

भारत सरकार
अन्तरिक्ष विभाग
सतीश धवन अन्तरिक्ष केन्द्र
शार
श्रीहरिकोटा रेंज डा.घ.524 124,
नेल्लूर जिल्ला, आंध्र, भारत
टेलिफोन: +91-8623-245060 (10 जं)
फेक्स: +91-8623-225160



Government of India
Department of Space
Satish Dhawan Space Centre
SHAR
Sriharikota Range P.O. 524 121,
Nellore Dist., A.P., India
Telephones : +91-8623-245060 (10 Lines)
Fax : +91-8623-225160

निविदा सूचना सं. NOTICE INVITING TENDER

NO. SDSC SHAR/Sr.HPS/PT/SMPC/UNIT-2/70/2023-2024

भारत के राष्ट्रपति की ओर से वरि. प्रधान, क्रय एवं भंडार, सतीश धवन अंतरिक्ष केंद्र श्रीहरिकोटा निम्नलिखित वस्तुओं के लिए **ऑनलाइन निविदाएं** आमंत्रित करते हैं / On behalf of the President of India, Sr. Head, Purchase & Stores, SDSC SHAR, Sriharikota invites **on line quotations** for the following:

क्र.सं. Sl.No	संदर्भ सं. Ref. No.	विवरण Description	मात्रा Qty.
01	SDSC SHAR/SMPC-U2 PURCHASE/SH2024000036 01 e-procurement [Two Part basis]	Manufacture & Supply of Extruded Rocasin Rubber Sheet	1,27,350 KGs.

निविदा जमा करने की प्रारंभिक तिथि (ऑनलाइन)/Bid Submission Start date (online) : 21-03-2024, 17:00 hrs.
निविदा स्पष्टीकरण की अंतिम तिथि (ऑनलाइन)/Bid clarification Due date (online) : 05-04-2024, 17:00 hrs.
निविदा जमा करने की अंतिम तिथि (ऑनलाइन)/Bid submission due date (online) : 12-04-2024, 14:00 hrs.
निविदाएं खोलने की तिथि (ऑनलाइन)/Bid opening date(online) : 12-04-2024, 14:30 hrs.

निविदाकार के लिए निर्देश Instructions to Tenderers:

ईजीपीएस के माध्यम से भेजी गई निविदाओं पर निविदा शुल्क तथा बयाना जमा राशि लागू नहीं होगी।
Tender fee and EMD not applicable for tenders submitted through EGPS

- कार्य के सम्पूर्ण विवरण/जानकारी तथा नियम व शर्तों इत्यादि के लिए संलग्न अनुलग्नक को देखें। / For full details/scope of work and terms and conditions etc., please see the enclosed annexures.
- इच्छुक निविदाकार इसरो के ई-क्रय वेबसाइट <https://eproc.isro.gov.in> से ई-निविदा डाउनलोड कर सकते हैं तथा अपनी निविदा (बोली) को ई-क्रय पोर्टल पर ऑनलाइन जमा कर सकते हैं। Interested tenderers can download the e-tender from ISRO e-procurement website <https://eproc.isro.gov.in> and submit the offer online in the e-procurement portal.
- निविदा दस्तावेज इसरो की वेबसाइट www.isro.gov.in, इसरो ई-क्रय वेबसाइट <https://eproc.isro.gov.in> तथा सतीश धवन अंतरिक्ष केंद्र शार की वेबसाइट www.shar.gov.in पर भी उपलब्ध हैं। इन्हें डाउनलोड करके अपनी निविदा (बोली) को ई-क्रय पोर्टल पर ऑनलाइन जमा किया जाना चाहिए। / Tender documents are also available on ISRO website www.isro.gov.in, ISRO e-procurement website <https://eproc.isro.gov.in> and SDSC SHAR, Sriharikota website www.shar.gov.in. The same can be downloaded and offer shall be submitted online in the e-procurement portal.
- आखिरी समय पर होने वाली भीड़-भाड़ कम करने के लिए निविदाकार अपनी निविदा (बोली) ऊपर विनिर्दिष्ट समय के अंदर ही जमा कर दें। नए विक्रेता के रूप में अनुमोदन के लिए आवेदन / अनुरोध पत्र ई-मेल द्वारा निविदा दस्तावेज में अंकित निविदा संख्या का उल्लेख करते हुए ऑनलाइन जमा करें। / Tenderers shall submit their offers within the given time as specified above and last moment rush for bid submission shall be avoided. Request for new vendor approval shall be submitted online and the same shall be intimated by mail (mentioned in the tender document) referring the tender number.
- वरि. प्रधान क्रय एवं भंडार, सतीश धवन अंतरिक्ष केंद्र श्रीहरिकोटा के पास किसी भी या सभी निविदाओं को स्वीकार / अस्वीकार करने का अधिकार है। / Sr. Head, Purchase and Stores, SDSC-SHAR, Sriharikota reserves the right to accept or reject any/or all the quotations.

दिनांक DT: 21.03.2024

वरि. प्रधान क्रय एवं भंडार
Sr. HEAD PURCHASE AND STORES

सतीश धवन अंतरिक्ष केन्द्र, श्रीहरिकोटा
Satish Dhawan Space Centre, Sriharikota

भारतीय अन्तरिक्ष अनुसंधान संगठन Indian Space Research Organisation

**GOVERNMENT OF INDIA
DEPARTMENT OF SPACE
SATISH DHAWAN SPACE CENTRE SHAR SRIHARIKOTA (SDSC SHAR)
NELLORE**

Tender for Manufacture & Supply of Extruded Rocasin Rubber sheet

Bids to be submitted online

Tender No.: SDSC SHAR/SMPC-U2 PURCHASE/SH202400003601 dated 21-03-2024

A. Tender Details

Tender No :	SDSC SHAR/SMPC-U2 PURCHASE/SH202400003601
Tender Date :	21-03-2024
Tender Classification:	GOODS
Purchase Entity :	SMPC-U2 PURCHASE
Centre :	SATISH DHAWAN SPACE CENTRE SHAR SRIHARIKOTA (SDSC SHAR)

Manufacture & Supply of Extruded Rocasin Rubber sheet

1) Manufacture & Supply of Extruded Rocasin Rubber sheet as per the Terms and conditions of the tender.

