外部委託業者の募集

References: IO/25/OT/70001311/AJI

"Framework Contract for Supply of B4C for IO ports"

（IO ポートのための B4C 供給に関する枠組み契約）

IO 締め切り 2025 年 7 月 3(木)

〇はじめに

本事前情報通知（PIN）は、作業契約の入札授与および実行につながる公開入札調達プロセスの最初のステップです。

本文書の目的は作業範囲と入札プロセスに関する技術的な内容の基本的な要約を提供することです。

〇背景

ITER は平和利用の核融合発電の科学的および技術的な実現可能性の実証を目的とした、国際共同研究開発プロジェクトです。ITER 機構の 7 つのメンバーは、;欧州連合（EURATOM が代表）、日本、中華人民共和国、インド、大韓民国、ロシア連邦、および米国です。

ITER の敷地はフランス南東部のブーシュデュローヌ地区にあり、ITER 本社（HQ）もあるフランス CEA サン・ポール・レ・デュランス に近いところに位置しています。詳細については、ITER のウェブサイト http://www.iter.org を参照して下さい。

〇作業範囲

本入札プロセスは、ITER機構（IO）ポート向けのB4C（炭化ホウ素）の供給に関するフレームワーク契約の締結を目的としています。ITER機構内では、計測プログラム部門が本契約の実施を担当します。

本契約において、供給業者は、ITER計測ポートの中性子遮蔽に使用される炭化ホウ素（B4C）セラミックブロックの調達要件に対してのみ責任を負います。これらのセラミックブロックは、エクアトリアルポートプラグ（EPP）#2、8、17およびアッパーポートプラグ（UPP）#4、5、6向けのものです。

契約には、ITERサイトへの納入および製品が本技術仕様書で定義された技術要件を満たしていることの保証も含まれます。

〇調達プロセスと目的

目的は、競争入札プロセスを通じて供給契約を落札することです。

この入札のために選択された調達手続きは公開入札手続きと呼ばれます。

オープン入札手順は、次の 4 つの主要なステップで構成されています。

- ステップ 1-事前情報通知（PIN）
  事前情報通知は公開入札プロセスの第一段階です。IO は、関心のある候補企業に対し、以下の概略日程に示された期日までに担当調達担当官に添付の関心表明フォームで以下の情報を

提出し、競争プロセスへの関心を示すよう正式に要請します。

特に注意:
関心のある候補企業は、IO Ariba の電子調達ツール 「IPROC」 に登録してください（まだ登録していない場合）。手順については、
https://www.iter.org/fr/proc/overview
を参照してください。

Ariba (IPROC) に登録する際には、お取引先様に最低 1 名の担当者の登録をお願いします。この連絡担当者は、提案依頼書の発行通知を受け取り、必要と思われる場合は入札書類を同僚に転送することができます。

- ステップ 2-入札への招待
  PIN の発行から 10 作業日経過後、提案依頼書 (RFP) を 「IPROC」 に掲載します。この段階では、担当の調達担当者に関心を示し、かつ IPROC に登録している関心のある候補企業は、RFP が公表された旨の通知を受けることができます。その後、RFP に詳述されている入札説明書に従って提案書を作成し、提出します。

  このツールに登録されている企業のみが入札に招待されます。

- ステップ 3-入札評価プロセス
  入札者の提案は、IO の公平な評価委員会によって評価されます。入札者は、技術的範囲に沿って、かつ、RFP に記載された特定の基準に従って作業を実施するために、技術的遵守を証明する詳細を提供しなければなりません。

- ステップ 4-落札
  認定は、公開されている RFP に記載されている、コストに見合った最適な価格または技術的に準拠した最低価格に基づいて行われます。

〇概略日程

概略日程は以下の通りです：

マイルストーン	暫定日程
事前指示書（PIN）の発行	2025 年 6 月 23 日
関心表明フォームの提出	2025 年 7 月 3 日
iProc での提案依頼書 (RFP) の発行	2025 年 7 月 7 日の週
明確化のための質問（もしあれば）	2025 年 8 月 8 日（質問締切り） 2025 年 8 月 11 日（回答締切り）
iPROC での入札提出	2025 年 8 月 18 日

入札評価と契約授与	2025 年 9 月または 10 月
枠組み契約調印	2025 年 9 月または 10 月

〇契約期間と実行

予想される契約期間は48か月です。契約の最終調印日前の作業はありません。

〇経験

契約者に求められる要件は以下の通りです：

- **B4C ブロック製造における実績ある専門知識**：炭化ホウ素（B4C）セラミックブロックはホットプレス製法により製造される必要があります。B4C、特に^10B 同位体に関する経験と実績が求められます。
- **高精度な寸法公差の維持能力**：高度な精密加工技術と厳格な品質管理手法により、厳しい製造公差を達成・維持できる能力。
- **測定システムの習熟**：三次元測定機（CMM）などの測定機器やその他の寸法検証手法を用いて、公差の確認ができる技術。
- **超高真空機器向け製造経験**：超高真空機器に求められる厳格な清浄条件下での製造経験。
- **汚染管理の知識**：真空部品の製造において、アウトガスや汚染を最小限に抑えるための手順に精通していること。
- **原子力品質基準への適合能力**：厳格な原子力品質基準を満たす部品の製造に関する技術と経験。

〇候補

参加は、個人またはグループ/コンソーシアムに参加するすべての法人に開放されます。法人とは、法的権利及び義務を有し、ITER 加盟国内に設立された個人、企業又は機構をいいます。ITER 加盟国は欧州連合(EURATOM メンバー)、日本、中華人民共和国、インド共和国、大韓民国、ロシア連邦、アメリカ合衆国です。

法人は、単独で、またはコンソーシアムパートナーとして、同じ契約の複数の申請または入札に参加することはできません。共同事業体は、恒久的な、法的に確立されたグループ又は特定の入札手続のために非公式に構成されたグループとすることができます。

コンソーシアムのすべての構成員(すなわち、リーダーと他のすべてのメンバー)は、ITER 機構に対して連帯して責任を負います。

コンソーシアムとして許可されるために、その点で含まれる法人はコンソーシアムの各メンバーをまとめる権限をもつリーダーをもたなければなりません。このリーダーはコンソーシアムの各目メンバーのために責任を負わなければなりません。

指名されたコンソーシアムのリーダーは、入札段階で、コンソーシアムのメンバーの構成を説明する予定です。その後、候補者の構成は、いかなる変更も ITER 機構に通知することなく変更してはなりません。かかる認可の証拠は、すべてのコンソーシアムメンバーの法的に授権された署名者が署名した委任状の形式で、しかるべき時期に IO に提出しなければなりません。

どのコンソーシアムメンバーも IPROC に登録する必要があります。

【※　詳しくは添付の英語版技術仕様書「**Framework Contract for Supply of B4C for IO ports Abstract**」をご参照ください。】
ITER 公式ウェブ　http://www.iter.org/org/team/adm/proc/overview からもアクセスが可能です。

「核融合エネルギー研究開発部門」の HP：　http://www.fusion.qst.go.jp/ITER/index.html
では ITER 機構からの各募集（IO 職員募集、IO 外部委託、IO エキスパート募集）を逐次更新しています。ぜひご確認ください。

イーター国際核融合エネルギー機構からの外部委託
に関心ある企業及び研究機関の募集について

＜ITER 機構から参加極へのレター＞

以下に、外部委託の概要と要求事項が示されています。参加極には、提案された業務に要求される能力を有し、入札すべきと考える企業及び研究機関の連絡先の情報を ITER 機構へ伝えることが求められています。このため、本研究・業務に関心を持たれる企業及び研究機関におかれましては、応募書類の提出要領にしたがって連絡先情報をご提出下さい。

china eu india japan korea russia usa
Route de Vinon-sur-Verdon - CS 90 046 - 13067 St Paul Lez Durance Cedex - France

PRIOR INDICATIVE NOTICE (PIN)

OPEN TENDER SUMMARY

IO/25/OT/70001311/AJI

for

Framework Contract for Supply of B4C for IO ports

Abstract

The purpose of this summary is to provide prior notification of the IO intention to launch a competitive Open Tender process in the coming weeks. This summary provides some basic information about the ITER Organisation, the technical scope for this tender, and details of the tender process for the award of a Framework Contract for the Supply of B4C for IO ports.

