

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL SOUTHERN ZONE,
CHENNAI CIRCUIT BENCH
APPLICATION NO.39 OF 2024(SZ)

Applicant(s) :: Sri. Jonatt Jose,
S/o Sri. Jose, Nalukettu, Koratty
Vs

Respondents :: The Secretary, MoEF and CC & others

Volume – 1

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Dated this the 12th day of March, 2024.



Rema Smrithi VK
Standing Counsel for KSPCB



SIXTH RESPONDENT

SUCHITRA V.
Environmental Engineer

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL SOUTHERN ZONE,
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Dated this the 12th day of March, 2024.




SIXTH RESPONDENT
SUCHITRA V.
Environmental Engineer

**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL SOUTHERN
ZONE, CHENNAI**

Application no. OA 39 of 2024 (SZ)

Applicant(s) : Sri. Jonatt Jose,
S/o Sri. Jose, Nalukettu, Koratty
Vs.
Respondents : The Secretary, MoEF and CC & others

REPORT FILED BY THE 6TH RESPONDENT
ENVIRONMENTAL ENGINEER, DISTRICT OFFICE,
THRISSUR, ON BEHALF OF THE 3RD RESPONDENT
CHAIRPERSON, KERALA STATE POLLUTION CONTROL
BOARD, THIRUVANANTHAPURAM

1. It is respectfully submitted that I am authorized to represent the third respondent in this application. Copy of the authorization letter is produced herewith and marked as **Annexure R6(a)**.
2. Carborundum Universal Ltd., located in Koratty Grama Panchayat, has been operating since 1985. The unit has received the Board's "Integrated Consent to Operate" from 04/07/2010 and is renewing it from time to time. The unit now has a valid Consent to Operate of the Board upto 30.06.2028. True copy of the Consents to Operate are marked and produced herewith as **Annexure R6(b)**.
3. Two types of production activities are done in the unit, which is manufacturing of **Silicon Carbide macro grains** from raw materials like

Petroleum coke (petcoke) and quartz; as well as production of **Micro Grits** from silicon carbide (product from the silicon carbide macro grains plant) with brown fused alumina grains, white fused alumina grains and special ceramics which are brought from outside.

4. For manufacturing of silicon carbide macro grains, raw materials used are petroleum coke and quartz. Company officials informed that petroleum coke is purchased from companies like Bharath Petroleum Corporation Limited. The raw materials are delivered to the furnace plant room from the storage chamber through enclosed ducts. For carrying out the process, 9 furnaces are accommodated in furnace plant room. In each furnace, petcoke and quartz are mixed and kept as a pile. A graphite tube is inserted in between the pile and it is heated to high temperature using electricity to form big lumps of silicon carbide.

In the same building, these lumps are then cooled, crushed and sieved to form various sizes. These sieves are provided with bag filters to prevent dust pollution. Of the 9 furnaces, at normal conditions, 3 will be on firing and 3 in cooling and 3 under construction/ unloading stage. Water sprays are used in cooling and the same is done by providing an iron pipe with holes along it. The sprays will be open for 5 minutes and will be stopped for another 2.5 minutes. During inspection water-spraying was done and there is no sudden release of huge smoke or fume during the spraying.

5. In the Micro Grits production plant, alumina grains, special ceramics and silicon carbide are powdered and then air classified. This process is carried out in a completely enclosed room with bag filters as air pollution control measures. Also, this micro grit plant is located not in the building in which the furnaces are operated but in a separate building.
6. Complaints of the petitioner were received in the office of the sixth respondent against the air pollution from the industry. Upon receiving a complaint from Sri. Jonatt Jose, inspection was conducted by officials of

the Board on 02.05.2023. It was informed by complainants and his family members during the complaint enquiry that due to emissions and odour emitted from the company, the complainant and his family including his small child is suffering from unrelenting cough. They also complained that apart from the air pollution affecting residents, transformers, electric post and household materials like grills, iron pipes, and metallic underside of the cars were prone to rusting quickly. He also added that, as there are no chimneys to vent the emissions from the furnace, the smoke and odour spreads in the premises, especially during cooling thus causing difficulties to the families residing nearby. During inspection conducted in the unit on the same day, fumes containing dust particles or smoke were not seen rising from the reaction furnace in the production of Silicon carbide macro grains. In furnace plant, water is used only for cooling. Also, there is no water consumption in Micro grit plant. Chimneys with air pollution control measures are provided in the raw material handling area and in the crushing plant. There are no separate chimneys to expel the fumes produced from the furnaces.

7. There are not many changes or product variations in the company since 2010 as reported by the management. To assess the effects of air pollution from the industry in the area, Ambient air quality monitoring was done in the unit on 14.02.2022, 2.06.2023 and 08.08.2023. In all these monitoring, Sulphur dioxide (SO_2) and Oxides of Nitrogen (NO_x) were within the limit of National Ambient Air Quality Standards. The alleged air pollution is primarily from the use of petcoke which should have reflected in the results of sulphur dioxide in the ambient air but the standards of sulphur dioxide were not exceeded on each of the days of measurement. Still, In light of existing complaints, the company was asked by the Board to submit a time bound proposal for installing additional control measures. The unit submitted the proposal on 27.11.2023. The proposal includes (i) installing a continuous ambient air quality monitoring system in the premises and (ii) installing hood with

chimney system for the furnaces. Based on this proposal and as the ambient air quality standards were found complied in Board's monitoring, as explained in paragraph 6, the consent to operate of the unit was renewed on 9.01.2024 up to 30.06.2028. Hence the unit possesses valid consent to operate. A copy of the valid consent is marked and produced herewith as **Annexure R6(c)**. In the Consent to Operate, the following specific condition have been added to minimize pollution from the unit.

- i) Ordinary coke shall be used instead of Pet coke.
 - ii) Stack with adequate stack height shall be provided to keep the emission quality to the standards.
 - iii) Waste water generated shall be properly treated the standard prescribed before disposal.
8. The unit has submitted a letter dated 12.02.2024 to the Board stating that stack for the furnace will be installed within 6 months' time period. The industry also reports that petcoke is not used as fuel in the industry but it is a raw material which gets absorbed in production of silicon carbide. The unit then requested that since pet coke is the raw material used for production of silicon carbide they may be allowed to use petcoke itself with air pollution control measures as proposed to be installed. True copy of the letter dated 12.02.2024 is marked and produced herewith as **Annexures R6(d)**.
9. The other matters raised in the petition are
- (i) Regarding the fuel policy of the state of Kerala and whether petcoke can be allowed to be used as a raw material or feedstock for silicon carbide manufacture, and,
 - (ii) Regarding the orders of the Hon'ble Supreme Court and Hon'ble National Green Tribunal (Principal Bench) in the matter of petcoke and its interpretation in the case of the industrial activity of this particular industry.