2) GeM Report ID: GEM/GARPTS/21032024/AYXBC15YFMFZ

A.1 Tender Schedule

Bid Submission Start Date :	21-03-2024 17:00
Bid Clarification Due Date :	05-04-2024 17:00
Bid Submission Due Date :	12-04-2024 14:00
Bid Opening Date :	12-04-2024 14:30
Price Bid Opening Date :	30-04-2024 14:30

B. Tender Attachments

Technical Write-up/Drawings

Document : RFP Document

Instructions To Vendors

2. STANDARD TERMS & CONDITIONS

1. Tele No.08623-225174/226048

Fax No.08623-225170/22-5028

e-Mail ID : hps@shar.gov.in, manas@shar.gov.in, satyach@shar.gov.in

1. Instruction to Indigenous Suppliers:

a) Payment Terms shall be as specified in RFP. If not specifically mentioned Our Normal payment term is 100% within 30 days after receipt and acceptance of the item at our site. For AMC cases, payment term is on pro-rata basis against completion of AMC.

b) GST/IGST: Please specify GST percentage, if any, in your offer. Please mention SAC / HSN code in your offer and Our GST No. is. 37AAAGS1366J1Z1.

c) Purchase / Price preference to MSEs

Purchase/Price preference will be applicable to the product reservation admissible to the Micro and Small Enterprises. Purchase/Price Preference shall be extended to the MSEs under the Public Procurement Policy for MSEs formulated under the Micro, Small and Medium Enterprises Development Act, 2006. The participating MSEs in a tender, quoting price within the band of L-1 + 15% may also be allowed to supply a portion of the requirement by bringing down their price to the L-1 price, in a situation where L-1 price is from someone other than an MSE. Such MSEs may be allowed to supply up to 25% of the total tendered value. In case of more than one such eligible MSE, the supply will be shared equally.

Micro & Small Enterprises which have technical capability to deliver the goods & Services as per prescribed technical & quality specifications and may not be able to meet the qualification criterion relating to prior experience-prior turnover may be relaxed as per guidelines issued by Ministry of MSMEs & as amended from time to time.

Interested vendors shall specifically claim the benefit with supporting documents.

d) Purchase / Price preference to Make-in-India Products:

Preference shall be given to Class 1 local supplier as defined in public procurement (Preference to Make in India), Order 2017 as amended from time to time and its subsequent Orders/Notifications issued by concerned Nodal Ministry for specific Goods/Products. If the bidder wants to avail the

Purchase preference, the bidder must upload a certificate from the OEM regarding the percentage of the local content and the details of locations at which the local value addition is made along with their bid, failing which no purchase preference shall be granted. In case the bid value is more than Rs. 10 Crore, the declaration relating to percentage of local content shall be certified by the statutory auditor or cost auditor, if the OEM is a company and by a practicing cost accountant or chartered accountant for OEMs other than companies as per the Public Procurement (preference to Make-in-India) order 2017 dated 04.06.2020.

2. Instruction to Foreign Suppliers:

- a) Payment Terms shall be as specified in RFP. If not specifically mentioned Our normal payment term is SIGHT DRAFT, Please confirm acceptance in your offer, if you insist for L/C, and all bank charges shall be to your account. Confirm acceptance.
 - b) Please specify whether any export clearance is required in case of an order on you.
 - c) Warranty/Guarantee applicable for the item shall be mentioned in your offer
 - d) Special Certification for packing Material : as per Plant Quarantine (Regulation of Control into India) Order 2003, Articles packed with packing material of plant origin viz., hay, straw, wood shavings, wood chips, saw dust, wood waste, wooden pallets, Dunn age Mats, wooden packages, coir pith, peat or sphagnum moss etc., will be allowed entry by Customs only with a Phytosanitary Certificate. In case of a Purchase Order, if you propose to us any of the above material for packing such a certificate issued by your local Plant Quarantine Authority shall be furnished.
 - e) Confirm whether any Export License is required and for which End User Certificate is to be provided by us, in case of an Order on you. (Enclose format for EUC, if applicable)
 - f) Either Indian Agent on behalf of the foreign principals or the foreign principal directly can quote against this order, but not both. In either case an Indian agent cannot represent more than one principal against the same tender.
 - g) SDSC SHAR is eligible for concessional Customs duty @ 5% as per Notification no.50/2017 Customs dated 30.06.2017, Serial No.539(A) as amended by Notification no.05/2018 dated 25.01.2018.
 - h) Any bidder from a country which shares a land border with India will be eligible to bid in any procurement whether of goods, services (including consultancy services and non-consultancy services) or works (including turnkey projects) only if the bidder is registered with Competent Authority as specified in Office Memorandum no.F.No.6/18/2019-PPD, Ministry of Finance, Department of Expenditure, Public Procurement Division dated 23rd July 2020. All the conditions mentioned in the above OM is applicable for this tender.
- Common terms to Indigenous and foreign suppliers:

3. Warranty

You shall provide applicable warranty for the items offered by you without fail for a minimum period of 12 months from the date of receipt and acceptance. For the applicable period you shall provide necessary warranty certificate.

4. Performance Bank Guarantee

Towards the performance of the systems during the warranty period you shall submit a performance bank guarantee equivalent to 3% of the order value to cover the warranty period. This PBG shall be interest free and the same shall be returned to you on successful completion of all contractual obligations. The said PBG shall be valid till completion of warranty plus 60 days.

