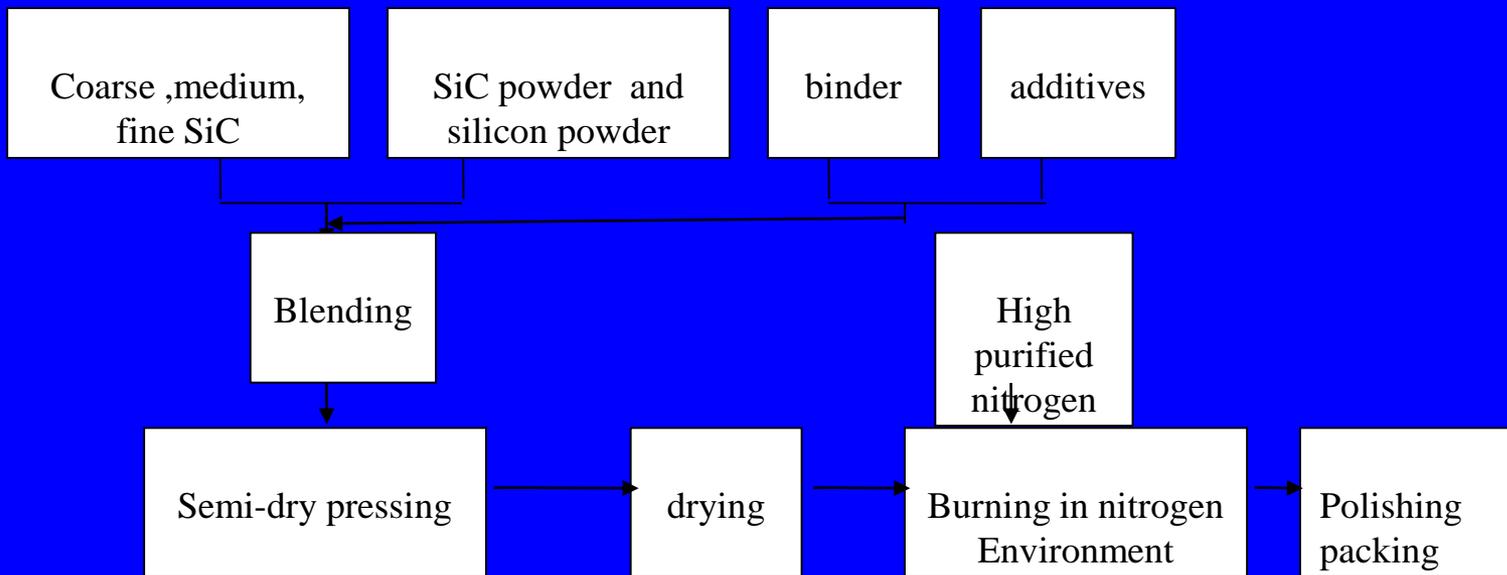
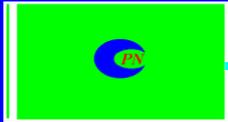
张杰

副主任：

孙国、靳秉国

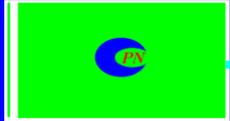
2007年12月7日

# Technical process route



# Quality control scheme

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## 1、 Raw material

### 1.1 Inspection on grain size of SiC:

Exceedings of screen :  $\leq 5\%$

Oversized powder:  $\leq 5\%$

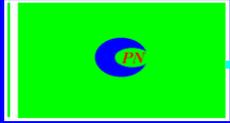
### 1.2. Chemical analysis:

SiC  $\geq 98\%$

Si  $\geq 98\%$

# Quality control scheme

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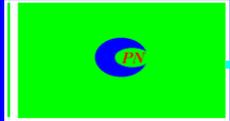
## **2、 Blending**

**2.1. Blending is done strictly according to Instruction regulations.**

**2.2. Volatile matter and grain size of materials are inspected by every shift to ensure the stability of the material.**

## Quality control scheme

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### **3.pressing**

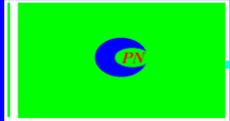
**3.1.Calibrate the mould before pressing**

**3.2.Strict controlling of unit weight to assure stable bulk density.**

**3.3.100% appearance inspection of every brick**

# Quality control scheme

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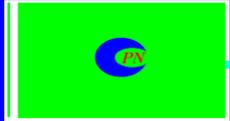
## **4. Drying**

**4.1.Examination of residual water content of dried products**

**4.2.Inspection of appearance and cracks are done for every products , only passed products can be forwarded to next step.**

## Quality control scheme

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### **5. Burning**

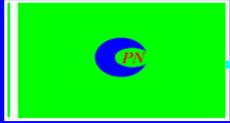
**5.1.Nitrogen purity:99.999%**

**5.2.Pressure test of the airproof box will be done.**

**5.3.Burning temperature :1450°C**

# Quality control scheme

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## **6. Inspection**

**6.1. two pcs sample of every kiln for common items testing will be done**

**6.2. six pcs sample of every kiln for nitrogenizing weight-gaining test will be done to guarantee the process of nitrogenizing.**

