सीमाशुल्क अग्रिम विनिर्णय प्राधिकरण
CUSTOMS AUTHORITY FOR ADVANCE RULINGS
नवीन सीमाशुल्क भवन, बेलार्ड इस्टेट, मुंबई - ४०० ००१
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The 10th day of April, 2024
Ruling Nos. CAAR/Mum/ARC/57/2024
in
Application No. CAAR/CUS/APPL/154/2023 - O/o Commr-CAAR-MUMBAI

Name and address of the applicant:	M/s. Ibiden Singapore Pte Limited – India Branch Office, Ground Floor, Nitesh Timequare, No. 8, M.G. Road, Bengaluru – 560 001.
Commissioner concerned:	The Commissioner of Customs, NS-V, JNCH, Nhava Sheva, Taluka – Uran, Dist – Raigad, Maharashtra 400 707.
Present for the applicant:	Shri Ajay Rotti Shri R. S. Mani Ms. Dhanashree Prabhu Shri Abhishek Thalagavara
Present for the Department:	None.

Ruling

M/s. Ibiden Singapore Pte Limited – India Branch Office (having IEC No. 0708015140 and hereinafter referred to as 'the applicant', in short) filed an application (CAAR-1) for advance ruling before the Customs Authority for Advance Rulings, Mumbai (CAAR in short). The said application was received in the secretariat of the CAAR, Mumbai on 15.11.2023 along with its enclosures in terms of Section 28H (1) of the Customs Act, 1962 (hereinafter referred to as the 'Act' also). The applicant is seeking advance ruling on the classification of "Raw Silicon Carbide Bricks for DPF application" under the Customs Tariff Act,1975 for imports through the port of Nhava Sheva.

2. Applicant has stated as follows in their statement of relevant facts having a bearing on the question raised enclosed with the CAAR-1 application:

2.1 The Applicant is primarily engaged in the business of Trading Alumina Fiber Mat imported from Ibiden Japan and providing marketing support services to promote raw silicon carbide brick used for Diesel Particulate Filters (hereinafter 'DPF') and Fine Graphite Material (hereinafter 'FGM') to associated enterprises of Ibiden Japan. The Applicant is in the process of setting up additional branches in Free Trade Warehousing Zones ('FTWZ') from where the Applicant proposes to undertake business to business trading activities of raw silicon carbide bricks. Accordingly, the Applicant would import raw silicon carbide bricks of various shapes used for DPF from their associated enterprises and sell to their customers in India. DPF is a mandated component for all diesel engine driven vehicle platform manufactured in India to achieve Bharat Stage emission standard 6 (BS-6) implemented from April 1, 2020. DPFs are used in diesel engine systems to reduce the emissions of particulate matter (PM) and other harmful pollutants. The primary function of a DPF is to capture and trap particulate matter, including soot, ash, and other solid particles present in the exhaust gases emitted by diesel engines. The DPF's porous structure and filtration media effectively capture these particles, preventing them from being released into the atmosphere.

2.2 The manufacturing process of a DPF typically involves several steps. Here is a general overview of the process:

Substrate Preparation: The first step is to prepare the substrate, which is the porous material that forms the core of the DPF. Common substrates are made of ceramic materials like silicon carbide or cordierite. The substrate is shaped into a honeycomb- like structure with numerous small channels running through it.

Coating Application: Once the substrate is prepared, a coating material is applied to the surface. The coating helps trap and filter out particulate matter from the exhaust gases. The most common coating material is a combination of precious metals like platinum, palladium, and rhodium, which act as catalysts for the oxidation of soot particles. Coating is a crucial step to achieve Bharat Stage emission standard 6 (BS-6) and meet the required norms.

Drying: After the coating is applied, the DPF is dried to remove any moisture and ensure the coating adheres properly to the substrate. This step may involve heating the DPF in an oven or using other drying techniques.

Calcination: Calcination is a crucial step that involves heating the DPF to a high temperature. During calcination, the coating material fuses with the substrate, creating a strong bond. Calcination also helps to stabilize the structure and improve the DPF's mechanical strength.

Canning and Assembly: Once the DPF core is prepared, it is typically placed into a metal canister, which acts as the outer housing. The canister is designed to withstand the high temperatures and mechanical stresses experienced during operation. Other components such as gaskets, seals, and mounting brackets are also added during the assembly process

Quality Control: Throughout the manufacturing process, various quality control checks are performed to ensure that the DPF meets the required specifications and standards. These checks may include visual inspections, pressure tests, and performance evaluations.