10. Central Pollution Control Board (CPCB) has been addressed vide letter dated 12-3-2024 to give advice on whether petcoke can be used as raw material in manufacture of silicon carbide; and on the control measures to be prescribed.
11. It is humbly submitted that the matter of fuel policy is under the consideration of Government of Kerala. It is also humbly submitted that allowing the use of petcoke in silicon carbide manufacture can be decided after receiving advice from Central Pollution Control Board. Hence it is further submitted that detailed report incorporating these points will be submitted before the next hearing.

Dated this the 12th day of March, 2024



A handwritten signature in blue ink, appearing to read "Suchitra V.", written over a horizontal line.

DEPONENT

SUCHITRA V.
Environmental Engineer

☎: General: 0471- 2312910, 2318153, 2318154, 2318155 Chairman: 2318150 Member Secretary: 2318151
 e-mail: chu.kspcb@gov.in; ms.kspcb@gov.in FAX: 2318152 web: kspcb.kerala.gov.in



KERALA STATE POLLUTION CONTROL BOARD

കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്

Pattom P.O., Thiruvananthapuram – 695 004

പട്ടം പി.ഒ., തിരുവനന്തപുരം - 695 004



KSPCB/1754/2023-SEE-1

Date:11/03/2024

AUTHORISATION

Sub: OA. No.39/2024 filed by Sri. Jonatt Jose before the Hon'ble NGT (SZ)

The Environmental Engineer, District Office, Thrissur is hereby authorized to represent the Chairperson on behalf of the Board in the above O.A.

**For and on behalf of the
 KERALA STATE POLLUTION CONTROL BOARD**


 CHAIRPERSON

To

The Environmental Engineer
 District Office
 Thrissur

Copy to:

1. Adv. Rema Smrithi V.K.
 No.2, Temple Glade Apartments
 Kalakshetra Colony
 Beach Road
 Besant Nagar
 Chennai – 600090
2. The Chief Environmental Engineer
 Regional Office
 Ernakulam
3. The Senior Environmental Engineer
 Legal Cell, Regional Office
 Ernakulam

34/7/2010



KERALA STATE POLLUTION CONTROL BOARD

INTEGRATED CONSENT TO OPERATE/AUTHORISATION

UNDER

The Water (Prevention & Control of Pollution) Act 1974

The Air (Prevention & Control of Pollution) Act 1981

&

The Environment (Protection) Act 1986

To

The Managing Director
Carborandum Universal Limited
P.B. No. 3, Koratty
Thrissur- 680 308

Consent no: PCB/HO/ICO/TSR/09/R1/2010

Date of issue: 04.07.2010

Validity: 30.06.2012

Copy to:

1. The Chief Environmental Engineer
Regional Office, Ernakulam
2. The Environmental Engineer, District Office, Thrissur
3. The Secretary, Koratty Grama Panchayat, Thrissur
4. Stock file

1. GENERAL

1.	VALIDITY	30.06.2012										
2.	Name and address of establishment	CARBORANDUM UNIVERSAL LIMITED Carborandum Universal Limited P.B. No. 3 Koratty 680 308 Thrissur										
3.	Communication	Telephone : 044-2536789- Fax : 044-25340858 e- mail :- Website :-										
4.	Occupier details	Sri. K. Srinivasan Managing Director Carborandum Universal Limited Parry House, 43, Moore Street Chennai – 600 001										
5.	Survey Number	114/1 , 2, 1151/2, 1150/2										
6.	Village	Kizhakkummuri										
7.	Taluk	Mukundapuram										
8.	District	Thrissur										
9.	Local body	Koratty Grama Panchayat										
10.	Category	RED										
11.	Capital Investment	Rs. 30 Crores										
12.	Scale	LARGE										
13.	Annual Fee	Rs. 1,00,000/-										
14.	Fee remitted	Rs. 3,00,000/-										
15.	Water consumption	<table border="1"> <thead> <tr> <th>Purpose</th> <th>Quantity in litre /day</th> </tr> </thead> <tbody> <tr> <td>Cooling, boiler feed</td> <td>5,000</td> </tr> <tr> <td>Domestic</td> <td>5,000</td> </tr> <tr> <td>Irrigation</td> <td>1,000</td> </tr> <tr> <td>TOTAL</td> <td>11,000</td> </tr> </tbody> </table>	Purpose	Quantity in litre /day	Cooling, boiler feed	5,000	Domestic	5,000	Irrigation	1,000	TOTAL	11,000
Purpose	Quantity in litre /day											
Cooling, boiler feed	5,000											
Domestic	5,000											
Irrigation	1,000											
TOTAL	11,000											
16.	PRODUCTS	Silicon carbide macro and micro grit – 250 tonne per month										

2. GENERAL CONDITIONS

- 2.1. This consent is granted subject to the power of the Board to review and make variation in all or any of the conditions.
- 2.2. The applicant shall comply with the instructions that the Board may issue from time to time regarding prevention and control of air, water, land and sound pollution.
- 2.3. For renewal of the consent, application in the prescribed form shall be submitted to the Board in the third month before the date of expiry of the consent.
- 2.4. No change or alteration of the industrial plant is to be made without the prior written permission of the Board. Any change in the particulars furnished and/or in the identity of the occupier/authorised agent is to be intimated to the Board forthwith.

3. CONDITIONS AS PER The Water (Prevention & Control of Pollution) Act

- 3.1. The entire quantity of cooling water shall be recycled.
- 3.2. Sewage effluent shall be treated in septic tanks and treated effluent shall be dispersed through soak pits with concreted bottom, honeycomb brick or perforated ring wall and 75 cm thick 2 mm sand envelope around.
- 3.3. Storm water shall be segregated from effluent.
- 3.4. Rainwater harvesting system shall be maintained properly.
- 3.5. Water meter shall be fixed to record consumption of water. Separate meters shall be fixed if cess at different rates is claimed for use of water for cooling/boiler feed, domestic, process where the effluent is easily biodegradable and / or not toxic and process where the effluent is not easily biodegradable and / or toxic.