1 Introduction

This Prior Indicative Notice (PIN) is the first step of an Open Tender Procurement Process leading to the award and execution of a Supply Contract.
The purpose of this document is to provide a basic summary of the technical content in terms of the scope of work, and the tendering process.
The Domestic Agencies are invited to publish this information in advance of the forth-coming tender giving companies, institutions or other entities that are capable of providing these supplies prior notice of the tender details.

2 Background

The ITER project is an international research and development project jointly funded by its seven Members being, the European Union (represented by EURATOM), Japan, the People's Republic of China, India, the Republic of Korea, the Russian Federation and the USA. ITER is being constructed in Europe at St. Paul–Lez-Durance in southern France, which is also the location of the headquarters (HQ) of the ITER Organization (IO).

For a complete description of the ITER Project, covering both organizational and technical aspects of the Project, visit www.iter.org.

3 Scope of Work

The present tender process aims to set up a Framework Contract for the Supply of B4C for IO ports. Within the ITER Organization, The Diagnostic program will be in charge of implementing this Contract.
The Supplier is responsible for this Contract exclusively for the requirements for the procurement of Boron Carbide (B4C) ceramic blocks to be used for neutron shielding of the ITER diagnostic ports. The ceramic block will be for the Equatorial Port Plugs (EPP) # 2, 8 &17 and Upper Port Plugs (UPP) #4,5 and 6. Contract also deliver to the ITER Site and to ensure that the product meets the technical requirements defined in this Technical Specification.

4 Procurement Process & Objective

The objective is to award a Supply Contract through a competitive bidding process.

The Procurement Procedure selected for this tender is called the Open Tender procedure.

The Open Tender procedure is comprised of the following four main steps:

- Step 1- Prior Indicative Notice (PIN) :
  The Prior Indicative Notice is the first stage of the Open Tender process. The IO formally invites the Domestic Agencies to publish information about the forth-coming tender in order to alert companies, institutions or other entities about the tender opportunity in advance. **Interested tenderers are kindly requested to return the expression of interest form (Annex I) by e-mail by the date indicated in the procurement timetable below.**

- Step 2 - Invitation to Tender (ITT) :
  Within 14 days of publishing the Prior Indicative Notice (PIN), the Invitation to Tender (ITT) will be advertised. This stage allows interested bidders who have seen the PIN to obtain the tender documents and prepare and submit their proposals per the tender instructions.

- Step 3 – Tender Evaluation Process :
  Tenderers' proposals will be evaluated by an impartial, professionally competent technical evaluation committee of the ITER Organization. Tenderers must provide details demonstrating their technical compliance to perform the work in line with the technical scope and per the criteria listed in the invitation to tender (ITT).

- Step 4 – Contract award :
  A Supply contract will be awarded based on best value for money according to the evaluation criteria and methodology described in the Invitation to tender (ITT).

5 Procurement Timetable

The tentative timetable is as follows:

Milestone	Date
Publication of the Prior Indicative Notice (PIN)	23 June 2025
Deadline for Submission of Expression of interest form	03 July 2025
Request for Proposals (RFP)- Invitation to Tender (ITT) advertisement	07 July 2025
Clarification Questions (if any) and Answers deadline	08 August 2025
Answers to Clarifications	11 August 2025
Tender Submission in IPROC	18 August 2025
Tender Evaluation & Contract Award	September/October 2025
Contract Signature	September/October 2025

6 Quality Assurance Requirements

Prior to the commencement of any work under this Contract, the selected Contractor shall produce a "Quality Plan" and submit it to the IO for approval, describing how they will implement the ITER Procurement Quality Requirements.

7 Contract Duration and Execution

The duration shall be for 48 months. No work shall commence before the date of final signature of the Contract.

8 Experience

The Contractor is expected to provide in the following:

- **Proven Expertise in manufacturing of B4C blocks :** Boron carbide ceramic blocks shall be made by hot pressing process. The experience in B4C and more particularly with ^{10}B isotope evidence need to be shown.
- **Tight Tolerances**: Capable of achieving and maintaining tight manufacturability tolerances through advanced precision techniques and rigorous quality control measures.
- **Measurement Systems**: Skilled with measurement tools such as coordinate measuring machines (CMM) or other dimensional verification methods to verify tolerances.

- **Ultra High Vacuum Manufacturing**: Experience in manufacturing under stringent cleanliness conditions required for Ultra High Vacuum equipment.
- **Contamination Control**: Knowledgeable in procedures to minimize outgassing and contamination in the manufacturing of parts for vacuum components.
- **Nuclear Quality Standards**: Skilled in manufacturing components that meet rigorous nuclear quality standards.

9 Candidature

Participation is open to all legal entities participating either individually or in a grouping/consortium. A legal entity is an individual, company, or organization with legal rights and obligations established within an ITER Member State.

Legal entities cannot participate individually or as a consortium partner in more than one application or tender of the same contract. A consortium may be a permanent, legally-established grouping, or a grouping constituted informally for a specific tender procedure. All consortium members (i.e. the leader and all other members) are jointly and severally liable to the ITER Organization.

In order for a consortium to be acceptable, the individual legal entities included therein shall have nominated a leader with authority to bind each member of the consortium, and this leader shall be authorised to incur liabilities and receive instructions for and on behalf of each member of the consortium.

It is expected that the designated consortium lead will explain the composition of the consortium members in a covering letter at the tendering stage. Following this, the Candidate’s composition must not be modified without notifying the ITER Organization of any changes. Evidence of any such authorisation shall be submitted to the IO in due course in the form of a power of attorney signed by legally authorised signatories of all the consortium members.

10 Sub-contracting Rules

All sub-contractors who will be taken on by the Contractor shall be declared with the tender submission in IPROC. Each sub-contractor will be required to complete and sign forms including technical and administrative information, which shall be submitted to the IO by the tenderer as part of its tender.
The IO reserves the right to approve (or disapprove) any sub-contractor which was not notified in the tender and request a copy of the sub-contracting agreement between the tenderer and its subcontractor(s). Rules on sub-contracting are indicated in the RFP itself.

IDM UID
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VERSION CREATED ON / VERSION / STATUS
19 Jun 2025 / 1.4 / Approved

EXTERNAL REFERENCE / VERSION

Technical Specifications (In-Cash Procurement)

Technical Specification for B4C Shielding Material

This specification defines the technical and quality requirements for the procurement, manufacturing, inspection, and acceptance ofBoron Carbide (B4C) shielding material used in nuclear applications. B4C is selected for its high neutron absorption cross-section, thermal stability, and structural integrity under irradiation, making it a critical material for radiation shielding in fusion and fission reactor environments.

Table of Contents

1 Preamble

This Technical Specification is to be read in combination with the General Management Specification for Service and Supply (GM3S) [1] that constitutes a full part of the technical requirements. In case of conflict, the content of the Technical Specification supersedes the content of [1].