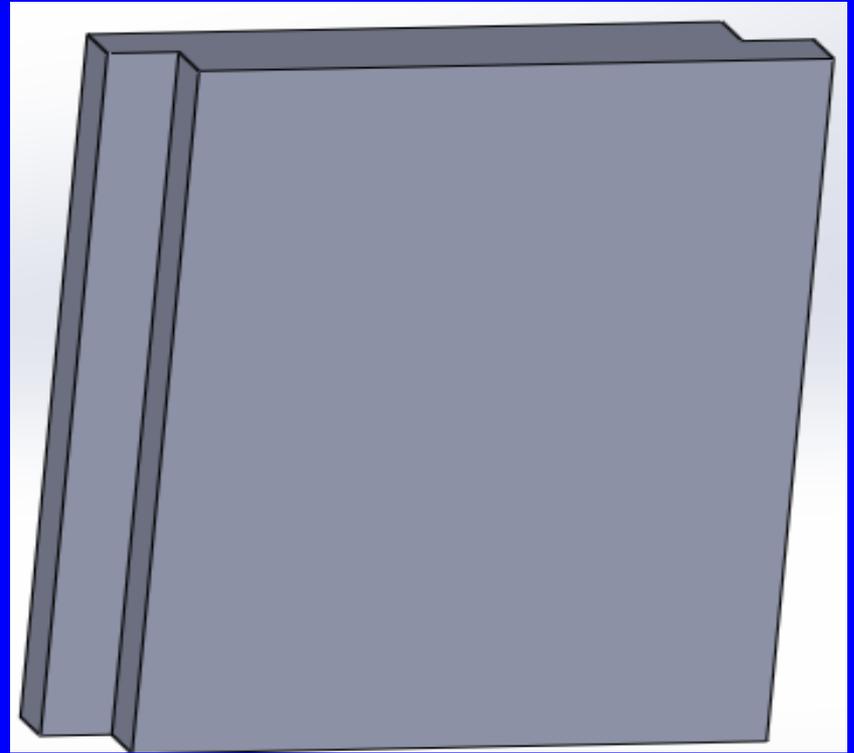
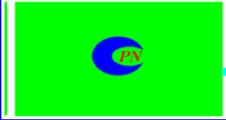
**6.3. Dimension inspection and appearance inspection will be done 100% of every brick.**

# Reference list for SiC block

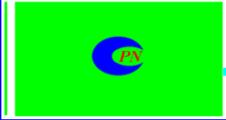


No.	Customer	Capacity	Current life till now (Year)
1	Jiaozuo Wanfang Alco	280KA	8
2	Guizhou branch of Chinalco	200KA	7
3	Zhongfu Alco	350KA	5
4	Baotou Alco	240KA	6
5	Guangxi Apple ALco	160KA	6
6	Tongchuan Alco	240KA	6
7	Qin'ao Alco	290KA	4
8	Baise yinhai Alco	240KA	4
9	Shanxi Guan Alco Group	190KA	5
10	COMALCO Alco(Australia)	AP30	6
11	RUSAL (Russia)	AP30	5
12	ALCAN(Canada)	AP30	5

# Typical shape of SiC brick



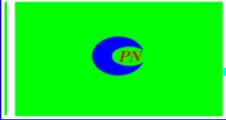
# Typical shape of SiC brick



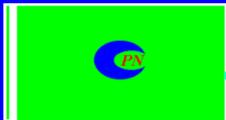
# Typical shape of SiC brick



# Installed cell with PRCO's refractory

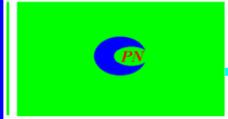


# Latest design of cell in China

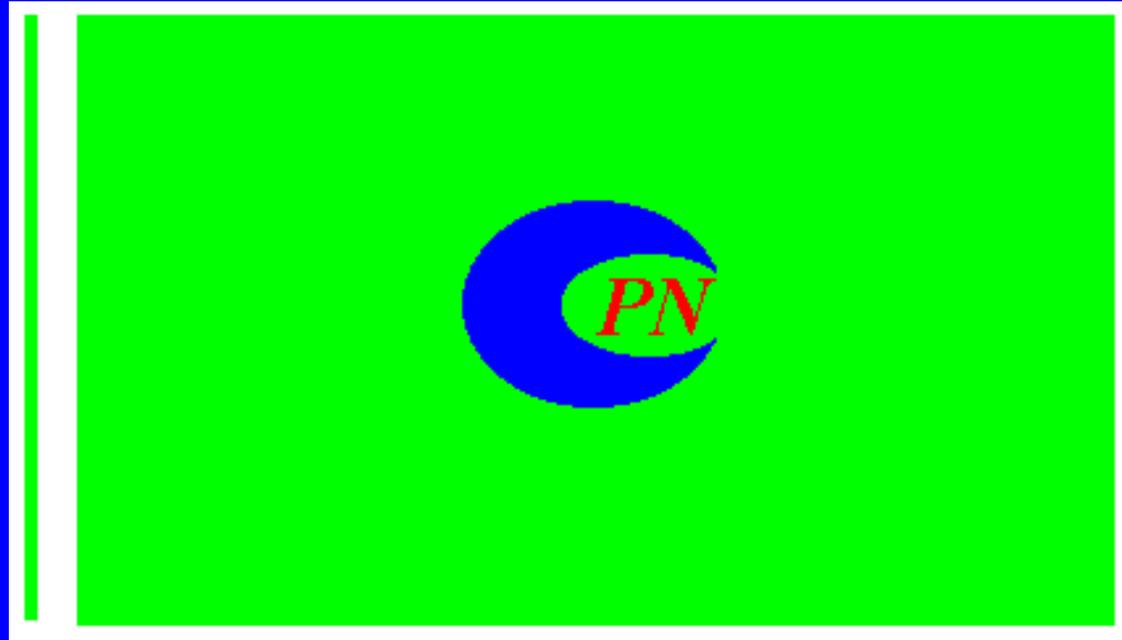


# Service commitment

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- ❖ The products will comply to technical conditions of tender book
- ❖ Punctual lead time
- ❖ We will dispatch engineers to supervise installation of refractory.
- ❖ We will strictly comply to any terms of the contract.



## **Puyang Refractories Group (PRCO) Co., Ltd**

”UNIVERSAL EXPORTS FZE” Co., Ltd

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