Packaging and Distribution: After passing the quality control tests, the DPFs are packaged and prepared for distribution to customers or automobile manufacturers for installation in diesel vehicles.

2.3 The Applicant intends to import non-oxide raw silicon carbide bricks in various shapes, including round and oval, based on the 'directions to buy' provided by an automotive Original Equipment Manufacturer (OEM). These silicon carbide bricks will subsequently be sold in their raw form to a coater responsible for applying the necessary coating. The coater will, in turn, supply the coated bricks to a canner for sealing within metal canisters. Finally, the completed Diesel Particulate Filters (DPFs) will be delivered to the OEM for integration into their automotive systems.

2.4 The applicant has further submitted the manufacturing process of raw silicon carbide substrate /brick preparation for a diesel particulate filter (DPF) as follows:

Material Selection: Common materials used for DPF substrates are silicon carbide (SiC) and cordierite. Silicon carbide is a high-strength ceramic material with excellent thermal and chemical resistance. It is chosen for its ability to withstand the harsh operating conditions of DPFs.

Mixing and Forming: Silicon carbide is mixed with other additives such as binders and pore-forming agents to create a homogeneous mixture. The mixture is then formed into a desired shape, typically a honeycomb-like structure. This structure consists of a large number of small parallel channels running through it, creating a high surface area for particulate matter filtration.

Extrusion or Injection Molding: The forming process can be accomplished through extrusion or injection molding. In extrusion, the mixture is forced through a die with specific cell configurations to shape the honeycomb structure. Injection molding involves injecting the mixture into a mold with the desired shape, which is then cured and hardened.

Drying: After the substrate is formed, it undergoes a drying process to remove moisture and any volatile components. The drying process can involve natural air drying or using temperature-controlled ovens.

Sintering: The dried substrate is then sintered at high temperatures at above 1500 Degree Celsius in a kiln or furnace. Sintering is a critical step that binds the material, causing it to shrink and form a solid, rigid structure. This process also enhances the mechanical strength and thermal stability of the brick.

2.5 During the manufacture of a Diesel Particulate Filter (DPF), a coater plays a crucial role in applying the catalytic coating to the silicon carbide brick. This catalytic coating is an essential component of the DPF as it facilitates the oxidation of soot and other particulate matter that is trapped within the filter. The process of coating is a critical step in DPF production, and the coater's job involves several key responsibilities:

Coating Material Preparation: The coater is responsible for preparing the catalytic coating material. This typically involves mixing various chemicals, often including precious

metals such as platinum, palladium, and rhodium, along with other catalysts and binders. The specific composition of the coating material can vary based on the manufacturer's design and the emission standards the DPF is meant to meet.

Coating Application: Once the coating material is prepared, the coater applies it to the interior walls of the silicon carbide brick. This is often done using a spray or washcoat process. The coater needs to ensure an even and controlled distribution of the coating material over the substrate's surface to optimize catalytic activity.

Drying: After the coating is applied, the DPF is typically subjected to a drying process to remove any solvents or liquids from the coating. This step may involve heating the DPF in an oven to evaporate the volatile components of the coating material, leaving the catalyst particles adhered to the substrate.

Quality Control: The coater is responsible for ensuring that the coated DPFs meet quality standards. This includes checking for uniform coating thickness, examining the overall integrity of the coating, and inspecting for any defects that might compromise the DPF's performance.

Documentation: The coater may also be responsible for keeping records of the coating process. This documentation can include details of the coating materials used, the batch or lot numbers, process parameters, and any quality control results.

Cleaning and Maintenance: Coating equipment and tools need regular cleaning and maintenance to prevent contamination and ensure consistent coating quality. Coaters are often responsible for maintaining their equipment and tools.

Safety: Safety is a paramount concern in any manufacturing process. Coaters must follow safety protocols, including wearing appropriate protective gear, working in a well-ventilated area if necessary due to the coating materials, and following safety guidelines to prevent accidents and chemical exposure.

The role of the coater is essential in ensuring the effective functioning of a DPF, as the coating plays a vital role in catalyzing the oxidation of captured particulate matter. The coater's attention to detail and precision are crucial to producing high-quality DPFs that meet emissions standards and performance expectations.