2 Purpose

The purpose of this Contract is for the procurement of Boron Carbide (B_4C) ceramic blocks to be used for neutron shielding of the ITER diagnostic ports. The ceramic block will be for the Equatorial Port Plugs (EPP) # 2, 8 &17 and Upper Port Plugs (UPP) #4, 5 and 6.
This purpose is to be executed under a Framework Contract format, with task orders identified for deliverables per Port Plug as well as the detailed scope of work and place of execution.

3 Acronyms & Definitions

3.1 Acronyms

The following acronyms are the main one relevant to this document.

Abbreviation	Description
CRO	Contract Responsible Officer
DR	Deviation Request
DA	Domestic Agency an organization set up under the ITER Framework Agreement to provide goods or services to the ITER Organization through Procurement Arrangements (PA) and Task Agreements (TA)
DSM	Diagnostics Shielding Module
EPP	Equatorial Port Plug
GM3S	General Management Specification for Service and Supply
HP	Hold Point
IDM	ITER Document Management System
IO	ITER Organization
MIP	Manufacturing and Inspection Plan a document listing the sequence of operations relevant to the implementation of PA. The document is developed by the suppliers and subcontractors in accordance with document ITER_D_22MDZD Requirements for Producing an Inspection Plan, approved by the RF DA and accepted by the IO
NC	Non-Conformance a deficiency in characteristics, documentation, or procedure that renders the quality of an item or activity unacceptable or indeterminate
PP	Port Plug
PPS	Product Procurement Specification
PRO	Procurement Responsible Officer
QC	Quality Class
QMS	Quality Management System

QP	Quality Plan. The document should describe the set of instruction, guidance, specified actions concerning to the quality assurance. The document is developed in accordance with document ITER_D_22MFG4 - Quality Requirements for IO Performers
RPrs	Preliminary Safety Report
RO	Responsible Officer
TO	Task Order
ST	Shielding Tray
UPP	Upper Port Plug
VQC	Vacuum Quality Class
VV	Vacuum Vessel

3.2 Definitions

Client: ITER Organization, referred to as IO in the rest of this document.

Contractor / Supplier: shall mean an economic operator who have signed the Contract in which this document is referenced. In this document as well as in the mandatory Appendixes referred here, the names Contractor and Supplier are used interchangeably.

In-Vessel Components: This term is used in this specification for indicating all the components, sub-assemblies and provision for services (electrical, gas and cooling water) that constitute the Integrated Diagnostic Port Plug Assembly, other than Interspace and Port Cell Support structures and their associated components *(that are called as Ex-vessel components)*

Integrated Diagnostic Port Plug Assembly: This assembly mainly consists of Diagnostic Shield Modules (DSM) with provision for shielding (Shielding blocks, Shielding Trays and Stainless Steel backfilling and associated attachments) housing associated diagnostic tenant systems and Service Systems (electrical, cooling water and gas) connections with provisions for required layouts. This DSM is contained in the Customised Port Plug Structure and attached to the Diagnostic First Walls.

Machine: The term "Machine" is used to describe the ITER Tokamak Machine where the final installation of these deliverables will be done.

Assembly: The term "Assembly" is used to describe the assembly activities of the components (mainly mechanical) of the deliverables planned by the Contractor. These activities are not in the scope of this contract.

Boron Carbide Structure: Boron Carbide (B_4C) blocks are solid materials composed primarily of boron and carbon, Renowned for their exceptional hardness and lightweight properties, B_4C blocks are widely used in various applications, particularly in the field of radiation shielding and neutron absorption

IDM ID: This is the IDM document number referred.

Set: Several blocks were made from the one combination of raw materials (one homogenic mixture of the boron carbide powder and binding agent, for example)

Batch: Several blocks were made at the same conditions (temperature, atmosphere, etc.).

Block: a single piece of material made in accordance with the Specification, drawings and the Purchase Order

4 Applicable Documents & Codes and standards

4.1 Applicable Documents

This is the responsibility of the Contractor to identify and request for any documents that would not have been transmitted by IO, including the below list of reference documents.

This Technical Specification takes precedence over the referenced documents. In case of conflicting information, this is the responsibility of the Contractor to seek clarification from IO.

Upon notification of any revision of the applicable document transmitted officially to the Contractor, the Contractor shall advise within 4 weeks of any impact on the execution of the contract. Without any response after this period, no impact will be considered.

Ref	Title	IDM Doc ID	Version
1	General Management Specification for Service and Supply (GM3S)	82MXQK	1.4
2	Technical Specification for the supply of B_4C for IO	AFK75K	1.2
3	Codes and Standards for ITER Mechanical Components	25EW4K	5.0
4	ITER Vacuum Handbook	2EZ9UM	2.5
5	ITER Procurement Quality Requirements	22MFG4	6.3
6	Deviation Request Template	2LRNQP	4.0
7	ITER Configuration Management Plan	27LHHE	3.3
8	Manufacturing Inspection Plan Template for Manufacturing Database (MDB)	VGDUSJ	2.3
9	Working Instruction for the Delivery Readiness Review (DRR)	X3NEGB	3.0
10	ITER Quality Assurance Program,	22K4QX	8.5
11	Procedure for management of Deviation Request,	2LZJHB.	9.1
12	ITER Policy on Safety, Security and Environment Protection Management	43UJN7	3.1
13	Procedure for management of Nonconformities	22F53X	9.1
14	Guideline for identification (Symptoms) of Counterfeit, Fraudulent and Suspect Items (CFSI)	XKUKAX	1.0
15	Quality Classification Determination	24VQES	6.0
16	NCR Database - Introduction & How to for Suppliers and Contractors	SM2JWP	3.10
17	ITER_D_2X4E9A - Root Cause Analysis Leaflet	2X4E9A	1.1
18	Chemical composition and impurity requirements for materials	REYV5V	2.3
19	ITER Numbering System for Components and Parts	28QDBS	5.1
20	Procedure for Labelling on Physical Items	VYJ7U2	1.4
21	WI for Preservation Activities during Storage, Construction and On site before turnover	WRCKZB	3.2

4.2 Applicable Codes and Standards

Requirements relative to applicable Codes and Standards are set out in [2].

Alternative national standards and/or material supplier procedures can be applied if they are required. IO and DA have to be agreed with used documents. The list of applicable standards should be included into Top-Level Manufacturing Plan of the Supplier, which should be send and approved by the IO before production starting. If during the execution of the contract (e.g. delivery of materials in several batches over a long period of time), the Supplier is willing to use a new version of a standard or a new standard superseding an applicable standard quoted in this document then it should be written approved by the IO in proper way. Any changes proposed by the Supplier may be acceptable with prior processing through deviation request according to "Procedure for the management of Deviation Request" [11] provided conformity assessment to all criteria is verified. The justification section of the Deviation Request shall contain significant arguments for proving proposed changes.

In addition, provisions included in the ITER Vacuum Handbook (2EZ9UM) [4] in general and particularly in section 5 shall be considered as well.