4. CONDITIONS AS PER The Air (Prevention & Control of Pollution) Act

- 4.1. Emission shall be made only through the following chimneys and characteristics shall not exceed the following:

Sl. No.	Stack No.	Source of emission	Height & diameter in m	Flow in Nm ³ /hr	Parameter	Limiting standards mg/Nm ³
1.	C1	Reclaims and Quartz dust collector in furnace plant	15 0.608	72,300	Particulate matter	150
2.	C2	Crude crushing dust collector in furnace plant	18 0.475	62,000	"	150
3.	C4	Grain crushing and sizing system in furnace plant	18 0.82	7,700	"	150

- 4.2. The port hole and platform cum ladder attached to stacks shall be maintained to facilitate monitoring of emissions.
- 4.3. There shall not be any fugitive emission from the premises.
- 4.4. The sound level measured 1 m outside the boundary of the premises shall not exceed the standards for the adjacent area.
- 4.5. Record of type, quantity and purpose of consumption of fuel shall be maintained and abstract shall be submitted to the Board along with emission monitoring report.
- 4.6. The suspended particulate matter at the boundary of the premises shall not exceed 200 microgram per cubic metre.

- 4.7. All operations likely to produce dust or noise shall be carried out within sufficiently closed and insulated premises.
- 4.8. The occupier shall install or modify equipments, as necessary, to ensure that the emission /ambient air /sound quality conform to the standards specified in condition no. 4.1 and 4.4.

5. **CONDITIONS AS PER The Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008**

- 5.1. Activities for which Authorisation is granted:

Collection	Storage	Disposal
√	√	√

- 5.2. (i) Type, quantity and mode of storage/collection/treatment/disposal of hazardous wastes shall be as follows:

Sl. No.	Hazardous waste	Schedule Category	Quantity	Mode of	
				Storage	Disposal
1.	Spent Oil	5.1	2500 l/year	Stored in impermeable containers kept in roofed area with impervious flooring and protected from rain and seepage and entry of surface runoff	Dispose to re-refiner/recycler, authorised by the Kerala State Pollution Control Board and registered with the Central Pollution Control Board

- (ii) The location of the hazardous waste storage site shall be made known by display board at the site. The premises of the disposal site shall be kept clean.

5.3. **Labelling and Transportation**

- (a) All hazardous waste containers shall be provided with a general label as given in Form 13.
- (b) Hazardous waste manifest in Form 12 shall be got prepared in set of six (all six copies to be signed by the transporter) and retained/ transported as indicated below:

Copy number with colour code	Purpose
Copy 1 (white)	To be forwarded by the occupier to the Kerala State Pollution Control Board
Copy 2 (yellow)	To be retained by the occupier after taking signature on it from the transporter and the remaining four copies to be carried by the transporter
Copy 3 (pink)	To be retained by the operator of the facility after signature
Copy 4 (orange)	To be returned to the transporter by the operator of facility after accepting waste
Copy 5 (green)	To be returned by the operator of the facility to Kerala State Pollution Control Board after treatment and disposal of wastes
Copy 6 (blue)	To be returned by the operator of the facility to the occupier after treatment and disposal of wastes

- c) Any accident during the collection and transport of hazardous waste shall be reported forthwith to the Head and District Office of the Board at Thrissur by telephone / fax / telegram and also in Form 14.
- d) The occupier shall provide the transporter with relevant information in Form 11, regarding the hazardous nature of the wastes and measures to be taken in case of an emergency.
- e) The occupier shall ensure that at the time of auction or sale of waste, the period of validity of certificate of registration of the registered re-refiner or recycler is sufficient to reprocess the quantity of wastes being sold or auctioned to him.

- 5.4. Records of hazardous wastes at the facility shall be maintained in Form 3.
- 5.5. The guidelines and criteria for handling hazardous wastes prescribed by the Central Pollution Control Board from time to time shall be followed.
- 5.6. The Authorisation is subject to conditions as may be specified in the Rules from time to time under the Environment (Protection) Act, 1986.
- 5.7. Any unauthorised change in personnel, equipment and working conditions as mentioned in the application by the person authorised shall constitute a breach of this authorisation.
- 5.8. It is the duty of the authorised person to take prior permission of the State Pollution Control Board to close down the facility.
- 5.9. The person authorised shall not rent, lend, sell or transfer the hazardous wastes without obtaining prior permission of the Board.
- 5.10. All the facility personnel must be well informed about the hazardous waste management procedure relevant to the positions in which they are employed. All the facility personnel must be trained to ensure that they are able to respond effectively to emergencies by familiarizing them with the emergency procedures, emergency equipment operations and communication or alarm systems.
- 5.11. Facilities must be established, tested periodically and maintained to minimize the possibility of a fire, explosion or any unplanned sudden or non-sudden release of hazardous waste to air, soil or surface water which could threaten human health or environment.
- 5.12. The authorisee must develop, implement and maintain and keep upto date, a contingency plan designed to minimize hazard to human health or the environment from fires, explosions or any unplanned sudden release of hazardous waste to air, soil or water.

6. OTHER CONDITIONS:

- 6.1. Used lead acid batteries shall be disposed as per the Batteries (Management and Handling) Rules 2001.
- 6.2. Arrangements for collection, segregation, storage, handling and disposal of solid wastes including garbage from canteen shall be maintained properly.
- 6.3. Periodical reports as detailed below shall be submitted to the Head Office and Regional Office/ District Surveillance Centre of the Board at Ernakulam:

Sl No.	Reports to be submitted to the Board	Periodicity
1	Effluent and storm water analysis report	Before the 10 th of every month
2	Water Consumption Returns in Form I	Before 5 th of every month
3	Emission monitoring report	Before the 10 th of every month
4	Annual returns of HW handled in Form 4	Annually before 30 th June
5	Hazardous waste manifest in Form 13	During transportation
6	Environment Statement in Form V	Annually by 30 th September



Date: 04.07.2010

Office Seal

SIGNATURE AND NAME OF
ISSUING AUTHORITY

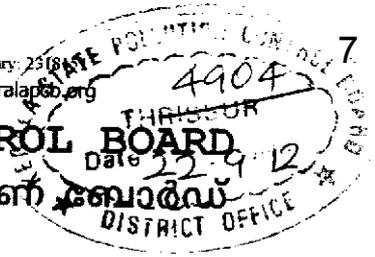
P. MOLIKUTTY
C.E.E. in full additional charge of
MEMBER SECRETARY