5. Security Deposit

On acceptance of the order, you shall submit an interest free amount equivalent to 3% of the total contract/order value towards security deposit. This security deposit is collected towards the performance of the Contract. The said Security Deposit shall be submitted either in the form of Bank Guarantee/Demand Draft/FDR receipts duly endorsed in the name of the centre. The Security Deposit will be returned to you on successful completion of the Contractual obligations; failing which it shall be forfeited/adjusted. Security deposit shall be valid till completion of total scope of work plus 60 days.

6. VALIDITY OF OFFER: - In case of single part tender - the validity of offers/tenders should be 90 days. In case of two part tender - 120 days from the date of opening of Part-I bid and 60 days from the date of opening of Part-II bid. Tenders shorter than offer validity mentioned above will not be considered for evaluation, which may please be noted.

7. Liquidated Damages:

If you fail to deliver the ordered items satisfactorily within the time specified or any extension thereof, Liquidated Damage @ 0.5%(zero point five percent) of the order value or part thereof the un-delivered items for each calendar weeks of delay shall be recovered from your bill. However total Liquidated Damage shall not exceed 10% (ten percent) of the order value.

FORCE MAJEURE:

Should a part or whole work covered under this contract be delayed in delivery/completion of work due to reasons of Force majeure which shall include legal lockouts, strikes, riots, civil commotion, fire, accidents, quarantines, epidemic, acts of God & War, stoppage of deliveries by the Government, freight embargoes etc; the delivery period/completion of work referred to in this Contract shall be extended by a period not in excess of duration of such Force Majeure. The party for whom it has become impossible to meet the obligation under this Contract due to force majeure condition, will notify the other party in writing not later than twenty one days from the date of commencement of the unforeseeable event. Unless otherwise directed by the in writing, the contractor/supplier shall continue to perform his obligations under the Purchase Order/Contract as far as is practical and shall seek all reasonable alternative means for performance not prevented by the force majeure event. Any certificate issued by the Chamber of Commerce or any other competent authority or organization of the respective country shall be sufficient proof of commencement and cessation of the above circumstances.

8. Offers received through post, courier, fax or email will not be considered.

9. Technical and commercial bid (Part-I) shall not contain any price details. Optional accessories or other price details, if any shall be uploaded in Supporting documents related to Price Bid, to be opened along with Price Bid.

10. In respect of FIM being issued, the fabricator shall submit Bank Guarantee for equivalent sum compulsorily. Central PSUs/PSEs/Autonomous Bodies shall be exempt from the production of BGs towards FIM, Indemnity Bond in lieu of Bank Guarantee is acceptable. Balance FIM/Scrap, if any shall be returned along with the supply of the items. Please confirm acceptance in your quotation.

11. SDSC SHAR shall have the right to place part order among the parties for the items for which they are the lowest.

12. Arbitration:

In the event of any dispute/s, difference/s or claim/s arising out of or relating to the interpretation and application of the Contract, such dispute/s or difference/s or claim/s shall be settled amicably by mutual consultations of the good Offices of the respective Parties and recognizing their mutual interests attempt to reach a solution satisfactory to both the parties. If such a resolution is not possible, within 30 days from the date of receipt of written notice of the existence of such dispute/s, then the unresolved dispute/s or difference/s or claim/s shall be referred to the Sole Arbitrator appointed by the Parties by mutual consent in accordance with the rules and procedures of Arbitration and Conciliation Act 1996 as amended from time to time. The arbitration shall be conducted in Bengaluru in the Arbitration and Conciliation Centre Bengaluru (Domestic and International) as per its rules and regulations. The expenses for the Arbitration shall be shared equally or as may be determined by the Arbitrator. The considered and written decision of the Arbitrator shall be final and binding between the Parties. The applicable language for Arbitration shall be English only.

Work under the Contract shall be continued by the CONTRACTOR during the pendency of arbitration proceedings, without prejudice to a final adjustment in accordance with the decision of the Arbitrator unless otherwise directed in writing by the DEPARTMENT or unless the matter is such that the works cannot be possibly continued until the decision (whether final or interim) of the Arbitrator is obtained.

3. General Instructions to Vendor

1. Instructions to tenderers

TeleNo.08623-225174/226048

Fax No.08623-225170

e-Mail ID : hps@shar.gov.in, manas@shar.gov.in, satyach@shar.gov.in

1. Interested tenderers may, at their option, login to <https://eproc.vssc.gov.in> and submit your offers.

2. TENDER FEE IS NOT APPLICABLE.

3. EARNEST MONEY DEPOSIT IS NOT APPLICABLE IF NOT MENTIONED IN THE RFP SPECIFICATION.

4. Indian agents while quoting on behalf of their principals are requested to attach Principals original quote, necessary authorization letter from their Principals, copy of agency agreement etc. in their bid.

5. TWO PART BIDS: In case of Two part tender, price details shall not be uploaded in the Technical & Commercial Bids (Part I), failing to which the bid will be treated as INVALID.

6. The offer should be valid for a minimum period of 120 days for 2 part / 90 days for single part from the date of opening.

7. Due date & time: Sufficient time has been allotted for Bid submission. Vendors are requested to complete Bid submission well in advance. Last minute requests for due date extension citing server problems etc. will not be entertained. Bids will not be entertained after the due date and time.

7 (A). Request for the extension of the due date will not be considered.

8.

(a) Bid Opening for Public Tender: In case of Public Tender-Two Part Tenders: Technical and Commercial Bids will be opened on the first day specified for Tender opening. Interested vendors can attend the tender opening session to know the bidding details (Bidders presence is not mandatory to consider the quote for evaluation). Price Bid opening of the selected vendors will be scheduled later and it will be intimated to the selected Bidder (s).