4.3 Reference standards

ISO 9001:2015	Quality management systems - Requirements
ISO 18754:2013	Fine ceramics (advanced ceramics, advanced technical ceramics) determination of density and apparent porosity
ISO 3369:2006	Impermeable sintered metal materials and hard metals determination of density
ISO 22309:2011	Micro beam analysis -quantitative analysis using energy-dispersive spectrometry (EDS)
ISO 17561:2016	Fine ceramics (advanced ceramics, advanced technical ceramics) - Test method for elastic moduli of monolithic ceramics at room temperature by sonic resonance
ISO 3312:1987	Sintered metal materials and hard metals -Determination of Young modulus
ISO 2768-1:1989	General tolerances - Part 1: Tolerances for linear and angular dimensions without individual tolerance indications
ISO 2768-2:1989	General tolerances -Part 2: Geometrical tolerances for features without individual tolerance indications
ASTM C750	Standard specification for Nuclear-Grade Boron Carbide Powder
ASTM C791	Standard test Methods for chemical, mass spectrometric, and spectrum chemical analysis of Nuclear Grade Boron Carbide
ASTM D1193	Specification for Reagent Water
ASTM E105	Standard Practice for Probability Sampling of Materials
ASTM C371	Standard Test Method for Wire-Cloth Sieve Analysis of Non-Plastic Ceramic Powders
ASTM E11	Specification for Woven Wire Test Sieve Cloth and Test Sieves
ASTM E1559	Standard Test Method for Contamination Outgassing Characteristics of Spacecraft Materials

4.4 Applicable standards

- ITER Vacuum Handbook ITER_D_2EZ9UM
- Appendix 3 of ITER Vacuum Handbook ITER_D_27Y4QC
- Appendix 13 of ITER Vacuum Handbook ITER_D_2ELUQH
- Appendix 17 of ITER Vacuum Handbook ITER_D_2EXDST
- Technical specification for outgassing samples ITER_D_QUCYDA
- EN10204 Metallic Products Types of Inspection Standards

5 Scope of Work

The ITER Project is an international effort aimed at demonstrating the scientific and technological feasibility of nuclear fusion energy. The nuclear fusion reactions occur within the volume of the ITER Vacuum Vessel (VV), which is filled during operation with a hot gas (plasma). A key aspect of the research program of ITER is the diagnosis of the plasma and the first-wall, e.g. the plasma temperature, density, radiative properties, first-wall resilience, etc. For this purpose, a large number of different types of diagnostic equipment peer into the ITER vacuum vessel from many different vantage points.

The diagnostic Port Plugs (PP) are components which serve as common platforms for a variety of diagnostics systems. Diagnostic equipment and shielding are integrated together into three cassettes known as “Diagnostic Shielding Modules” (DSM) which, in turn, are attached to the PP structure that is part of the ITER VV confinement barrier.

The back of the PP structure is formed by the closure flange (1) that connects the PP to the ITER VV ports and the closure plate (2), the region where most of the penetrations transmitting diagnostic signals from the inside to the outside of the VV are located.

PPs structures are boxes inserted into the regular penetrations (port extensions upper and equatorial) of the ITER VV. The DSMs fill the internal space of PP structures housing diagnostics, shielding and common services.

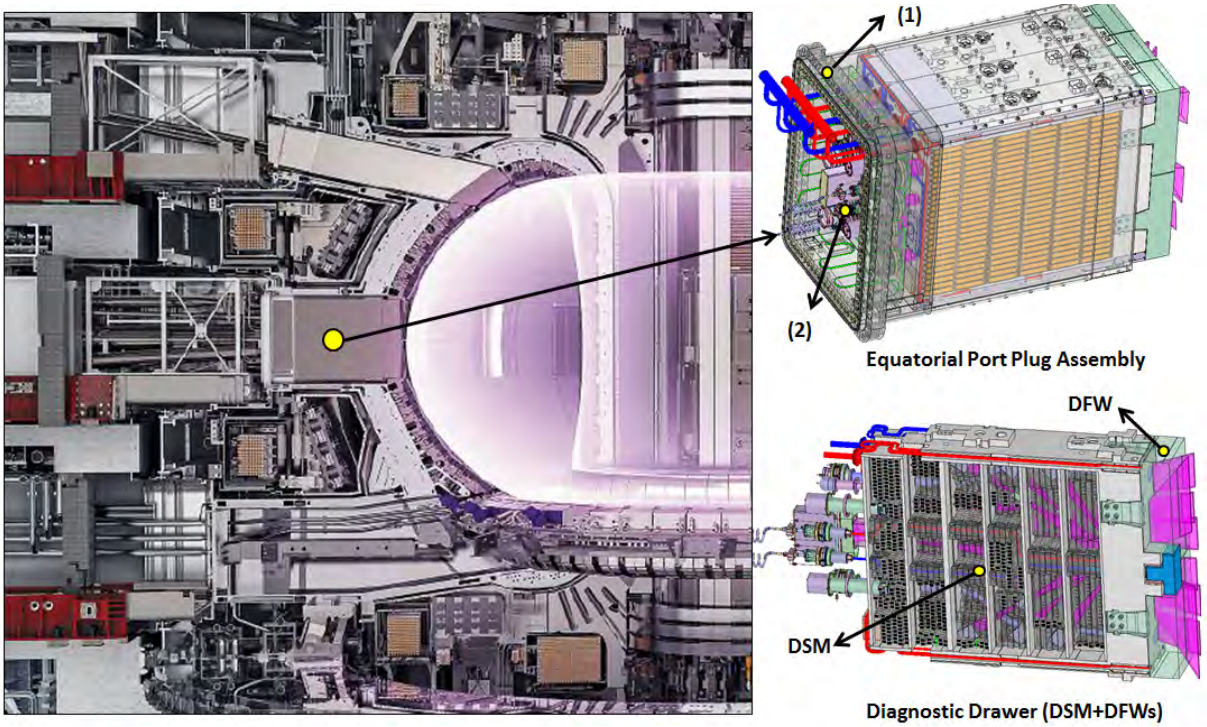


Figure -1 Diagnostic EPP in the ITER tokamak

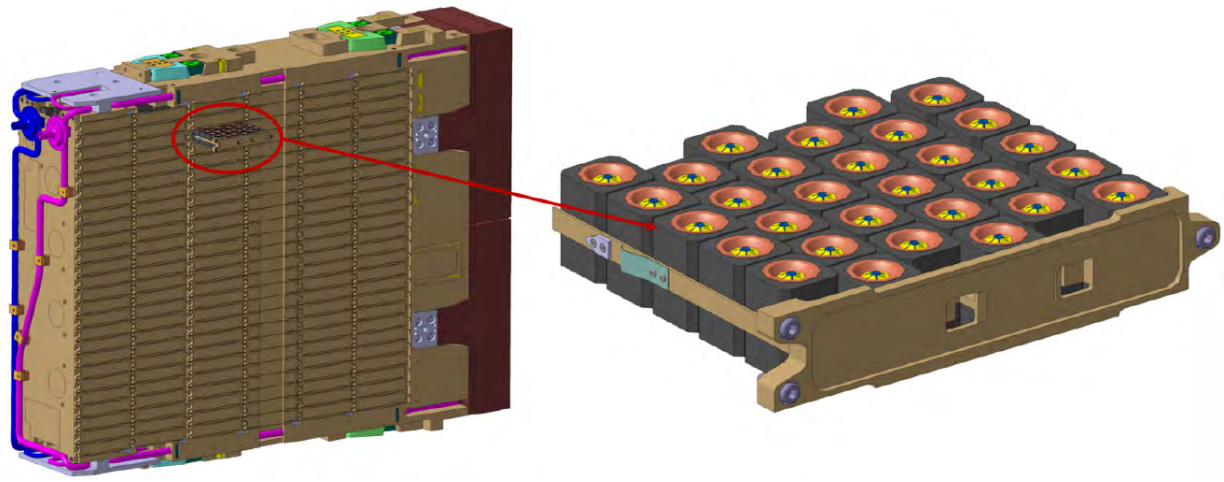


Figure -2 EPP DSM shielding trays.