KERALA STATE POLLUTION CONTROL BOARD

കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്

Pattom P.O., Thiruvananthapuram – 695 004
 പട്ടം പി.ഒ., തിരുവനന്തപുരം - 695 004



File. No. PCB/HO/TSR/ICO/81/2007

Date: 14.09.2012

CONSENT TO OPERATE – RENEWAL

Consent no. PCB /HO/TSR/ICO-R1/ 03/2012

- Ref: 1. Your application dated 31.03,2012
 2. Consent No PCB/HO/TSR/ICO/09/R1/2010 dated 04.07.2010

The 'Consent to Operate' issued vide ref. 2 to industry (Carborandom Universal Limited, P.B no – 3, Koratty, Thrissur – 680308) is hereby renewed up to 30.06.2015. The copy of consent cited under ref. 2 attached herewith is part of this renewal order and this order is subject to the conditions stipulated therein with the following variations/modifications.

Additions/modifications

1.1 Validity	30.06.2015
1.3 Communication.	Tel: 044-42216789 0480- 2732313 Fax: 0480 2732821
1.4 Occupier details	Sri.A.R Satheesh, General Manager
1.11 Capital Investment	Rs. 32.32469 Crore
1.15 Water consumption	1,50,000 l/day
1.16 Products	Silicon carbide macro grains – 27t/d Silicon carbide micro grits } Brown fused Alumina micro grits } 15t/d White fused Alumina micro grits } Special ceramic micro grits }
1.17 Date of application	31.03.12
1.18 Date of enquiry	16.05.12

176
 22-9-12

Other conditions

6.4. Arrangements shall be provided for safe management and disposal of e-waste. The following details shall be submitted to the Board on or before 30.12.2012

Particulars of E-waste	Quantity of E-waste disposed in 2011	Quantity of E-waste proposed to be disposed in 2012	Mode of disposal

6.5 Adequate fire protection equipment in accordance with the fire safety regulations shall be established / installed at salient places and for ensuring the same, necessary certificate from Fire & Rescue Services Department regarding fire safety shall be obtained. The unit shall have valid certificate from the Fire & Rescue Services Department during its operation.

6.6 Sign Board of size 6x4 ft shall be erected outside the main gate of the unit displaying important consent conditions, the latest ambient air and noise monitoring data against the standards specified and the relevant information about hazardous wastes both in English & Malayalam.



For and on behalf of the
KERALA STATE POLLUTION CONTROL BOARD

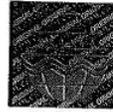

(MEMBER SECRETARY)

To

Sri. A.R Satheesh,
General Manager
Carborandom Universal Limited,
P.B no – 3, Thrissur – 680308

Copy to:

1. The Chief Environmental Engineer, Regional Office, Ernakulam
- ✓ 2. The Environmental Engineer, District Office, Thrissur
3. Stock file



KERALA STATE POLLUTION CONTROL BOARD

FILE NO. :PCB/HO/TSR/ICO/81/2007

Date of issue :08/08/2015

INTEGRATED CONSENT TO OPERATE - RENEWAL

Consent No : PCB/HO/TSR/ICO-R/10/2015

Ref : Consent No PCB/HO/TSR/ICO-R1/03/2012 dated 14.09.2012

The 'Integrated Consent to Operate' issued as per reference above to M/s Carborandum Universal Ltd, P.B.No-3, Koratty, Thrissur-680308 is hereby renewed up to 30/06/2018 and issued to M/s Carborandum Universal Ltd, P.B.No-3, Koratty, Thrissur-680308 The consent(s)/ variation order(s) cited under reference are integral part of this renewal order and this order is subject to the conditions stipulated therein and the following modifications/ additions.

I. GENERAL

S.No.	Items	Description
1	Validity	30.06.2018
2	Capital Investment	Rs 33. 60 Crores
3	Date of Application	07.07.2015
4	Date of enquiry	27.05.2015

II. CONDITIONS

1. Condition 6.5 is modified as: Adequate fire safety measures shall be installed in accordance with fire safety regulations.

All other conditions of the Integrated Consent to Operate issued as per reference above remain unchanged.

DATE :08/08/2015



OFFICE SEAL

SIGNATURE & SEAL OF ISSUING AUTHORITY

MEMBER SECRETARY

Copy To

1. The Environmental Engineer, District Office, Thrissur
2. Stock file



KERALA STATE POLLUTION CONTROL BOARD

FILE NO. :PCB/HO/TSR/ICO/81/2007

Date of issue :16/07/2018

INTEGRATED CONSENT TO OPERATE - RENEWAL

Consent No : PCB/HO/TSR/ICO-R/11/2018

Valid upto 30/06/2023

Ref : 1.Consent No:PCB/HO/TSR/ICO-R/10/2015 dated 08/08/2015 Valid upto 30/06/2023

The ' Integrated Consent to Operate' issued as per reference above to M/s CARBORUNDUM UNIVERSAL LIMITED,PB.NO.3,NALUKETTU P.O,KORATTY,THRISSUR-680308, is hereby renewed up to 30/06/2023 and issued to M/s CARBORUNDUM UNIVERSAL LIMITED,PB.NO.3,NALUKETTU P.O,KORATTY,THRISSUR-680308. The consent(s)/ variation order(s) cited under reference are integral part of this renewal order and this order is subject to the conditions stipulated therein and the following modifications/ additions.

I. GENERAL

S.No.	Items	Description
1	Validity	30/06/2023
2	Annual Fee	Rs.1,44,000/-
3	Capital Investment	Rs.3390.38 Lakhs
4	Fee Remitted	Rs.7,33,500/-(for 5 years)
5	Category	Red
6	Raw material	Petroleum Coke-20 M T/d Silicon carbide crude 10 MT/d Quartz -24 M T/d
7	Product	Silicon carbide macro grains -27 M T/d Micro grits of SiC and special ceramics -15 MT/d
8	Raw material	Grains of Silicon Carbide, Brown fused Alumina, White fused Alumina ,Special ceramic (total) -16 M T/d

II. Stack Details

Stack No.	Source of Emission	Emission Rate(Nm ³ /Hr)	Stack Height above		Control Equipment
			Ground Level(In Meters)	Roof Level(In Meters)	

As per the previous consent					
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III. CONDITIONS

1. Fee and arrears as per notification no.G.O(P)No.2/2017/Env. dated 04.11.2017 shall be remitted to the Board on receipt of this consent.