(b) For Limited Tender: Bidders participation is not allowed.

9. Prices are required to be quoted according to the units indicated.

10. Preference will be given to those tenderers offering supplies from ready stocks and on the basis of FOR destination delivery at site.

11. (a) All available technical literature, catalogues and other data in support of the specifications and detail of the items should be furnished as attachments.

(b) Samples, if called for, should be submitted free of all charges by the tenderer and the Purchaser shall not be responsible for any loss or damage thereof due to any reason whatsoever. In the event of non-acceptance of tender, the tenderer will have to remove the samples at his own expense.

(c) Approximate net and gross weight of the items offered shall be indicated in your offer. If dimensions details are available the same should be indicated in your offer.

(d) Specifications: Stores offered should strictly conform to our specifications. Deviations, if any,

should be clearly indicated by the tenderer in their quotation. The tenderer should also indicate the Make/Type number of the stores offered and provide catalogues, technical literature and samples wherever necessary. Test certificates wherever necessary should be attached. Whenever options are called for in our specifications, the tenderer should address all such options. Wherever specifically mentioned by us the tenderer could suggest changes to specifications with appropriate response for the same.

12. The purchaser shall be under no obligation to accept the lowest or any tender and reserves the right of acceptance of the whole or any part of the tender or portion of quantity offered and the tenderers shall supply the same at the rates quoted.

13. All amounts shall be indicated both in words as well as in figures. Where there is difference between amounts quoted in words and figures, amount quoted in words shall prevail.

14. The tenderer will be required to furnish a document containing the name of his bankers as well as the latest income-tax clearance certificate duly counter signed by the Income-tax Officer of the Circle concerned under the Seal of his office, if required by the Purchaser.

15. The Purchaser reserves the right to place order on the successful tenderers for additional quantity up to 25% of the quantity offered by them at the rates quoted.

16. Sr. Head, Purchase and Stores, SDSC SHAR SRIHARIKOTA reserves the right to accept or reject any bid in part or full without assigning any reason thereof.

17. Any bidder from a country which shares a land border with India will be eligible to bid in any procurement whether of goods, services (including consultancy services and non-consultancy services) or works (including turnkey projects) only if the bidder is registered with Competent Authority as specified in Office Memorandum no.F.No.6/18/2019-PPD, Ministry of Finance, Department of Expenditure, Public Procurement Division dated 23rd July 2020. All the conditions mentioned in the above OM is applicable for this tender.

18. Vendors are requested to register in National Public Procurement Portal i.e., Government e-Market Place (GeM).

19. Vendors may note the Guidelines on Debarment of Firms vide O.M No. F.1/20/2018-PPD dated 02.11.2021 in line with rule no.151 and 175 (Code of Integrity) of GFR (General Financial Rules).

4. Tender- Two part Instructions

1. 1. This requirement can be quoted only through online e-procurement mode using ISRO portal <https://eproc.isro.gov.in>. No manual tender will be considered.

2. The vendors have to get themselves registered in above site to download the tender details. To register in above ISRO portal (<https://eproc.isro.gov.in>) the vendors need to have digital certificate The digital certificate can be obtained from any digital certifying authority like M/s (n)Code solutions; M/s Tata Consultancy Ltd., M/s Satyam Information System etc.
3. The parties are advised to download the tender and submit the bid on online at least two days prior to tender closing date to avoid last minute network problem. The due date shall not be extended due to network or computer related problems.
4. Tender fee is not applicable.
5. This being a two part tender i.e. Technical & Commercial Part and Price Part, the tenderer should not attach any documents containing Pricing information along with Technical & Commercial Bid. Normally we do not open PART-II (Price bid), if PART-I (Technical Offer) does not meet with our technical specification requirements. Price bid opening date mentioned in the tender document/ Schedule is tentative only. However, price bid opening will be made only after satisfactory completion of Part-I technical bid evaluation and with prior intimation to vendors.
6. Our Tender Enquiry contains technical requirements and specification. The detailed technical specification of your offer should be covered in the technical part. The Technical documents need to be attached online as a single PDF file without any prior information. The tender attachments containing Price details will be treated as unsolicited offers and rejected.
7. The quote should indicate quantity wise unit rate separately which have to be filled online. The Prices are to be mentioned both in figures as well as in words. The taxes, duties etc. are to be calculated and indicated in the column provided in online forms explicitly.
8. Bidders are expected to comply with the technical & commercial and other terms and conditions given in vendor specified terms of this tender. In case of any deviation, the reasons thereof should be clearly specified in the vendor specified terms column.
9. The vendors have to compulsorily submit the compliance statement online otherwise their offer will not be considered for further evaluation. Before entering the compliance statement, vendors are advised to refer the detailed specification provided in the Technical Write-up/ Drawings document. The specification offered by the vendors may also be indicated in the compliance statement wherever necessary.
10. The Technical Specification / Drawing / Product Catalogues / Works carried by vendor / Make offered etc. as a single PDF file without any financial details has to uploaded online mode by the vendor. This being TWO PART TENDER the PDF document uploaded should not contain any commercial/pricing details. If the attached PDF contains any pricing detail the offer will be treated as unsolicited and will be summarily rejected.
11. Original Equipment Manufacturer (OEM) or their representative can submit bid. Indian agents while quoting on behalf of their principals are requested to attach necessary authorization letter from their Principals in their bid.
12. Instructions on Indian Agent (if any):- Bidders are required to provide the following information in respect of their authorized Indian Agent, if any, alongwith technical bid as the same is mandatory as is required for consideration of the bid. Name, Address, Telephone no. , fax no., email of the Indian Agent including the contact person.