Inside of a DSM, all the spaces not occupied by diagnostics, sight lines, services, etc… are to be filled with B_4C as shielding material. The mechanical attachment solution of B_4C elements to the DSM structure must guarantee the integrity of the fragile shielding ceramic elements during the different events affecting the EPP in normal and off-normal conditions.

The Shielding Tray (ST) is the basic unit used as shielding element which is assembled on DSM the frame (see figure 5.2). STs are formed by a stainless-steel frame and B_4C blocks which are attached to the frame using secured pre-stressed push-on fasteners. STs easily allow the creation of internal spaces for sight lines implementation and diagnostics integration. Typical weight of a ST is in the order of 10 kg, fully compatible with the RH standard means available.

B_4C blocks are standard shaped and may be serially manufactured using hot pressing and sintering techniques with no need of specific machining.

This Technical specification covers the general requirements for the procurement of Boron Carbide (B_4C) ceramic blocks to be assembled on STs. The arrangement is shown in the next picture.

Figure -3 Boron carbide block arrangement (B_4C) in shielding tray

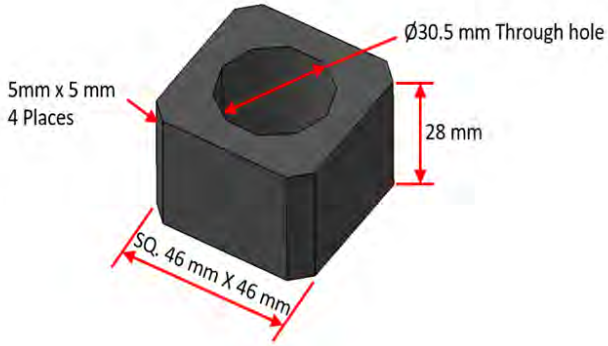


Figure -4 Typical Configuration of B_4C Block

6 Scope of Supply

6.1 Description

The scope of supply under this FWC contract includes the procurement of Boron Carbide (B_4C) ceramic blocks for the internal shielding of the ITER Diagnostic Port Plugs.

- Equatorial Port Design: Each of the 3 Equatorial Diagnostic Port Plugs includes 3 Diagnostic Shielding Modules (DSMs), totaling 9 DSMs (3 ports × 3 DSMs).

- Upper Port Design: Each of the 3 Upper Diagnostic Port Plugs includes 1 DSM, totaling 3 DSMs (3 ports × 1 DSM).

Note: In the Upper Port Design, each DSM is modeled with left and right shielding cases, but it is fabricated and welded as a single monolithic DSM unit.

In total, 12 DSMs (9 from Equatorial Ports and 3 from Upper Ports) will be filled with B_4C ceramic blocks for neutron shielding. The specific quantity of B_4C blocks, along with detailed technical drawings, will be provided with each respective Task Order.

6.2 Material requirements

The chemical, physical, electrical, thermal and mechanical properties of boron carbide are related with the IO report on Properties of Boron Carbide (Properties of Boron Carbide (B_4C) (ITER_D_Q43KAY)) and summarized as below. Unless otherwise specified in this specification, the values of ITER_D_Q43KAY shall apply.

6.2.1 Chemical composition

As neutron absorption efficiency is the key factor of the system used by the Customer, the boron 10 isotopic content shall be maximized whenever it is possible. The following options shall be considered by the Supplier in the tender:

	^{10}B isotopic content	**Applicability**
Option 1	19.9 ± 0.3 atom %	Mandatory
Option 2	50.0 ± 2 atom %	Appreciated
Option 3	90.0 ± 2 atom %	Appreciated

Table -1 ^{10}B isotopic content

The rest of chemical composition of blocks is similar with boron carbide powder specified in ASTM C750. The Customer can relax chemical composition requirement, but it shall be agreed with the IO.

Constituent	**Composition, weight %[A]**
Total B	76.5-81
Carbon	~19
Total B_4C	98.0 min
Iron	0.5 max
Cobalt	0.03 max

Table -2 Chemical composition

[A] *Unless otherwise indicated (percentages based on a dry weight of Boron Carbide)*

The raw powder chemical composition analysis is not forced by the Specification. However, it is recommended to perform regular analysis of raw materials as a part of incoming inspection. Nevertheless, the Supplier should distribute to the IO all raw material certificates in accordance with EN10204 Type 2.1 or equivalent.

6.2.2 General and Physical Properties

The bulk density of block should not be less than 2250 kg/m^3. ISO 18754:2013, ISO 3369:2006 or other agreed with the IO standards are applicable.

The mechanical properties such as Compressive Strength, Fracture Toughness, Fracture Energy, Young's Modulus, Shear Modulus, Bulk Modulus and Poisson's ratio are not significant for the diagnostic port neutron shielding, However, these mechanical properties inspections also need to be tested in samples as to prove the purchase meet the basic requirements.

The mechanical properties of B_4C are listed in following table.

Mechanical Properties	Unit	Values
Compressive strength	MPa	1200-2900
Fracture toughness	$MPa.m^{-1/2}$	4.5-5.5
Fracture Energy	$J.m^{-2}$	25
Young's modulus (E)	GPa	441-472
Shear Modulus (G)	GPa	186-200
Bulk Modulus (K)	GPa	199-254
Poisson's ratio	-	0.17-0.22

Table -3 General and Physical Properties

6.2.3 Thermal Properties

The thermal properties are given below. They are used as an input for different analysis during design phase. That is why the Supplier shall demonstrate once for qualification series that thermal properties of blocks (product form) correlate with values-temperature tendency indicated in the Specification: Specific Heat (Cp), Mean Linear Thermal Expansion Coefficient (α), and Thermal Conductivity (K). As an alternative option, it shall be demonstrated the coincidence of measured values with the same one used for analysis during design phase.

The thermal properties of B_4C are listed in following table 4.

Thermal Properties	Unit	Room@25°C	Room@100°C	Room@500°C
Specific Heat(C_P)	$J.kg^{-1}.K^{-1}$	950-1100	1100-1400	1800-2000
Mean Linear Thermal Co-efficient (α)	$10^{-6}.K^{-1}$	-	2.70-3.40	4.50-4.78
Thermal Conductivity (K)	$W.m^{-1}.K^{-1}$	27.0-42.0	21.0-40.0	15.0-21.0

Table -4 Thermal Properties

6.2.4 Outgassing rate

The boron carbide blocks are classified as VQC-1B elements and they shall satisfy to ITER Vacuum Handbook (ITER_D_2EZ9UM) requirements for in vacuum used materials (Section 5). It means that the particular material (hot pressed boron carbide, or sintered, or another one) shall be approved by the ITER Vacuum RO by submitting the Material Approved Request Form (ITER_2MGWR4). The only approved material using is allowed.

The outgassing rates of materials used on ITER vacuum systems shall be consistent with the values of the maximum steady state outgassing rate at 100°C are $1x10^{-8}$ $Pa.m^3.s^{-1}.m^{-2}$ for H_2 and $1x10^{-10}$ $Pa.m^3.s^{-1}.m^{-2}$ for impurities.

An outgassing rate acceptance test shall be performed for all VQC-1 components to an accepted procedure such as those described in the ITER Vacuum Handbook Appendix 17

(ITER_D_2EXDST). Outgassing acceptance tests may, with prior acceptance, be performed using representative samples which follow, and are subjected to, the complete manufacturing process.

The IO should approve the measurement report.

6.3 Dimensions, Permissible Variations and Surface Finish

B_4C blocks shall conform to the dimensions and dimensional tolerances as established by the Manufacturing Process Plan, the Purchase Order and applicable procurement drawings. The main dimensions shall be recorded. The tolerances and flatness are given in the drawings.