All other conditions of the Integrated Consent to Operate issued as per reference above remain unchanged.

DATE :16/07/2018

SIGNATURE & SEAL OF ISSUING AUTHORITY
MEMBER SECRETARY



To

M/s CARBORUNDUM UNIVERSAL LIMITED,
PB.NO.3,NALUKETTU P.O,
KORATTY,THRISSUR-680308

1. This digitally signed document is legally valid as per the Information Technology Act 2000

2. For verifying this document please go to krocmms.nic.in and search using date of issue/name of the unit/Application Number in "Consent Granted Applications" link in the home page of the Board's Online Consent Management and Monitoring System.



KERALA STATE POLLUTION CONTROL BOARD

FILE NO. : KSPCB/TS/ICO/10041755/2024

Date of issue : 09-01-2024

INTEGRATED CONSENT TO OPERATE - RENEWAL

Consent No : KSPCB/TS/ICO/10041755/2023

Valid upto : 30 / 06 / 2028

Ref:

1. Consent no PCB/HO/TSR/ICO-R/11/2018 dated 16.07.2018 valid up to 30.06.2023
2. Your application dated 21.06.2023

The Integrated Consent to Operate issued as per reference above is hereby modified & issued to M/s CARBORUNDUM UNIVERSAL LIMITED , PB.NO.3,NALUKETTU P.O,KORATTY.

The consent(s)/ variation order(s) cited under reference are integral part of this consent variation order and this order is subject to the conditions stipulated therein and the following modifications/ additions.

1. GENERAL

S No.	Items	Description
1	Raw material	Raw petroleum coke – 20 TPD Quartz – 24 TPD Silicon carbide grains, brown fused alumina grains, white fused alumina grains, special ceramic grains – 25 TPD Silicon carbide crude – 20 TPD
2	Product	Silicon carbide macro grains – 40 TPD Microgrits of SiC and special ceramics – 24 TPD
3	Annual fee	Rs 1,50,000/-
4	Fee remitted (For 5 years)	Rs 7,65,833/- (Rs 29,333/- arrear fee and Rs 13,500/- excess from previous

		renewal application)
5	Capital investment (in Lakhs)	Rs 3521
6	Validity	30.06.2028

2. CONDITIONS

2.1 For renewal of the consent in case of continuance of operation of the industry, application in the prescribed form shall be submitted through the web portal of the Board (www.keralapcbonline.com) for renewing the Consent on or before two months in advance to expiry date. Late application will be accepted with 10% (for application before expiry date) & 50% of yearly fee as late fee for application after due date. The renewal application in the prescribed form shall be submitted through the web portal of the Board.

2.2 The applicant shall comply with the instructions that the Board may issue from time to time regarding prevention and control of air, water, land and sound pollution.

2.3 No change or alteration of the unit/establishment is to be made without the prior written permission of the Board. Any change in the particulars furnished and/or in the identity of the occupier/authorized agent is to be intimated to the Board forthwith.

2.4 This consent is granted based on the particulars and affidavit submitted by the Entrepreneur and any violation/non-compliance/submission of false information will lead to cancellation of consent and stringent action against the applicant and occupier.

2.5 This consent is granted subjected to the power of the Board to review and make variations in all or any of the conditions as per section 21 (6) of the Air Act 1981 and Section 27 of Water Act 1974.

2.6 Ordinary coke shall be used instead of Pet coke.

2.7 Stack with adequate stack height shall be provided to keep the emission quality to the standards.

2.8 Waste water generated shall be properly treated the standards prescribed before disposal.

All other conditions of the Integrated Consent to Operate issued as per reference above remain unchanged.

Digitally signed by SHEELA A M
Date: 2024.01.09 23:24:36 IST

SIGNATURE OF ISSUING AUTHORITY

MEMBER SECRETARY

To

M/s CARBORUNDUM UNIVERSAL LIMITED
PB.NO.3,NALUKETTU P.O,KORATTY
E-Mail : Kuruvillarajeshj@cumi.murugappa.com
Contact Number :9645238258,

- 1.This digitally signed document is legally valid as per the Information Technology Act 2000
2. For verifying this document please go to www.keralapcbonline.com and search using Certificate Number/Name of the unit/Application Number in “Certificate Verification” link in the home page of the Board’s Phoenix website.



Carborundum Universal Limited

Post Bag No. 3, Koratty - 680 308

Thrissur Dist., Kerala, India.

Tel: +91 480 3023044, 2732061

Website: www.cumi.murugappa.com

12th Feb 2024

To,

The Member Secretary

Kerala State Pollution Control Board.

Plamoodu - Thekkamoodu Rd,

Ithruvananthapuram, Kerala 695004

Dear Madam,

Sub: Review of condition in the consent referred below

Ref: Consent No. KSPCB/TS/ICO/10041755/2023 issued to M/s Carborundum Universal Limited, PB.NO.3,Nalukettu P.O,Koratty

We refer the integrated consent order in reference above duly issued by your good office and our sincere thanks for extending the support. We hereby confirm that we will fulfil the conditions stipulated in the consent by your good office; however, we would also like to highlight few concerns to your kind consideration.

Condition No.2.7: to provide stack for emission as per the consent condition, we are working out the installation of the stack and the work will be completed within 6 months.

The condition no. 2.6 as per the consent suggest to use ordinary coke in place of raw petroleum coke. We would like to give you a detailed note on the challenges in meeting the condition 2.6.

Globally the manufacturing process of Silicon carbide adopts usage of raw petroleum coke as a source of carbon. Kindly note the raw petroleum coke is not used as a source of fuel, but as a raw material. The detailed description of the process is given below-

1.0 Manufacturing process:

Silicon carbide plant at Nalukettu, Koratty was started in the year 1985. There are 200+ people are employed directly or indirectly. The factory premises is spread to an extent of 20 acres with constructed area of about 13148 sq. metre is built up area. The plant premises is well surrounded by Bamboo Garden and trees which ensure and provide a green belt to the factory premises.

The furnace plant has a production capacity of 20 MT of black silicon carbide crude per day. The grain plant has a capacity to convert 40 MT of crude into grain.