2.6 In the context of Diesel Particulate Filter (DPF) manufacturing, a "canner" typically refers to a role or process that involves assembling and sealing the DPF units into their outer housing, which is often a metal canister or casing. The canner's job is an integral part of DPF production, and their responsibilities include:

Canning Process: The primary responsibility of the canner is to insert the DPF core, which contains the ceramic substrate with the catalytic coating and filtration media, into the metal canister. This process can involve carefully aligning and securing the DPF core within the canister.

Sealing and Welding: After the DPF core is correctly placed in the canister, the canner may be responsible for sealing the canister. This sealing process can include welding, crimping,

or other methods to ensure an airtight and durable seal. The seal is essential to maintain the integrity of the DPF under the high-temperature and high-pressure conditions it will experience during operation.

Quality Control: The canner plays a critical role in quality control. They are responsible for inspecting the sealed DPF units to ensure that the canning process has been carried out correctly. This includes checking for leaks, ensuring proper alignment, and examining the overall integrity of the DPF.

Documentation: The canner may be required to maintain records related to the canning process. This can include recording batch numbers, production details, and any quality control results or issues encountered during the canning process.

Cleaning and Maintenance: The equipment and tools used in the canning process need to be cleaned and maintained regularly to prevent contamination and ensure consistent sealing quality. Canners are often responsible for the maintenance of their equipment.

Safety: Safety is paramount in any manufacturing process. Canners should follow safety protocols, including wearing appropriate protective gear and adhering to safety guidelines to prevent accidents, especially when working with welding or sealing equipment.

The canning process is the final step in DPF manufacturing before the filters are ready for packaging and distribution. A well-executed canning process is critical to ensuring that the DPFs will perform effectively in reducing particulate matter emissions from diesel engines. It also contributes to the durability and reliability of the DPF in the demanding conditions of diesel engine exhaust systems

2.7 Coating and canning would not be undertaken by the Applicant. The reason for usage of silicon carbide ceramic for DPF application is that it is high temperature resistant refractory material. Ceramics have been classified in terms of their silica content; silica or silicon dioxide. The content of silicon dioxide actually determines the temperature up to which it can be used. Higher is the silicon dioxide content, higher is the temperature it can resist. Therefore, the temperature or in refractive terminology, it is called refractoriness, the refractoriness of high silica is more than that of the fireclay refractory. The silicon carbide substrate imported by the Applicant would contain by weight more than 50% of silica (SiO2). Apart from applicability in DPF, extruded silicon carbide bricks have various applications like Heat Exchanger, Nuclear power plants, Thermal oxidiser etc. However, the Applicant is not engaged in supply to manufacturers of products for these applications in India.

3. In the statement containing the applicant's interpretation of law and/or facts, as the case may be, in respect of the aforesaid question (i.e. applicant's view point and submissions on issues on which the advance ruling is sought) the applicant submitted as follows:

3.1 The World Customs Organisation (WCO), for purposes of uniform interpretation of the Harmonized System Nomenclature (HSN), has published detailed Explanatory notes to various headings/subheadings explaining their scope. This forms the basis for interpreting the HSN. Goods are classified taking into consideration the scope of headings/subheadings, related Section Notes, Chapter Notes and the General Interpretative Rules (GIR).

3.2 Customs Tariff Act, 1975 contains 21 sections and each sections, chapters classifying various goods. Section contains notes which provides guidelines to classify goods under relevant HSN. Accordingly, the sequence of classification is Sections (contain Section notes) >> Chapters (contain chapter notes) >> Heading >> subheading.

3.3 Heading 6902, inter alia, covers refractory bricks, blocks and similar refractory ceramic constructional goods. The Heading also includes Silicon Carbide bricks and shapes containing by weight more than 50% of silica (SiO2). The relevant entries of Chapter 69 and Heading 6902 of are extracted below:

"This Chapter applies only to ceramic products which have been fired after shaping

(a) headings 6904 to 6914 apply only to such products other than those classifiable in headings 6901 to 6903;

(b) articles heated to temperatures less than 800°C for purposes such as curing of resins, accelerating hydration reactions, or for the removal of water or other volatile components, are not considered to be fired. Such articles are excluded from Chapter 69; and

(c) Ceramic articles are obtained by firing inorganic, non-metallic materials which have been prepared and shaped previously at, in general, room temperature. Raw materials comprise, inter alia, clays, siliceous materials including fused silica, materials with a high melting point, such as oxides, carbides, nitrides, graphite or other carbon, and in some cases binders such as refractory clays or phosphates.