Unless otherwise specified, general dimensional tolerances are H14, h14, ±IT14/2 in accordance with ISO 2768-1.

The maximum average surface roughness shall be Ra6.3 for the supplied B_4C blocks.

For tender purpose, the B_4C blocks shape could be based on the drawing called "B_4C_BLOCK" (ITER_D_96GSS3).

6.4 Visual Examination

All external surfaces of boron carbide blocks shall be checked by a visual examination in accordance with written procedure. The procedure shall be agreed with the Customer. The blocks shall be free of scale, strings, tears, nicks or other injurious defects.

Surfaces shall be thoroughly examined during all phases of production to check the blocks. All surfaces shall be plane, uniform and free from wrinkles, buckles, blowholes, tears, cracks and inclusions. Allowable on-surfaces defects are chips with depth not more than 1.5 mm and length not more than 5 mm; scratches with depth not more than 0.3 mm, the length is not regulated.

A visual examination shall be performed on all parts. When the examination indicates the presence of unacceptable defects on the block, it will be rejected.

6.5 Tests requirements

The Supplier should demonstrate stability and reproducibility of the technology by making qualification series of blocks before serial production. Two batches of blocks are enough for qualification series (but not limited). A value of the qualification series should be agreed between the Supplier and the Customer, and it should be included into the Purchase Order.

Type and frequency of tests are shown in the Table 4. All tests should be performed in accordance with standards or Supplier's procedures mentioned in the Manufacturing Program. Supplier's tests procedures should be approved by the IO.

Test Type	Sampling	Comments
Visual Examination	100% of surfaces for 100% blocks	In accordance with drawings
Dimensional Check	100% blocks	In accordance with drawings
Density	15% blocks from ***qualification series***	An equal quantity of samples from different batches
	10 blocks from batch for ***serial production***	Different from chemical composition and outgassing samples
Chemical composition	1 block per set or batch powder (as in epy Purchase Order specify)	Different from outgassing and density samples

Mechanical Properties	10 blocks from batch for ***serial production***	Different from chemical composition and outgassing samples
Outgassing rate	The quantity of samples from ***qualification series*** should be enough to satisfy requirements for outgassing load, see Section 6.4	Samples could be the same for density measurements
	Random control from ***serial production*** (total quantity of samples from serial production should be enough to satisfy requirements for outgassing load, see Section 6.4)	Different from chemical composition and density samples
Thermal Properties	To be determined by the Supplier (as many as need for tests performing)-it includes to ***qualification series***	Tests are performed once before series production to demonstrate compliance with properties (see ITER_D_Q43KAY) were used for neutron shielding analyses during design phase

Table -5 Type and sampling of tests

Material Test Reports shall be provided to the Customer prior to delivery as per Table -5 Type and sampling of tests. Material and certification should follow this Specification. Material cannot be accepted if it does not comply with the Specification.

6.6 Quality Control Provisions

The quality assurance system behind the material procurement in RCC-MR regardless of the procurement route is based on the fact that the material Manufacturer must certify the conformity of the part or product with the order. The declaration of conformity shall also include the certification documents similar to those requested in EN 10204:2004 for metallic materials.

The confirmation of compliance shall be stated in or appended to the certificate, depending on the type of certificate issued.

In case the Supplier has carried out a specific assessment for materials and has a proper quality-assurance system, certified by a competent body established within the European Community (EU), it is assumed that they can certify conformity with the requirements of this technical specification (PPSs). Then, the specific assessment of the quality system covers all relevant processes and material properties referred in the material specifications. In this case inspection certificate 3.1 in accordance with EN 10204:2004 and an inspection report is enough.

When the Supplier does not have a quality assurance system as described above, inspection certificate type 3.2 in accordance with EN 10204:2004 shall be provided by the material Manufacturer before agreement with IO. In this case there shall be a justification from a Third Party following the material testing and ensuring that the conformity of the material meets the requirements of applicable EN Standards and PPSs.

EN 10204:2004 specifies the different types of inspection documents supplied to the purchaser, in accordance with the requirements of the order, for the delivery of all metallic products, whatever their method of production.

6.7 Material Traceability

A material traceability system shall be established to ensure that only correct and accepted products and parts are used or installed during manufacturing activities. This system shall be implemented so that traceability shall be guaranteed from the reception stage to the delivery including all intermediate steps during the manufacturing route.

This system shall be implemented through dedicated procedures which shall be subjected to the Client's approval.

If marking/stamping anomalies comprising incoming material identification or traceability occur and they cannot be properly traced back through further investigations, material concerned shall be considered as non-conforming material until appropriate test/verifications have been made and documented.

An inspection certificate type 3.1 in accordance with EN10204:2004 shall be provided. The certificate specifies that the material was manufactured, sampled, tested and inspected in accordance with the material specification. The document is validated by the Supplier's authorized inspection representative, independent of the manufacturing department.

6.8 Marking

The package of each batch should be legibly identified with the following information. The marking should be performed by impression stamping or other acceptable means specified by the Supplier.

- Supplier name or symbol
- Grade of material
- Drawings
- Unique identification number related to quality history
- Purchase Order Number
- Quantity (in case of package for set of blocks)

6.9 Storage and Handling

Storing conditions should be included in the Manufacturing Process Plan for the Customer information. Storing of blocks should be organized by the Customer in accordance with the Supplier recommendations. The Customer should prepare a procedure (or similar document) with guideline for blocks checking and preparing for final use (installation into Diagnostic Shielding Module of Port Plug for example). It should be approved by the IO.

6.10 Cleanliness Preservation

Requirements in ITER Vacuum Handbook (2EZ9UM) [4] section 24,28, 29, 31 and appendix 13 relative to protection and preservation of cleanliness shall be respected.

After final cleaning, the handling of vacuum equipment shall be strictly controlled to preserve cleanliness.

Cleaning shall be performed in the workshop.

Further fabrication, conditioning, transportation, etc., shall also include dispositions to preserve and/or flow down the required degree of cleanliness according to aforementioned requirements.

In many cases vacuum components will be delivered to the ITER site in advance of installation to the ITER vacuum system. Vacuum components shall be stored in such a state as not to degrade the vacuum performance. So, the Customer has to prepare the Long-term storage procedure for

boron carbide blocks, and it shall be subject of reference to the Section 31 of the ITER Vacuum Handbook (ITER_D_2EZ9UM). It shall be agreed between the IO, Customer and Supplier.

The life of the product warranty shall be mutually agreed between the Customer and Supplier.

6.11 Packing

Packing conditions and materials will be defined in a packing procedure that shall meet the requirements of the ITER Vacuum Handbook (2EZ9UM v2.5) [4] section 29. This procedure shall be subjected to the Client's approval.

All components shall be visually inspected immediately before starting final packing for transport.

All components shall be wedged, cushioned and blocked to prevent movement and any physical damage to the component or wrapping material during transport.

All components and the main subcomponents shall be clearly marked in a permanent way and in a visible place with the Client's official numbering system according to the document "ITER Numbering System for Components and Parts (ITER_D_28QDBS)" [19].

The Components' labelling shall follow the procedure ITER_D_VYJ7U2, Procedure for Labelling on Physical Items [20].

A detailed 'component identification standard' together with printed label templates and RFID tagging standards will be provided by the Client.