The furnace plant uses 20 MT of petroleum coke and 24 MT of Quartz per day as raw material. Attached below the process flow of the plant.





Carborundum Universal Limited

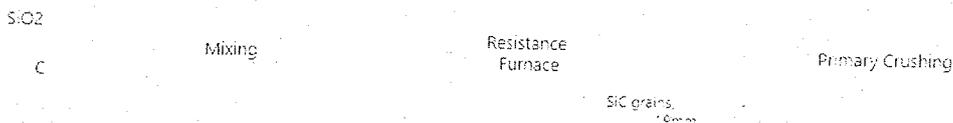
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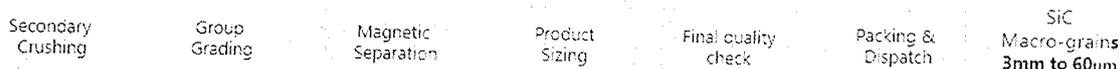
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Furnace Plant - Silicon Carbide Fusion Process



Grain Plant ----- Macro-grain Production Process



Process Flow diagram of Furnace and grain processing.

Silicon carbide furnace process in detail:

Raw petroleum coke is being used for the production of silicon carbide (SiC) at the global level including US and Europe. The largest silicon carbide plant is in Russia which has a capacity to process 90000 MT per year in which petroleum coke is being used for the manufacturing of SiC.

The silicon carbide is produced by an electro chemical reaction of high-grade silica sand (Quartz) and low ash carbon source which is petroleum coke. The process is carried out in an electrical resistance furnace (popularly known as Acheson Furnace). The heat needed for driving the reaction between silica and carbon is generated by a graphite core, which acts as a resistor submerged in the raw material mix.

The furnace is fired electrically using 1800 KVA single phase transformer. There are 3 such transformers units and 9 furnaces in the plant. At any time only three furnaces will be under operation

The furnaces are electrically fired for a duration of 48 hours. The furnace power is controlled by means of tap changing, which is controlled by a PLC system. A reducing atmosphere is created inside the furnace by a thick layer of non-reacting mix which avoids the contact of coke with atmospheric oxygen and make it available for the reaction. The role of coke is to supply carbon for the reaction, and it works only as a raw material. A report vide dated 04.06.2018 to this effect from IISC Bangalore stating the role of raw petroleum coke is attached (Annexure-1).

Silicon carbide grains and powders finds applications in Semiconductors, diesel particulate filters manufacturing, surface engineering, technical ceramics and refractory applications. The use of low ash carbon source is very critical for good quality silicon carbide crude production required for various applications. The two criteria for selecting the carbon source used in silicon carbide production are the economic viability and the quality which is measured as the ash content. All major manufacturers of Silicon carbide follow a low specification of Ash % for the silicon carbide production. We follow a specification of <1% for ash content in raw petroleum coke for the production of SiC at Koratty.



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Ordinary coal has very high ash content. Ash content of coal varies from 15% to 45% with majority of coal produced falls under 35% to 45% range. Indian Coal due its drift origin contains higher percentage of ash. During the reaction for the formation of silicon carbide the ash remains in the system along with silicon carbide produced making it non viable to use this as a source for making good quality silicon carbide grains and powders for applications like semiconductors, Diesel particulate filters, abrasives and refractories. These applications need to have stringent control on the Silicon Carbide content which is normally above 98%.

The ash content of petroleum coke meets the requirement of Silicon carbide production compared to any other commercially viable carbon sources like ordinary coal. The change of raw material ie ordinary coke in lieu of raw petroleum coke will lead to stoppage of factory operations. Hence we request you to kindly reconsider the suggestions to use ordinary coke in the condition 2.6 and allow us to use raw petroleum coke for the reasons explained herein above. We would also be initiating following actions as per the conditions stipulated in the consent.

2.0 Compliance plan for the conditions 2.7 and 2.8

We proposed the installation of Hood and Common Stack for Furnaces to control the emissions wide our letter CUMIKOR/PCB/L2/23-24 dated 27/11/2023. We give below a brief description of the implementation plan of the stack.

Design of stack:

To collect gas effectively from furnace, a moving hood is designed and this can be placed over the furnace. The hood is designed to connect to a wet scrubber which is made up of SS316. The sorbent used is NaOH. Entire gases collected are passed through the scrubber which is in contact with sorbent and neutralize sulphur bearing gases to within the accepted limits. Scrubber is connected to a centrifugal blower to provide required suction to collect the gases from the furnace through hood. This also in SS 316 construction.

Stack details:

Stack height and top diameter are calculated based on norms provided by CPCB Emission Regulation Part2 Feb.1998. Based on this total height of stack considered as 60 meters. This is constructed with latest precast technology with steel tower to support the chimney. Suitable sorbent disposal system also will be provided.