13. A letter from the OEM in the current date certifying that the said Indian Agent is their authorized Indian Agent and also indicating the responsibilities/role of the Indian Agent under the proposed purchase. Remuneration/service charges payable to the Indian Agent under the proposed purchase.
14. Offer validity: - In case of single part tender - the validity of offers/tenders should be 90 days. In case of two part tender - 120 days from the date of opening of Part-I bid and 60 days from the date of opening of Part-II bid. Tenders shorter than offer validity mentioned above will not be considered for evaluation.
15. Due date & time: Sufficient time has been allotted for Bid submission. Vendors are requested to complete Bid submission well in advance. Last minute requests for due date extension citing server problems etc. will not be entertained. Bids will not be entertained after the due date and time.
17. The vendors may contact +91471 2565454/4574/2527/3753/3289 or eproc@vssc.gov.in for any technical assistance in bid submission.
18. Once the offer is submitted in on line mode by the vendor and bid submission period is over, vendor will not be able to provide revised offer.
19. Request for the extension of the due date will not be considered.
20. Tender which are not prepared in terms of these instructions are liable to be rejected.
21. Based on the response to the Tender Notice, SDSC SHAR reserves the right to change any milestone date of the tendering activity.
22. SDSC SHAR reserves the right to verify all claims made by the bidder.
23. Tender Opening : The Technical and Commercial Bid [Part-I] will be opened on the specified day mentioned in the schedule and in case any further clarification/ discussion are required, such clarification/discussion shall be called for before opening the Price Bid.
24. The exact date and time of opening of price bid of successful tenderers will be intimated later (in case of Public Tender).
25. Tenderers can participate in the said tender opening to know the details on for which, the representative of the firm shall be duly authorized by Competent Authority. Against proper authorization only such representatives shall be allowed to attend the tender opening (only in case of public tender). Tenderer Presence is not mandatory to consider the Quote for evaluation.
26. SDSC SHAR, SRIHARIKOTA reserves the right to accept or reject any/or all the tenders in part or full without assigning any reasons thereof.
27. Vendors are requested to register in National Public Procurement Portal i.e., Government e-Market Place (GeM).

5. Format for MII declaration

1. (to be printed in letter head) -

Self-Certification under preference to Make in India order Certificate

2. In line with Government Public Procurement Order No. P-45021/2017-PP (BE-II) dated 04.06.2020 & 16.09.2020 and its amendments, we hereby certify that we M/s.

_____are local suppliers and the offered item having local content of _____% (excluding Net Domestic Indirect Taxes, Transportation, Insurance, Installation, Commissioning, Training and after sales service support like AMC/CMC etc.) as defined in above orders for the material against Tender/Bid No._____ Dated _____

3. Details of location at which local value addition will be made as follows:

4. We also understand, false declaration will be breach of the code of integrity under the rule 175(1)(i)(h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per rule 151 (iii) of the General Financial Rules along with such other actions as may be permissible under law.

5. Thanking You

Signature with date

Name

Designation

Official Seal

6. Format for Self Declaration regarding Restriction under Rule 144 (XI) of GFR 2017 (Land Border Sharing)

1. (to be printed in letter head)

DECLARATION BY AUTHORISED SIGNATORY OF THE FIRM

2. I, the undersigned, _____ (full names), do hereby declare, in my capacity as _____ of M/s _____ (name of bidder entity), that:

3. 1) I have read the Order (Public Procurement No.1, 2 & 3) dtd 23 Jul 2020 & 24 Jul 2020 office memorandum (OM) No. F.18/37/2020-PPD Dt:08.02.2021, OM NO. F.12/1/2021-PPD (Pt) dated 02.03.2021 and OM No. F.7/10/2021-PPD dated 08.06.2021 and OM No.F.7/10/2021-PPD dated 23.02.2023 on the subject of Restrictions under Rule 144 (xi) of the General Financial Rules (GFRs), 2017 regarding restrictions on procurement from a bidder of a country which shares a land border with India and comply to all the provisions of the Order.

4. 2) I certify that M/s _____ (name of bidder entity) IS NOT FROM

SUCH A COUNTRY (or) IS FROM SUCH A COUNTRY (strike out whichever is not applicable), has been registered with the Competent Authority. I hereby certify that this SUPPLIER fulfils all requirements in this regard and is eligible to be considered. [Where applicable, evidence of valid registration by the Competent Authority is attached]

5. 3) I understand that the submission of incorrect data and / or if certificate / declaration given by M/s _____ (name of bidder entity) is found to be false, this would be a ground for debarment and further legal action in accordance with law as per Clause 18 of Procurement Policy Division OM No.F.7/10/2021-PPD dated 23.02.2023

6. AUTHORISED SIGNATURE:

DATE:

Seal / Stamp of Bidder

C. Bid Templates

C.1 Technical Bid - Manufacture & Supply of Extruded Rocasin Rubber sheet

1. PROCESSING AND SUPPLY OF ROCASIN - Supply of 2 mm thick Extruded Rocasin Rubber Sheet, as per the specifications, terms & conditions in the tender document

Item specifications for PROCESSING AND SUPPLY OF ROCASIN

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	as per the tender document		-		

2. PROCESSING AND SUPPLY OF ROCASIN - Supply of 1 mm thick Extruded Rocasin Rubber Sheet, as per the specifications, terms & conditions in the tender document

Item specifications for PROCESSING AND SUPPLY OF ROCASIN

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	as per the tender document		-		

Common Specifications (Applicable for all items)

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	As per the tender document		-		