Tariff item		*Description*
6902		***Refractory bricks, blocks, tiles and similar refractory ceramic constructional goods, other than those of siliceous fossil meals or similar siliceous earths***
6902 20	-	*Containing by weight more than 50% of alumina (Al_2O_3), of silica (SiO_2) or of a mixture or compound of these products :*
6902 20 40	---	*Silicon Carbide bricks and shapes*

3.4 The Applicant submits that the silicon carbide brick that would be imported is a non-oxide ceramic and all the properties under this HS code are satisfied. Thus, classification of the silicon carbide brick imported by the Applicant would rightly fall under the HS code 69022040.

3.5 Chapter 84 stipulates classification of "Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof." There is a specific mention under Heading 8421 of "centrifuges, including centrifugal dryers; filtering or purifying machinery and apparatus, for liquids or gases". The tariff head 84213200 which covers particulate filters is reproduced below:

Tariff item		*Description*
		Filtering or purifying machinery and apparatus for gases
8421 32 00	--	Catalytic converters or particulate filters, whether or not combined, for purifying or filtering exhaust gases from internal combustion engines

However, the Chapter notes state that the Chapter 84 does not cover appliances of ceramic material covered under Chapter 69. The relevant extracts are reproduced hereunder:

"This Chapter does not cover:

(a)....

(b) machinery or appliances (for example, pumps) of ceramic material and ceramic parts of machinery or appliances of any material (Chapter 69);"

3.6 Further, the Applicant would like to place reliance on Circular No. 24/2013-Customs dated June 27, 2013 which provides a clarification on 'Classification of Elements of Filters'. The relevant extracts are reproduced as under:

"Heading 8421 of the Customs Tariff applies to, Centrifuges, including centrifugal dryers; filtering or purifying machinery and apparatus, for liquids or gases". The scope of parts of articles covered by the said Heading 8421 is explained in the World Customs Organization's Harmonized Commodity Description and Coding System Explanatory Notes.

These Explanatory Notes present an internationally accepted view of the scope of each Heading of the Customs Tariff. In this context, the Explanatory Note to Heading 84.21 provides that:

> *"Subject to the general provisions regarding the classification of parts (see the General*
>
> *Explanatory Note to Section XVI), the heading covers parts for the above-mentioned types of filters and purifiers. Such parts include, inter alia:*
>
> *Leaves for intermittent vacuum filters; chassis, frames and plates for filter presses; rotary drums for liquid or gas filters; baffles and perforated plates, for gas filters.*
>
> *It should be noted, however, that filter blocks of paper pulp fall in heading 48.12 and that many other filtering elements (ceramics, textiles, felts, etc.) are classified according to their constituent material."*

3. Thus, it emerges that elements of Filters are to be classified as per their constituent material. For instance, elements (of Filters) that are made up of paper would be classified in Headings 4812 or 4823; if made up of textile material for technical use then in Heading 5911; if made up of glass then in Heading 7019; etc. Filters by themselves would be classified under Heading 84.21."

3.7 The Applicant submits that silicon carbide bricks, available in various shapes, are elements used in diesel particulate filter applications. These bricks are composed of high-temperature-resistant refractory materials, predominantly silicon carbide, with a silica content by weight exceeding 50%. Therefore, the appropriate classification for these products under the Customs Tariff Act, 1975, is 6902 2040. The Applicant further emphasizes that silicon

carbide bricks, being ceramic materials, do not fall under the classification of Chapter 84 as stated in the Chapter note and clarified by the circular 24/2013- Customs dated June 27, 2013.

3.8 Chapter 38 titled "Miscellaneous chemical products", contains the classification of the catalysts that are used for coating the silicon carbide bricks used by the coaters. Relevant extracts of chapter 38 of Customs Tariff Act, 1975 are reproduced as under:

Miscellaneous chemical products

Tariff item	Description
3815	Reaction initiators, reaction accelerators and catalytic preparations, not elsewhere specified or included
	- *Supported catalysts :*
3815 11 00	-- With nickel or nickel compounds as the active substance
3815 12	-- *With precious metal or precious metal compounds as the active substance :*
3815 12 10	--- Platinum or palladium catalysts with a base of activated carbon
3815 12 90	--- Other
3815 19 00	-- Other
3815 90 00	- Other

The Applicant submits that since the silicon carbide substrate is imported raw without coating/catalysing with platinum or palladium catalysts, classification under Chapter 38 is not justified.