The equipment shall be permanently marked on at least two sides of each box/package with good quality non-fading indelible ink/paint in characters approx. 150mm high (depending upon size of the packages):

- The ITER Organization and the Supplier's name marked on the outside of the packing.
- The customers Purchase Order Number.
- Origin of manufacture (country).
- Overall size of the individual pieces of equipment.
- The gross weight including the packing.
- Centre of gravity in three planes.
- The lift points with the SWL.
- Wherever necessary the packages will be marked on all four sides with special shipping marks such as "TOP", "BOTTOM", "DO NOT OVER TURN", "HANDLE WITH CARE", "FRAGILE","KEEP DRY" etc. as well as special symbol indicating the top (see **Error! Reference source not found.**).
- Marking/symbols for storage and handling shall also be indicated on packages.

If the packing is a purpose made container, it must be marked with a unique identity number, and Purchase Order Number, if different from that of the component.

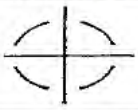
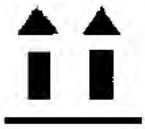
No.	Name of Mark	Stenciled Marked and Letters	Remarks
1	Center of gravity		At the center of gravity
2	Sling		Where sling wire is to be applied
3	Top		When package cannot be placed upside down
4	Keep Dry	 KEEP DRY	For boxes that need protection from water and moisture
5	Handle with care	 HANDLE WITH CARE	For fragile cargo
6	Heavy weight this end	 HEAVY WEIGHT THIS END	When center of gravity is on one side
7	Danger	 DANGER	For boxes containing dangerous and toxic materials

Figure -5 Auxiliary Shipping Marks.

6.11.1 Packing inspection

The Supplier shall demonstrate the soundness of the packing after installation on the transport through an inspection.

The Inspection shall be extended to a visual, dimensional quantity check of equipment and materials, etc. based on the approved detail packing and shipping procedure.

Packing inspection will be performed by the Supplier, himself in accordance with the requirements described in this appendix and drawn up by the purchaser in a procedure approved by the Client.

The Supplier shall also check the conditions during transportation and quality of the contents, etc. in each package on his own responsibility so that the requirements of this Technical Specification are properly met.

When the inspection is finished, the Supplier shall prepare a report including photographic records showing shipping marks, exterior and interior views of packages and how the equipment or machines are fixed on the transportation frame, etc., per one package.

If the Client pointed out any defect of packing the Supplier shall modify or fix at once it at his own responsibility and expenses. The Supplier shall inform to the Client about the results of the modification.

In case any damages or unexpected expenses occur due to delay of shipment owing to the said modification, the Supplier shall be responsible for these damages of expenses.

6.11.2 Documents attached to the package

A packing list shall be issued and signed for each despatch. Packing lists shall be numbered sequentially for each despatch.

Each package will be accompanied with two (2) copies of the packing list each and other specifications describing the contents:

- One copy of the above packing list shall be sheathed in a watertight envelope and fastened on the inside of the packing.
- The other also in a watertight envelope shall be fixed to outside the package in such a manner not to be separated or lost during shipment.

Each shipment shall be accompanied by a delivery report shall be prepared by the Supplier, stating as a minimum:

- The packing date.
- The full address of the place of delivery and the name of the person responsible to receive the package, as well as of the Supplier's name and full address.
- Bill of materials.
- Security measures.
- Contractor's Release Note.
- Packing list.
- Material Safety Data Sheet (MSDS).
- The declaration of integrity of the package.
- The declaration of integrity of the components.
- Any additional relevant information on the status of the components.

The delivery report shall be signed by a representative of the Client and its Supplier. The signature by the Client of the delivery report prior to shipment represents a Hold Point (HP).

6.12 Shipping and Transportation

The Supplier shall ensure that the packed components are safely and securely attached to the road transporter and that the road transport organisation establishes a safe route.

The off-loading of the packed components from the road transport at the port of exit and onto the ship if applicable shall be responsibility of the Supplier.

The safe and secure installation on the ship is the ultimate responsibility of the ships master and the ship owner.

The Supplier shall ensure that the transport organisation, port of exit authorities and the shipping company are insured for damage and/or loss of the components.

Copies of customs declarations, export/import licenses, goods dispatch/receipt notes shall be kept for incorporating into the overall documentation.

6.13 Delivery

Upon receipt of the package, the Client shall open the package and make a visual inspection of its content to check:

- The integrity of the package, including identifying visible damage
- The number and type of components contained in the shipment
- The enclosed documentation
- The integrity of the components.

In the case of anomalies, the Client shall make any additional relevant remark on the inspection.

If the components are in an acceptable condition, the Client will sign the Delivery Report. The signature of the Delivery Reports is a Client's Hold Point. The original of the Delivery Report shall be kept by the Client and a copy of it shall be kept by the Supplier.

6.14 Unpacking

The Supplier shall provide detailed procedure subjected to the Client's approval for unpacking describing how the Boron carbide block components must be removed from the packing safely and without damage.

6.15 Milestones and Documentation

This section summarizes the main milestones and corresponding documentation, which have been detailed in the previous sections.

Milestones	Deliverables from the supplier
Contract signed	
Before the Manufacture	QP, MIP, detailed drawings and coherent operation instructions
During Manufacture	Documentations required in the MIP
During contract implementation	DR and NCR as necessary
After factory acceptance test	Factory acceptance test report as per the section 6.5
Before the delivery	EOMR, Release Note, Signed MIP, Storage & Preservation Procedure
Delivery	

Table -6 Main milestones and documentation requirements

6.16 Final Acceptance

The Contractor shall provide commercial warranty as per IO Supply Contract General Conditions covering repair or replacement of the components up to one year after the Provisional Acceptance of the item.

The Final Acceptance shall be granted upon expiry of the warranty period and when all defects or damages have been rectified.

The Final Acceptance Certificate shall be signed by both the Client and the Contractor

7 Location for Scope of Work Execution

The Contractor shall perform the work at their own location and deliver the manufactured parts to the Client's delivery place to be defined in the particular Task Orders".

8 Deliverables and Schedule Milestones

The maximum expected duration from the contract signature to the supply of the scope of work is 36 months plus option for 12 months.

8.1.1 List of deliverable documentation

The Supplier shall provide IO with the documents and data required in the application of this Technical Specification, the GM3S Ref [1] and any other requirement derived from the application of the contract.

You can find here below a minimum list of documentation, but not limited to, that are required within the expected timing:

Category	Document Type	Further Description	Expected Timing (T0+x) *
Other Manufacturing Output	Material Certificate	Material Certificates of individual items delivered	To be defined in corresponding Task Orders

(*) T0 = Commencement Date of the contract; X in months.

9 Quality Assurance requirements

The Supplier should have an ITER approved Quality Management System in accordance with ISO 9001:2015. The suppliers shall submit QMS Description, Quality Plan (QP), Manufacturing Program (MP) and Manufacturing and Inspection Plan (MIP) for the DA and the IO approval.

The supplier shall provide manufacturing service according to the MIP agreed by DA and IO. The supplier has the responsibility to notify DA and IO to take part in the quality control activities based on an approved MIP.

10 Safety requirements

The scope under this contract does not cover for PIC and/or PIA and/or PE/NPE components, [1] GM3S section 5.3 applies.

11 Special Management requirements

Requirement [1] GM3S section 6 applies in full.

IDM UID
AU8PRS

VERSION CREATED ON / VERSION / STATUS
28 May 2025 / 1.0 / Approved

EXTERNAL REFERENCE / VERSION

Technical Specifications (In-Cash Procurement)

Technical Specification for the Task Order#1 for the Procurement of Boron Carbide (B4C) ceramic blocks for Upper port 4/5/6

This Technical Specification refers to the Task Order 1 of the Framework Contract for the Procurement of Boron Carbide (B4C) ceramic blocks for Diagnostic IO Port Plugs.
The TO#1 is focus on the delivery for the Upper port 4/5/6.