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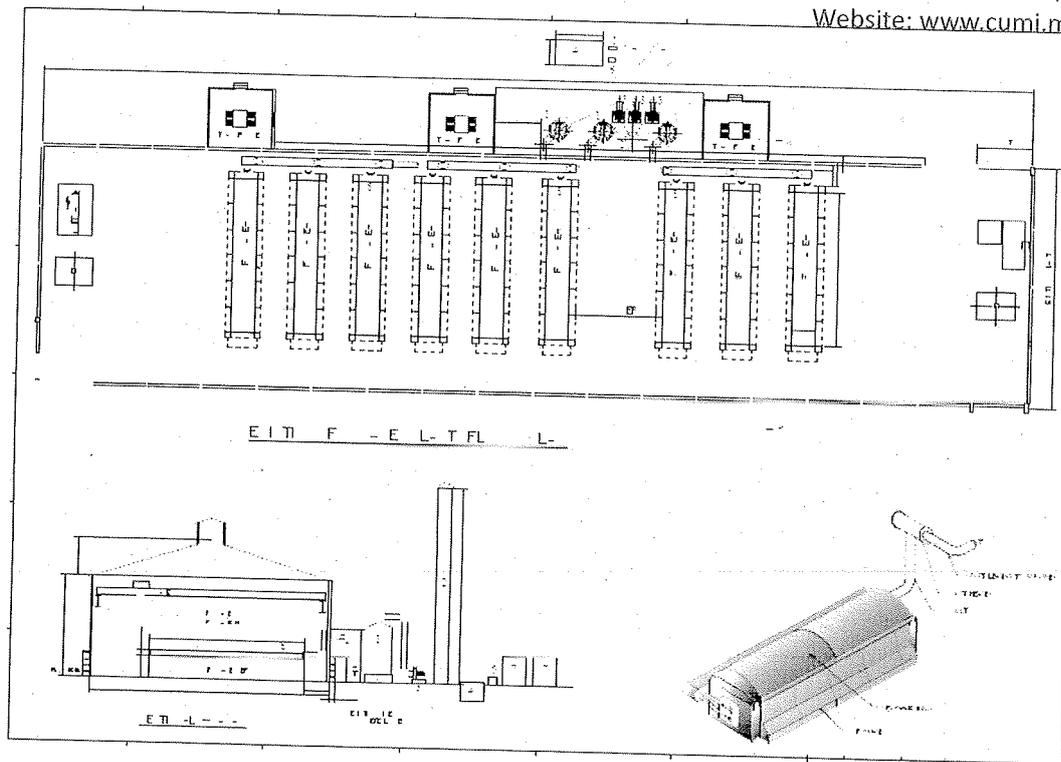
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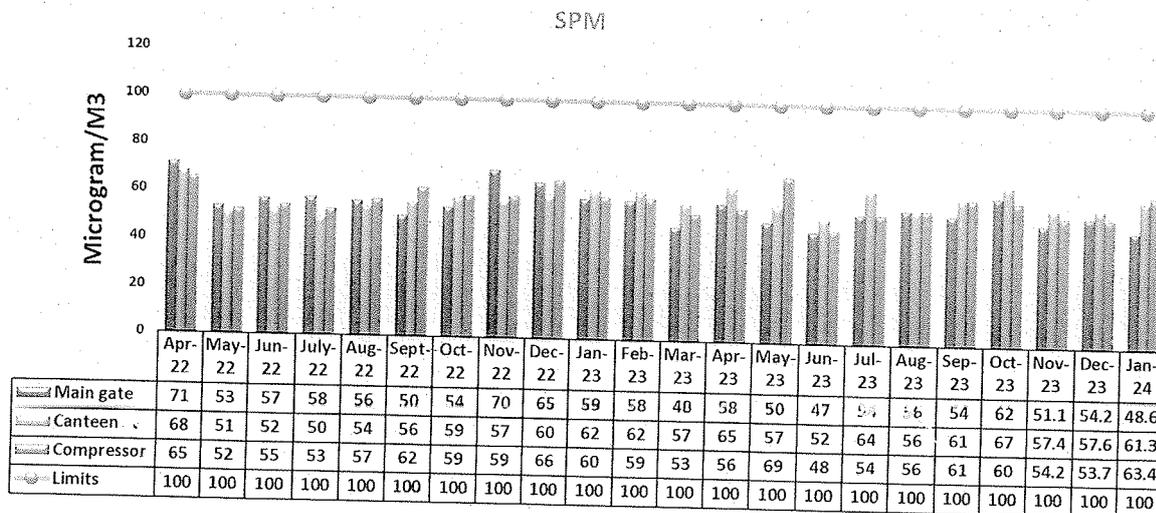


The proposed scheme for gas collection and stack is shown as above.

3. Back ground of current system controls in place:

Ambient air monitoring.

We regularly monitor the ambient air quality parameters and the trend of the same is given below. The ambient air quality monitoring data shows the values are well within the limits. The trend of ambient air quality monitoring is given below-



Test Method : IS5182 Part 23 2006 RA 2012



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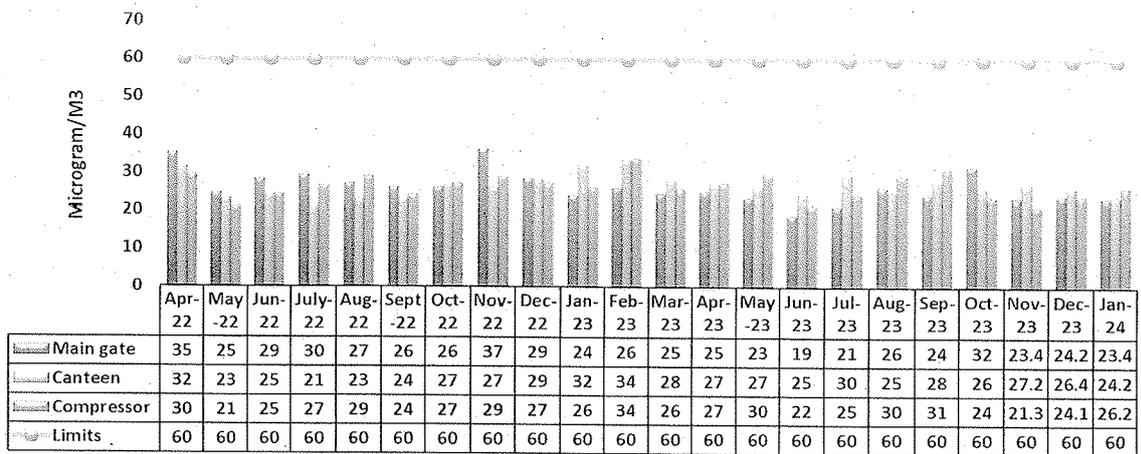
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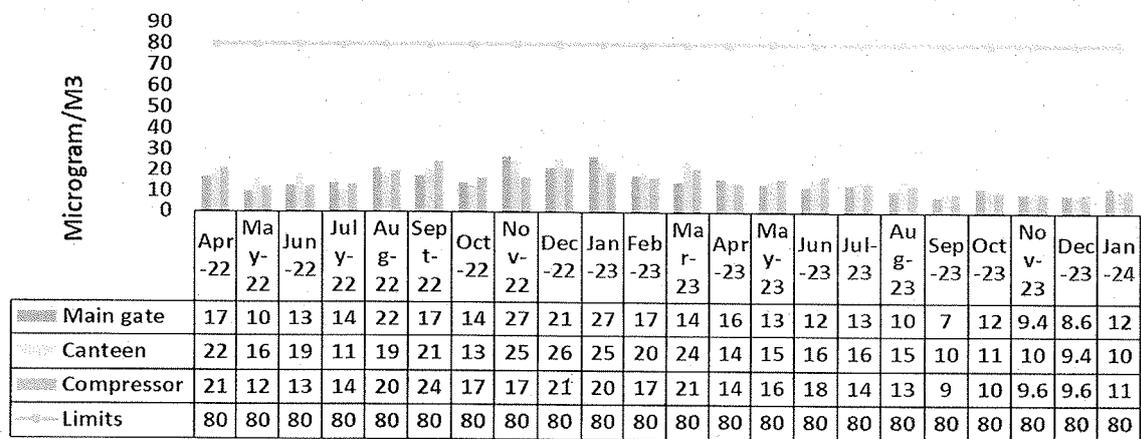
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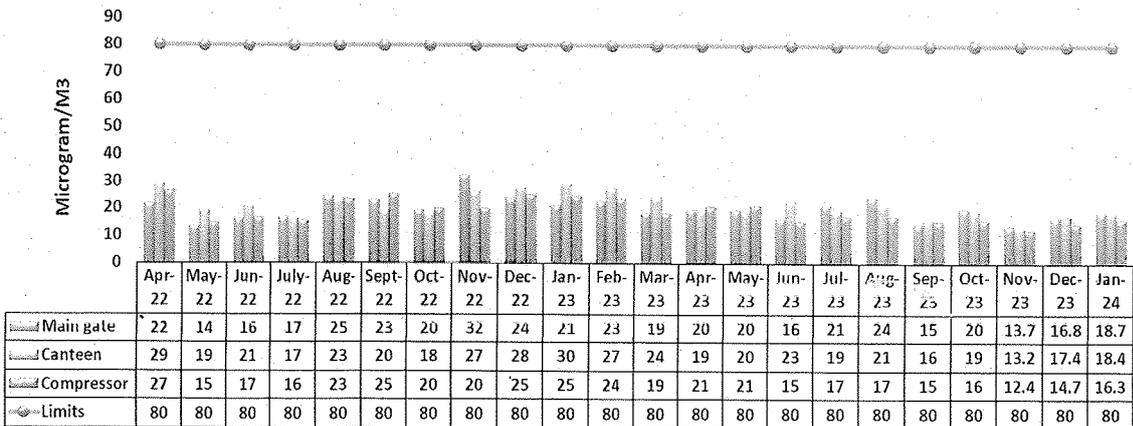
Test Method : CPCB