3.9 Chapter 87 stipulates classification of "Vehicles other than railway or tramway rolling-stock, and parts and accessories thereof". The general explanatory notes under Section XVII state that the articles need to comply with the following three conditions to be eligible for classification as part and accessories under any chapter of Section XVII:

(a) They must not be excluded by the terms of Note 2 to this Section and
(b) They must be suitable for use solely or principally with the articles of Chapters 86 to 88 and
(c) They must not be more specifically included elsewhere in the Nomenclature

Silicon carbide brick cannot be used as DPF in as-is condition without the process of coating and canning as elaborated in the aforementioned paragraphs. Further, as submitted in the earlier paragraph, raw silicon brick has various applications like Heat Exchanger, Nuclear power plants, Thermal oxidiser etc. Accordingly, silicon carbide brick is not solely or principally used for the purpose of DPF. Therefore, classification as parts and accessories

cannot be justified. Once the coating and canning process is completed, the DPF would be used solely or principally as filters for diesel vehicles.

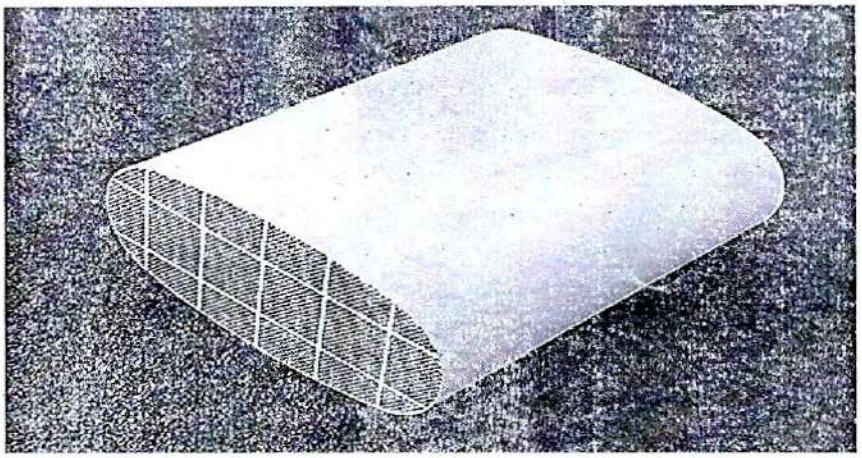
3.10 Laxmi Khandsari v. State of Uttar Pradesh [1981 (3) SCR 92); State of Haryana v. Jai Singh [2003 (9) SCC 114]; Welfare Association ARP v. Ranjit P. Gohil (2003 (9) SCC 358] held that for classification to be reasonable, it should fulfil the two tests. One, it should not be arbitrary, artificial or evasive, and should be based on intelligible differentia, some real and substantial distinction, which distinguished persons or things grouped together in the class from others left out of it. Two, the differentia adopted as the basis of classification must have a rationale or reasonable nexus with the object sought to be achieved by the statute in question.

3.11 As per general rules for the interpretation of the First Schedule to Customs Tariff Act, 1975, when goods are classifiable under two or more headings, classification would be done under the heading which provides the most specific description than to headings providing a more general description. The relevant extract of the rule is reproduced as under:

> *"3. When by application of rule 2(b) or for any other reason, goods are, prima facie, classifiable under two or more headings, classification shall be effected as follows:*
>
> *(a) the heading which provides the most specific description shall be preferred to headings providing a more general description."*

3.12 Based on the detailed discussions in the aforementioned paragraphs, since HSN 6902 2040 is the most specific description, the correct classification for raw silicon carbide brick is 6902 2040.

4. A personal hearing in the matter was conducted on 13.03.2024 in office of the CAAR, Mumbai. During the personal hearing the authorized representatives of M/s. Ibiden Singapore Pte Limited – India Branch Office, Shri Ajay Rotti, Smt. Dhanashree Prabhu and Shri R S Mani, General Manager, Head India Operations and Shri. Abhishek Thalagavara, Head – DPF India reiterated their contention submitted in the written application to CAAR, Mumbai. They also showed the product in question i.e. raw Silicon Carbide Bricks and submitted that it merits classification under CTI 6902 2040. They also relied upon the circular No. 24/2013-Customs dated 27.06.2013 in support of their contention. Nobody appeared from the department side for the Personal Hearing either in person or through online hearing made available. The office of the CAAR, Mumbai has also not received any relevant records/comments on the subject application from the concerned jurisdictional Commissionerate i.e. Nhava Sheva-V, JNCH till date. Said representatives also showed the product in question, an image thereof is reproduced below:



5. I have taken into consideration all the materials placed on record in respect of the subject goods including the submissions made by the applicant during the course of personal hearing. I therefore proceed to decide the present application regarding classification of subject goods i.e. "raw Silicon Carbide Brick for DPF application" on the basis of the information on record as well as the existing legal framework having bearing on the classification of the products in question under the first schedule of the Customs Tariff Act, 1975.

The Customs Tariff is aligned, up to the 6-digit level, with the Harmonized System of Nomenclature ('HSN') issued by the World Customs Organization ('WCO'). The HSN Explanatory Notes released by the WCO aid in the interpretation of the Headings of the Tariff and may be used as a safe guide for the same. It has been held so by the Supreme Court in the case of Collector of Customs, Bombay v. Business Forms Ltd. Thr. O.L.. 2002 (142) E.L.T. 18 (S.C.).

5.1 Heading 8421 *inter alia* covers filtering or purifying machinery and apparatus for liquids or gases. Further, sub-heading 8421 32 more specifically covers "Catalytic converters or particulate filters, whether or not combined, for purifying or filtering exhaust gases from internal combustion engines". General explanatory notes (I)(B) to section XVI states that the section (i.e. XVI) does not, however, cover:

.....

(d) Certain ceramic goods of Chapter 69 (see General Explanatory Notes to Chapters 84 and 85).

Further, I have gone through the General Explanatory Notes to chapter 84 and 85 and in General Explanatory Note (A) to chapter 84 it is explained that Subject to the provisions of the General Explanatory Note to Section XVI, this Chapter covers all machinery and mechanical appliances, and parts thereof, not more specifically covered by Chapter 85, and not being:

.....

(c) Ceramic articles of Chapter 69.

सीमाशुल्क अग्रिम निर्णय प्राधिकरण, मुंबई
Customs Authority For Advance Rulings, Mumbai

Further, in General Explanatory Note (A) to chapter 84 it is clearly explained that "Since *machinery or appliances (for example, pumps) of ceramic material and ceramic parts of machinery or appliances of any material (Chapter 69)*, laboratory glassware (heading 70.17) and machinery and appliances and parts thereof, of glass (heading 70.19 to 70.20) *are excluded from this chapter, it follows that even if a machine or mechanical appliance is covered, because of its description or nature, by a heading of this Chapter it is not to be classified therein if it has the character of an article of ceramic materials or of glass*". I am of the view that this explanatory note leaves no iota of doubt as to the classification of the product in question inasmuch as the product in question is a "silicon carbide brick" which is specifically accommodated under CTI 6902 2040 of chapter 69 which covers Ceramic Products. Therefore, 'silicon carbide brick' which is a ceramic product can not be classified under heading 8421, even if, particulate filters are specifically covered under heading 8421.

5.2 Further, explanatory notes to heading 8421 explains that:

"subject to the general provisions regarding the classification of parts (see the General Explanatory Note to Section XVI), the heading covers parts for the above-mentioned types of filters and purifiers. Such parts include, inter alia:

Leaves for intermittent vacuum filters; chassis, frames and plates for filter presses; rotary drums for liquid or gas filters; baffles and perforated plates, for gas filters.

It should be noted, however, that filter blocks of paper pulp fall in heading 48.12 and that many other filtering elements (ceramics, textiles, felts, etc.) are classified according to their constituent material".

Again, this explanatory notes also clears that classification of the filter blocks or filtering elements is to be decided on the basis of their constituent material. 'raw silicon carbide brick' is a ceramic product and by virtue of this explanatory note, it should be classified under chapter 69, it is amply clear that CTI 6902 2040 specifically covers 'silicon carbide bricks'.

5.3 General explanatory notes to Sub-chapter I of chapter 69 is reproduced below for ready reference:

"**In headings 69.02 and 69.03 refractory goods**, i.e., fired articles having the special property of resisting high temperatures as met in metallurgy, the glass industry, etc. (e.g., of the order of 1,500 and higher). According to the particular uses for which they are intended, refractory articles may also need to withstand rapid changes of temperature, be either good thermal insulators or conductors, have a low coefficient of thermal expansion, be porous or dense, resist the corrosive effects of products with which they come into contact, have a good mechanical strength and resistance to wear, etc.