This document supplements the Technical Specification 8BRQGX and the General Management Specification for Service and Supply (GM3S) 82MXQK, specific to the deliverables of Upper port Plug (4/5/6).

SUPPLY

Table of Contents

SUPPLY

1 Preamble

This Technical Specification refers to the Task Order 1 of the Framework Contract for the Procurement of Boron Carbide (B4C) ceramic blocks for Diagnostic IO Port Plugs internals and is to be read in combination with the Framework Contract Technical Specification [1] and the General Management Specification for Service and Supply (GM3S) [2] that constitutes a full part of the technical requirements and the Framework Contract Specific.

2 Purpose

The purpose of this Contract is for the procurement of Boron Carbide (B4C) ceramic blocks for the assembly in shielding tray for the IO Port Plug as described in the Scope below. Exhaustive technical and delivery requirements of these parts are given in [1].

3 Acronyms & Definitions

3.1 Acronyms

The following acronyms are the main one relevant to this document.

Abbreviation	Description
CRO	Contract Responsible Officer
DR	Deviation Request
DSM	Diagnostics Shielding Module
EPP	Equatorial Port Plug
GM3S	General Management Specification for Service and Supply
HP	Hold Point
IDM	ITER Document Management System
IO	ITER Organization
NPE	Nuclear Pressure Equipment
PE	Pressure Equipment
PMI	Positive Material Identification
PP	Port Plug
PPS	Product Procurement Specification
PRO	Procurement Responsible Officer
QC	Quality Class
RPrs	Preliminary Safety Report
RO	Responsible Officer
TO	Task Order
UPP	Upper Port Plug
VV	Vacuum Vessel

3.2 Definitions

Client: ITER Organization, referred to as IO in the rest of this document.

Contractor: shall mean an economic operator who have signed the Contract in which this document is referenced. In this document as well as in the mandatory Appendixes and Annexures referred here, the names Contractor and Supplier are used interchangeably.

In-Vessel Components: This term is used in this specification for indicating all the components, that constitute the Integrated Diagnostic Port Plug Assembly, other than Interspace and Port Cell Support structures and their associated components *(that are called as Ex-vessel components)*

Machine: The term "Machine" is used to describe the ITER Tokamak Machine where the final installation of these deliverables will be done.

Assembly: The term "Assembly" is used to describe the assembly activities of the components (mainly mechanical) of the deliverables planned by the Contractor. These activities are not in the scope of this contract.

IDM ID: This is the IDM document number referred.

4 Applicable Documents & Codes and standards

4.1 Applicable Documents

This is the responsibility of the Contractor to identify and request for any documents that would not have been transmitted by IO, including the below list of reference documents.

This Technical Specification takes precedence over the referenced documents. In case of conflicting information, this is the responsibility of the Contractor to seek clarification from IO.

Upon notification of any revision of the applicable document transmitted officially to the Contractor, the Contractor shall advise within 4 weeks of any impact on the execution of the contract. Without any response after this period, no impact will be considered.

Ref	Title	IDM Doc ID	Version
1	Technical Specification for B4C Shielding Material	8BRQGX	1.0
2	General Management Specification for Service and Supply (GM3S)	82MXQK	1.4

4.2 Applicable Codes and Standards

Requirements relative to applicable Codes and Standards are set out in [1]

5 Scope of Supply

The Scope of Supply of this Task Order covers the procurement of all Boron Carbide (B4C) ceramic blocks. Shown in the next picture.

SUPPLY

Figure 5-1 - Boron carbide block arrangement (B4C) in shielding tray

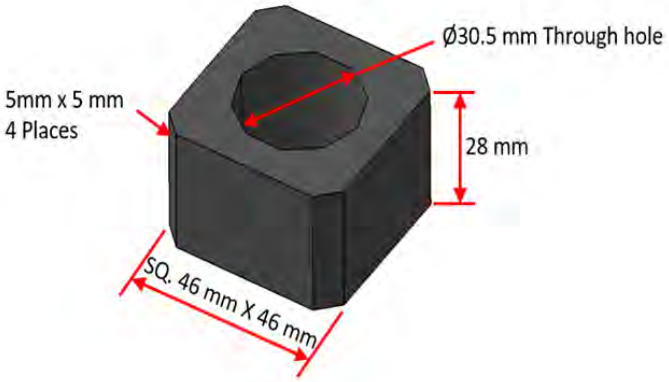


Figure 5-2 - Typical Configuration of B4C Block

6 Quantity and schedule of delivery.

In the scope of this TO the Boron Carbide (B4C) ceramic blocks to be used for the insertion in the shielding tray for the UPP 4 /5 / 6.

The delivery will be divided in 3 batch

- Batch 1: Upper port 04, 5.200 blocks
- Batch 2: Upper port 04, 5.200 blocks
- Batch 3: Upper port 05, 5.200 blocks

The total of the blocs delivered is 15 600.

Delivery number	Name of Delivery	Number of blocks to deliver	Time
#1	Batch 1 upper port 04	5 200 blocks	T0 + 3 months
#2	Batch 2 upper port 05	5 200 blocks	T0 + 6 months
#3	Batch 3 upper port 06	5 200 blocks	T0 + 9 months

SUPPLY

7 Location for Scope of Work Execution

The Contractor shall perform the work at their own location and deliver the manufactured parts to the Client's delivery place to be defined in the particular Task Orders".

8 Deliverables and Schedule Milestones

The delivery period for all the items described above is 09 months.

The delivery may be split in batches as proposed by the supplier (and approved by the IO) but always within the delivery period of 09 months from the task order signature.

Before delivery, the corresponding End-of-Manufacturing report of each item delivered shall be approved by the IO.

8.1 List of deliverable documentation

The Supplier shall provide IO with the documents and data required in the application of this Technical Specification [1], the GM3S Ref [2] and any other requirement derived from the application of the contract.

The minimum list of documentation, but not limited to, that are required within the expected timing:

Category	Document Type	Further Description	Expected Timing (T0+x) *
Other Manufacturing Output	Material Certificate	Material Certificates	T0+1 month
Other Manufacturing Output	Material Certificate	End-of-manufacturing reports of individual items delivered	T0+9 months

(*) T0 = Commencement Date of the contract; X in months.

9 Quality Assurance requirements

The Quality class under this contract is QC-1, [2] GM3S section 8 applies in line with the defined Quality Class.

10 Safety requirements

The scope under this contract does not cover for PIC and/or PIA and/or PE/NPE components, [2] GM3S section 5.3 applies.

11 Special Management requirements

Requirement [2] GM3S section 6 applies in full.

ANNEX I

EXPRESSION OF INTEREST & PIN ACKNOWLEDGEMENT

To be returned by e-mail to: amankumar.joshi@iter.org copy Chloe.Perret@iter.org

TENDER No.	**IO/25/OT/70001311/AJI**
DESIGNATION of SERVICES:	**Framework Contract for Supply of B4C for IO ports**
OFFICER IN CHARGE:	**Aman Kumar Joshi – Procurement Division ITER Organization**

☐ WE ACKNOWLEDGE HAVING READ THE PIN NOTICE FOR THE ABOVE-MENTIONED TENDER

☐ WE INTEND TO SUBMIT A TENDERs

☐ WE WILL NOT TENDER FOR THE FOLLOWING REASONS:

……

Company name:.....

COMPANY STAMP

Signature:

Name: .....

Position: .....

Tel: .....

E-mail.....

Date: .....