Supporting Documents required from Vendor

1. Documentary proofs for Annexure-II

2. Annexure-VI: Compliance statement

3. Annexure-V: Bidder Evaluation format

4. Annexure IV: Pre-qualification criteria

5. Annexure-III: Exceptions & Deviations

6. Annexure-II: Base Raw material cost index

7. Annexure-I: Unpriced copy of schedule of prices

8. Priced copy of Schedule of prices (Price Bid Related)

9. Duly filled, signed and stamped Bidder's compliance to technical specifications, terms & conditions in Annexure

10. Other documentary evidence - II

11. Other documentary evidence - I

12. IT Returns & IT Clearance certificate

13. Audited balance sheets, P&L accounts

14. Documentary proofs for Annexure-V

15. Documentary proofs for Annexure-IV

16. Latest Udyam Registration Certificate

17. Make In India Certificate as per the format given in tender document

18. Compliance to GFR 144 (XI) - Land Border sharing as per the format given in tender document

5 additional documents can be uploaded by the vendor

C.2 Commercial Terms / Bid

Sl. No.	Description	Compliance	Vendor Terms
1	As per Tender document	Yes / No / Explain	
2	GST AND OTHER COSTS, IF ANY: Percentage of applicable GST for the quoted items shall be indicated along with SAC/HSN Code.	Yes / No / Explain	
3	As per the Notification No. 6/2018-Central Tax (Rate) dt:25.01.2018 A(ix) S.No.243A as amended by Notification No.25/2018-Integrated Tax (Rate) Dt: 31.12.2018 b(viii) S.No.243B issued by Ministry of Finance (Dept. of Revenue), SDSC SHAR is eligible to avail IGST @5% for the procurements related to Scientific and technical instruments, apparatus, equipment, accessories, parts, components, spares, tools, mock ups and modules, raw material and consumables required for launch vehicles and satellites and payloads. Please confirm your acceptance.	Yes / No / Explain	
4	DELIVERY TERM: FOR SRIHARIKOTA	Yes / No / Explain	
5	DELIVERY PERIOD: A) The delivery of ROCASIN sheets shall be in staggered manner in 4 years and as per the requirement of the Purchaser. B) For supply of Extruded ROCASIN sheets, delivery of the required material shall be within 15 days from the date of intimation of the requirement. C) Failure to supply material within 30 days from the date of intimation, the purchaser reserves the right to short-close the PO and prohibit the vendor from participating in any further bidding processes.	Yes / No / Explain	
6	PAYMENT TERM: 100% payment will be made on pro-rata basis through PFMS within 30 days after receipt and final acceptance of the ordered items at our site.	Yes / No / Explain	

7	<p>LIQUIDATED DAMAGES (LD): In case of delay in completion of total scope of work beyond the stipulated delivery period, Liquidated Damages @ 0.5% of the PO value per week or part of on undelivered portion as pre-estimated damages subject to a maximum of 10% of the Order value.</p>	Yes / No / Explain	
8	<p>SECURITY DEPOSIT: The Successful bidder, within 10 days of placement of Purchase Order, required to furnish Security Deposit for 3% (or as notified by Govt. Of India/ISRO from time to time) of the contract price for one year on pro-rata basis valid for one year plus 60 days and which will be renewed before expiry every year till completion of the contract, valid till the satisfactory execution of the contract and acceptance.</p> <p>Security Deposit may be furnished in the form of Insurance Security Bonds, Account Payee Demand Draft, Fixed Deposit Receipt from a commercial Bank, Bank Guarantee (including e-Bank Guarantee) from a Commercial bank executed on Rs.100/- non-judicial stamp paper or online payment in an acceptable form.</p> <p>The security deposit (bearing no interest) shall be held by the Purchaser as security till satisfactory completion, testing and handing over of all the system during each year and for the due performance of all vendors obligations under the contract as per delivery period or extension granted thereof by the Purchaser.</p> <p>The bank guarantee or fixed deposit receipt submitted by the tenderer/Contractor shall be verified immediately from the issuing bank. In case the vendor fails to furnish the security deposit within the specified date, the Purchase Order/Contract shall be cancelled, and the EMD, if any, made earlier shall be forfeited.</p>	Yes / No / Explain	
9	Compliance to the Technical specifications shall be mentioned.	Yes / No / Explain	

10	Please furnish Contact details i.e. Name of the focal point for this tender, E-mail id, Mobile no/ Landline no. etc. for further communication.	Yes / No / Explain	
11	<p>Purchase preference to Micro and Small Enterprises (MSEs): Purchase preference to Micro and Small Enterprises (MSEs): Purchase preference will be given to MSEs as defined in Public Procurement Policy for Micro and Small Enterprises (MSEs) Order, 2012 dated 23.03.2012 issued by Ministry of Micro, Small and Medium Enterprises and its subsequent Orders/Notifications issued by concerned Ministry. If the bidder wants to avail the Purchase preference, the bidder must be the manufacturer of the offered product in case of bid for supply of goods. Traders are excluded from the purview of Public Procurement Policy for Micro and Small Enterprises. In respect of bid for Services, the bidder must be the Service provider of the offered Service. Relevant documentary evidence in this regard shall be uploaded along with the bid in respect of the offered product or service. If L-1 is not an MSE and MSE Seller (s) has/have quoted price within L-1 plus 15% (Selected by Buyer) of margin of purchase preference/price band defined in relevant policy, such Seller shall be given opportunity to match L-1 price and contract will be awarded for 25% (selected by Buyer) percentage of total QUANTITY. Please specify whether you belong to MSE or not. If YES, supporting documents shall be uploaded.</p> <p>Latest Udayam registration certificate for the current Financial year shall be submitted.</p>	Yes / No / Explain	
12	MSE Purchase preference will be applicable only to the manufacturers of the items offered and supporting documents to that shall be submitted. Traders are not eligible for MSE Purchase preference.	Yes / No / Explain	