SO2



Test Method IS 5182 Part 2 2001 RA 2017

NO2



Test Method : IS 5182 Part 6 2006 RA 2017



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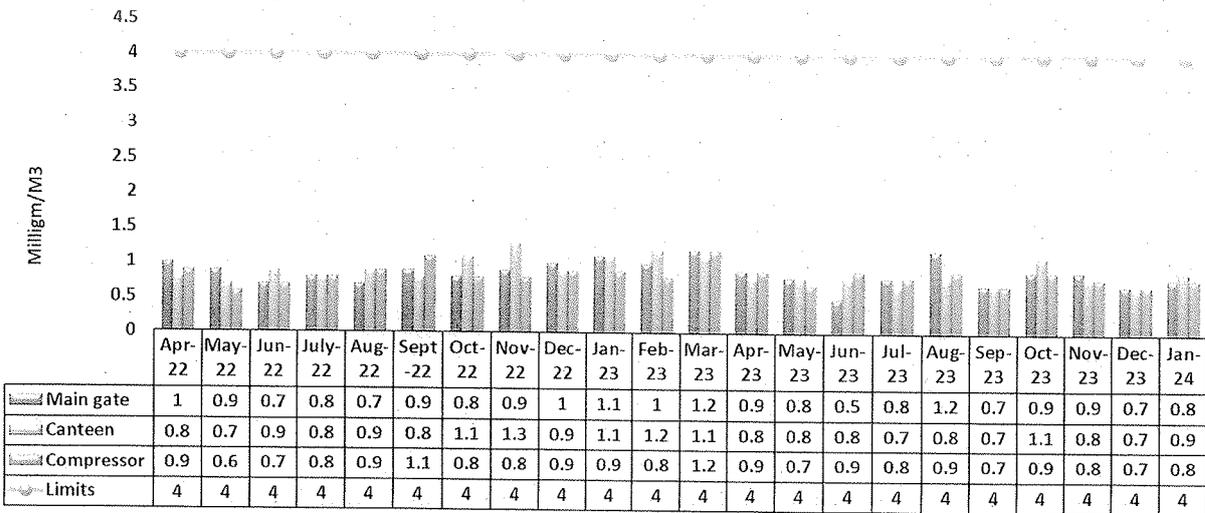
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CO



Test Method : SOP/PCL/COA/17

As evident from the above chart we have always complied the environmental parameters and willing to extend further investments towards installation of gas collection system as per your advice. Hence, we request you kindly consider this consent change request(i.e use of raw petroleum coke as raw material instead of ordinary coke) for the condition clause 2.6 and the amendment to this effect be kindly issued.

Kindly do the needful.

Yours Sincerely,

For Carborundum Universal Limited,

Premanath KN

Senior General Manager

Annexures

- 1. Letter from IISc- Bangalore



Corporate Identity Number: L29224TN1954PLC000318
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DEPARTMENT OF MATERIALS ENGINEERING
INDIAN INSTITUTE OF SCIENCE
BANGALORE - 560012 INDIA

A Centre for Advanced Study Supported by the University Grants Commission

TO WHOMSOEVER IT MAY CONCERN

Silicon carbide (SiC) also known as Carborundum is one of the hardest material synthetically produced. SiC is a versatile material which finds lot of application in the area of abrasive, refractories, engineered ceramics, energy, environment and defence.

Silicon carbide is commercially produced by the Acheson process in an electric resistance furnace which uses electricity as a source of energy. The raw materials used for mass production of silicon carbide are silica, in the form of quartz, and carbon derived from the raw petroleum coke. These raw materials are heated to a temperature above 2000⁰C in an Acheson furnace. Here, the heat needed for driving the reaction is generated by the electrical resistance offered by a graphite core which is submerged in the raw material mix. A reducing atmosphere is created inside the furnace by covering the active materials with non-oxidising thick layer of unreacted mix, which diminishes the contact of reacting coke with air. By avoiding the burning of coke, carbothermic reduction reaction in which the carbon is covalently bonded to silicon to form SiC crystals is initiated. The purity of silicon carbide is a function of raw material purity and hence that of the raw petroleum coke and silica used. Hence, the intention of using raw petroleum coke is to make it react in a controlled atmosphere with silica to form silicon carbide.

G. S. Gupta
(G. S. Gupta) 04/06/18
Professor FOR CUMI, KERALA