However, to fall in heading 69.02 or 69.03 as refractory goods, articles must not only be capable of resisting high temperatures, they must also be designed for high temperature work. Heading 69.03 would therefore include crucibles of sintered alumina, but textile machine thread guides of the same material would fall in heading 69.09 since they are designed for clearly non-refractory uses".

In this explanatory note, further, it is also explained that the main types of refractory goods are *inter alia* 'refractories based upon silicon carbide'.

From the information available on open source websites it is learnt that recently, Silicon Carbide (SiC) has been investigated and pursued as an alternative material for diesel particulate filter (DPF) applications. SiC has acceptable physical properties such as good thermal conductivity, refractoriness, and chemical durability. Materials for DPF applications require a particular mean pore size, porosity, and permeability. In addition, these material attributes must be coupled to an appropriate thermal design so that the filter can survive the extreme temperature gradients generated during the regeneration process.

From the submissions of the applicant it is observed that 'silicon carbide bricks' are used for the same purpose as is mentioned above. The applicant has submitted that common materials used for DPF substrates are silicon carbide (SiC) and cordierite. *Silicon carbide is a high-strength ceramic material* with excellent thermal and chemical resistance. It is chosen for its ability to withstand the harsh operating conditions of DPFs.

5.4 I have also gone through the Chapter/General Explanatory Notes of chapter 85 and it is observed that no heading under chapter 85 specifically covers the product in question i.e. "Silicon Carbide Brick". Further, Chapter Note 1(b) to chapter 84 states that this chapter (i.e. chapter 84) does not cover machinery or appliances (for example, pumps) of ceramic material and ceramic parts of machinery or appliances of any material (Chapter 69).

6. Heading 6902 covers "Refractory bricks, blocks, tiles and similar refractory ceramic constructional goods, other than those of siliceous fossil meals or similar siliceous earths". Further, sub-heading 6902 20 covers "Containing by weight more than 50% of alumina (Al_2O_3), of silica (SiO_2) or of a mixture or compound of these products". Further, CTI 6902 2040 specifically covers *'silicon carbide bricks and shapes'*. The applicant has submitted that the reason for usage of silicon carbide ceramic for DPF application is that it is high temperature resistant refractory material. Ceramics have been classified in terms of their silica content; silica or silicon dioxide. The content of silicon dioxide actually determines the temperature up to which it can be used. Higher the silicon dioxide content, higher is the temperature it can resist. Therefore, the temperature or in refractive terminology, it is called refractoriness, the refractoriness of high silica is more than that of the fireclay refractory. These bricks are composed of high-temperature-resistant refractory materials, predominantly silicon carbide, with a silica content by weight exceeding 50%. Silicon carbide brick that would be imported is a non-oxide ceramic. *The silicon carbide substrate imported by the Applicant would contain by weight more than 50% of silica (Si)*. The Applicant submits that silicon carbide bricks, available in various shapes, are elements that would be used in diesel particulate filter applications.

As per Note 1 to Chapter 69 this chapter applies only to ceramic products which have been fired after shaping:

(a).....

(b).....

(c) *Ceramic articles are obtained by firing inorganic, non-metallic materials which have been prepared and shaped previously at, in general, room temperature*. Raw materials comprise, *inter alia*, clays, siliceous materials including fused silica, materials with a high melting point, such as oxides, carbides, nitrides, graphite or other carbon, and in some cases binders such as refractory clays or phosphates.

The applicant has explained the manufacturing process of silicon carbide substrate /brick preparation for a diesel particulate filter (DPF) which is reproduced in para 2.4 (*supra*). It is explained by the applicant that the forming process can be accomplished through extrusion or injection molding. In extrusion, the mixture is forced through a die with specific cell configurations to shape the honeycomb structure. *Injection molding involves injecting the mixture into a mold with the desired shape*, which is then cured and hardened. *The dried substrate is then sintered at high temperatures at above 1500 Degree Celsius in a kiln or furnace*. Sintering is a critical step that binds the material, causing it to shrink and form a solid, rigid structure. This process also enhances the mechanical strength and thermal stability of the brick.