13	<p>Make-In-India (MII) Clause: For this procurement, provisions contained in Public Procurement (Preference to Make in India), Order 2017 issued by Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce & Industries vide letter No. P-45021/2/2017-PP(BE-II) dated 16.09.2020 & directives related shall be followed. Accordingly, you are requested to indicate the percentage of local content in the material, clearly mentioning the details of location(s) at which value addition is made in line with clause 9 to O.M dated 16.09.2020 referred above. It may be noted that Local Content shall not include services such as Transportation, Insurance, Installation, Commissioning, Training and after sales service support like AMC/CMC etc.</p>	Yes / No / Explain	
14	<p>The bidder shall provide compliance to Order No. F.No.6/18/2019 PPD dated 23.07.2020 and amendments thereof by Ministry of Finance, Department of Expenditure, Public Procurement Division regarding restrictions on procurement from a bidder of a country which shares a land border with India and comply to all the provisions of the Order. In this regard, you shall certify that the bidder entity is not from such a country or, is from such a country, has been registered with the Competent Authority.</p>	Yes / No / Explain	
15	<p>Do you have Unique GeM Seller ID? If YES, provide details. If NO, As per Office Memorandum No 6/9/2020-PPD dated 24/08/2020 of Department of Expenditure, it is mandatory for sellers providing Goods and Services to Central Government Organizations to be registered on GeM and obtain a Unique GeM Seller ID, at the time of Placement of Order/acceptance of contract. Tenderers shall ensure the same.</p>	Yes / No / Explain	
16	<p>Safe delivery of the ordered item with proper transport worthy pack shall be ensured.</p>	Yes / No / Explain	

17	"Purchase preference to MSE/MII-Class-I local suppliers will be as per notification No.F.1/4/2021-PPD dated 18-05-2023 and its directives/amendments thereof issued by Ministry of Finance, Department of Expenditure, Public Procurement Division".	Yes / No / Explain	
18	VALIDITY OF OFFER: The validity of the offers/ tenders should be 120 days. Tenders shorter than offer validity mentioned above will not be considered for evaluation.	Yes / No / Explain	
19	NOTE: Being a two Part Tender, Offer price details shall not be disclosed in Techno-commercial Bid (Part-I bid). Otherwise offer will be rejected. Price bid related document shall not be uploaded in techno-commercial part.	Yes / No / Explain	
20	Remarks, if any	Yes / No / Explain	

C.3 Price Bid

Sl. No.	Item	Quantity	Unit Price	Currency	Total Price	Remark
1	PROCESSING AND SUPPLY OF ROCASIN - Supply of 2 mm thick Extruded Rocasin Rubber Sheet, as per the specifications , terms & conditions in the tender document	122000.00 KG		-		
2	PROCESSING AND SUPPLY OF ROCASIN - Supply of 1 mm thick Extruded Rocasin Rubber Sheet, as per the specifications , terms & conditions in the tender document	5350.00 KG		-		

REQUEST FOR PROPOSAL (RFP)
for
MANUFACTURE & SUPPLY OF
EXTRUDED ROCASIN RUBBER SHEET



Satish Dhawan Space Centre SHAR
Indian Space Research Organization
Government of India
Sriharikota, Andhra Pradesh – 524124

INTRODUCTION

Proposals are invited from the interested Bidders for the enclosed scope of work as two-part bid.

Part-1: Technical and Unpriced part of the work
and

Part-2: Priced Commercial bid.

The RFP document is organized in four Sections as follows.

- Section–A General Terms and Conditions of the Contract
- Section–B Scope of Work
- Section–C Technical Specifications
- Section–D Annexures

Title of the Entity: HIL, UNIT-2, SMPC, SDSC SHAR / SRIHARIKOTA

Title of Proposal: Proposal for '**Manufacture & Supply of Extruded Rocasin Rubber sheet**' as per specifications, terms & conditions given in the document. ROCASIN rubber is consumable used as an insulation material to be lined inside Solid rocket motors, designed & developed by ISRO.

1.			TENDER DOCUMENT
		a.	Overall specifications, terms & conditions and functional requirements are detailed in the tender document. Bidder shall sign and stamp each page of 'Original' in token of his acceptance.
		b.	The proposal shall be completely filled in all respects and shall be tendered together with requisite information and Annexure. Any tender incomplete in any particulars shall be liable for rejection.
		c.	Bidders shall submit their quotations in firm figures without variations or additions in the terms of the proposal documents. Proposals containing qualifying expressions such as 'subject to minimum acceptance' or 'subject to prior sale', or any other qualifying expressions or incorporating terms and conditions at variance with the terms and conditions incorporated in the proposal documents shall be liable for rejection.
	1.1		Clarification requests by bidder
		a.	Although, details presented in the proposal document i.e., conditions of contract, scope of work and technical specifications have been compiled with all reasonable care, it is the bidder's responsibility to ensure that the information provided is adequate and clearly understood.
		b.	Bidder shall examine the proposal document thoroughly in all respects and if any conflict, discrepancy, error or omission is observed, bidder may request clarification and submit the bid within the scheduled time. Such clarification requests shall be directed to Purchase department, SDSC SHAR, Sriharikota within 15 days from the date of tender release, on these mail