From these submission, it is amply clear that the condition of the Note 1 to chapter 69 i.e. 'this chapter applies only to ceramic products which have been fired after shaping' is fulfilled. Further, General explanatory notes to chapter 69 have explained 'firing' as below:

"In this operation, the "green ware" is *heated to a temperature of 800 degree Celcius or higher* according to the nature of the product. After firing, the grains are closely bound together as a result of diffusion, chemical transformation or partial fusion".

In the submissions of the applicant it is specifically mentioned that *the dried substrate is then sintered at high temperatures at above 1500 Degree Celsius*. Therefore, I am of the view that the manufacturing process of the product in question satisfies this explanatory note's explanation as well.

Explanatory notes to heading 6902 explains that "This heading covers a group of refractory products (other than those of heading 69.01) normally used in the construction of ovens, kilns, furnaces or other plant for the metallurgical, chemical, ceramic, glass and other industries.

It includes, inter alia:

(1) *Bricks of all shapes* (parallelepiped, wedge shaped, cylindrical, semi-cylindrical, etc.), including keystones *and other specially shaped bricks* (e.g., runner bricks, concave on one face and rectilinear on the others) *even if they are clearly recognisable as being of the kind specially designed for the construction of plant or machinery of Section XVI.*

I am of the view that this explanatory note to heading 6902 is a decisive factor in the case at hand. It is unambiguously explained in this explanatory note that heading 6902 covers refractory bricks of all shapes and these should be classified under heading 6902 even if they are clearly recognisable as being of the kind specially designed for the construction of machinery of section XVI.

The applicant has sought advance ruling as to the classification of "raw Silicon Carbide Brick for DPF application". In this question itself the applicant has declared its intention that the product in question i.e. 'silicon carbide bricks' are proposed to be imported for further use in DPF (i.e. Diesel Particulate Filter). Therefore, even, the design of the subject product and the fact that the subject product is proposed to be used in Diesel Particulate Filter which is a machinery of the section XVI, the subject product i.e. raw Silicon Carbide Bricks cannot be classified in heading 8421 and these are to be classified in heading 6902.

7. The classification of the goods under the Customs Tariff is governed by the principles as enumerated in the General Rules of Interpretation ('GRI') set out in the First Schedule to the Customs Tariff Act, 1975 ('Tariff'). Rule 3 of the GRI reads as follows:

"3. When by application of rule 2(b) or for any other reason, goods are, prima facie, classifiable under two or more headings, classification shall be effected as follows:

(a) The heading which provides the most specific description shall be preferred to headings providing a more general description. However, when two or more headings each refer to part only of the materials or substances contained in mixed or composite goods or to part only of the items in a set put up for retail sale, those headings are to be regarded as equally specific in relation to those goods, even if one of them gives a more complete or precise description of the goods".

I have gone through the first Schedule of the Customs Tariff Act, 1975 and it is observed that CTI 6902 2040 specifically covers the product in question i.e. 'silicon carbide bricks'.

8. The applicant has relied upon the Circular No. 24/2013-Customs dated June 27, 2013 which provides a clarification on 'Classification of Elements of Filters'. The relevant extract of the circular is reproduced in para 3.6 *(supra)*. This circular has clarified that *"elements of Filters are to be classified as per their constituent material. For instance, elements (of Filters) that are made up of paper would be classified in Headings 4812 or 4823; if made up of textile material for technical use then in Heading 5911; if made up of glass then in Heading 7019; etc. Filters by themselves would be classified under Heading 84.21."*

9. On the basis of foregoing discussions and findings, I have come to the conclusion that "Raw Silicon Carbide Bricks for DPF application" merit classification under Custom Tariff Heading 6902, more specifically under CTI 6902 2040 of the First Schedule of the Customs Tariff Act, 1975, and I rule accordingly.

10/9/14

(P.K. Rameshwaram)
Customs Authority for Advance Rulings,
Mumbai.

सीमाशुल्क अग्रिम निर्णय प्राधिकरण, मुंबई
Customs Authority For Advance Rulings, Mumbai

F. No. CAAR/CUS/APPL/154/2023-O/o Commr-CAAR-Mumbai

This copy is certified to be a true copy of the ruling and is sent to: -

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2. The Commissioner of Customs, NS-V, JNCH, Nhava Sheva, Taluka – Uran, Dist – Raigad, Maharashtra – 400 707.

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8. Guard file.

10.04.2024

(V. M. Sobhan Sindhu)
Asstt. Commissioner of Customs & Secretary
Customs Authority for Advance Rulings,
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