			satyach@shar.gov.in/ manas@shar.gov.in/ hps@shar.gov.in
		c.	Any failure by bidder to comply with the aforesaid requirement shall not excuse the bidder, after subsequent award of contract, from performing the work in accordance with the agreement.
	1.2		Corrigendum of Proposal Document
		a.	Department may, for any reason whether at its own initiative or in response to the clarification requested by the prospective bidder, issue amendment in the form of addendum/corrigendum during the bid period and subsequent to receiving the bids. Any addendum/ corrigendum thus issued shall become part of proposal document and bidder shall scan and upload as addendum / corrigendum duly signed and stamped in token of his acceptance.
		b.	For addendum / corrigendum issued during the bid period, bidder shall consider the impact in his bid. For addendum / corrigendum issued subsequent to receiving the bids, bidder shall follow the instructions issued along with addendum / corrigendum.
2.			PREPARATION OF BIDS
	2.1		Site Visit
			The Bidder may visit SDSC SHAR and acquaint himself fully with the requirements and no claims whatsoever will be entertained on the plea of ignorance of difficulties in the execution of the contract. Before submitting the tender, the Bidder shall be deemed to have clearly understood and satisfied himself regarding the supply contract, all conditions liable to be encountered during the execution thereof and that prices quoted in the offer are adequate and all-inclusive with respect to all factors, circumstances and conditions likely to be incidental, both direct and indirect, to the supply contract. If the bidder wishes to see the site, the bidder may do so within 15 days from the date of issue of tender enquiry.
	2.2		Validity of offer
			Bid shall remain valid for acceptance for a period of 120 days from the due date of opening of the bid. The bidder shall not be entitled during the said period to revoke or cancel his bid or to vary the bid except and to the extent required by Department. Bid shall be validated for extended period as required by Department. In such cases, unless otherwise specified, it is understood that validity is sought and provided without varying either the quoted price or any other terms and conditions of bid finalized till that time.
	2.3		Cost of bidding

			All direct and indirect costs associated with the preparation and submission of bid (including clarification meetings and site visit, if any), shall be to bidder's account and the Department will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bid process.
	2.4		Applicable language
			The bid and all correspondence incidentals to and concerning the bid shall be in English language. For supporting document and printing literature submitted in any other language, an accurate English translation shall also be submitted. Responsibility for correctness in translation shall lie with the bidder.
	2.5		Arrangement of bid
		a.	Bids should not contain any terms and conditions which are not applicable to the bid. The bid and all details submitted by the bidder shall be signed and stamped on each page as token of acceptance by a legally authorized person, to enter into agreement on behalf of the bidder. Corrections / alteration, if any, shall also be signed by the same person.
		b.	The cancellation of any document such as Partnership deed etc. should be communicated by the bidder to the Department in writing well in advance; failing which Department shall have no responsibility or liability for any action taken by bidder on the strength of the said documents.
		c.	Should the bidder have a relative or relatives or in the case of firm or company, one or more of its shareholders or a relative or relatives of the shareholder (s) employed in a senior capacity in Department's organization, the authority inviting bids shall be informed of the fact at the time of submission of the bid, failing which the bid may be disqualified or, if such fact subsequently comes to light, Department reserves the right to take any action as it deems fit in accordance with any applicable law, rules and regulations of the like in force for the time being.
	2.6		Compliance to Tender requirement
			Department expects bidder's compliance to requirement of tender document without any deviation. Deviation on clauses, if felt absolutely necessary should be furnished in the bid as per the format attached as Annexure-III. Department shall not take cognizance of any deviation stipulated elsewhere in the bid. Any willful attempt by the bidders to camouflage the deviations by giving them in the covering letter or in any other documents that are enclosed may render the bid itself non-responsive. Department reserves the right to evaluate the offers containing deviations with

			financial implications after adding cost for such deviations as determined by Department.
	2.7		Documents comprising the bid
		a.	This is e-procurement tender. All the documents need to be scanned and attached to bid under “documents solicited from Vendor” form within due date.
		b.	Bidder may note that Department intends to fully evaluate the technical and priced commercial submissions. It is important that bidder clearly demonstrates his experience and capability, giving to Department a high level of confidence that if awarded, the bidder will be able to perform the works within the stipulated time schedule and quoted price and meeting all other requirements listed in the proposal document.
		c.	Bidder should furnish the complete and correct information required for evaluation of his bid. If the information with regard to resources or any other information / documentation forming basis of evaluation is found incomplete / incorrect, the same will be considered as adequate ground for rejection of the bid.
	2.8		Schedule of price
		a.	The schedule of price shall be read in conjunction with all the Sections of Tender document.
		b.	The vendor has to provide cost details for the Tender realization as per Annexure- I: Schedule of Price
		c.	The quoted price shall include all costs of <ul style="list-style-type: none"> i. ‘Rocasin Rubber Manufacture & Supply to SMPC U2, SDSC-SHAR’ as per specifications, terms & conditions given in the document. ii. Packing, forwarding and transportation of Rocasin Rubber to purchaser’s site and any other cost for proper and complete execution of the CONTRACT.
		d.	The rate quoted shall be firm and fixed for 18 months. Price escalation shall be applicable after 18 months. For this purpose, vendor shall submit their request for price escalation and furnish cost of raw materials along with invoices as per price revision formula. Relevant documentary proofs w.r.t cost of individual raw materials shall also be submitted (detailed in clause 6 of Section-A). In the absence of the above information it will be construed that the price quoted are firm and fixed during the contract period or till completion of the total scope of work.
		e.	The rate quoted shall be on the basis of F.O.R SDSC SHAR, Sriharikota.

		f.	All rates of taxes/duties/levies applicable with details of percentage and applicable portion of the price should be spelt out clearly in the offer.
		g.	The variation in the GST or applicable statutory taxes shall be paid on documentary evidence submitted by the bidder during this contract.
	2.9		Online bids shall consist of the following:
			<p>All the documents mentioned below shall be scanned and uploaded in the ISRO e-procurement portal at documents solicited from Vendor. Bid submitted shall be as per tender document format along with the attachments, specifying attachment number arranged in the order as follows:</p> <ol style="list-style-type: none"> i. Submission of bid letter along with one set of tender documents duly signed and stamped as token of acceptance. ii. All the Annexures enclosed in proposal duly filled, signed and sealed <ol style="list-style-type: none"> a. Unpriced Copy of schedule of prices, Annexure-I: Schedule of Price with all other commercial terms and conditions duly filled, signed and stamped. b. Raw material base costs, filled as per Annexure-II: Base Raw Material Cost Index, along with necessary documentary evidence c. Deviations on clauses in tender document if any, filled as per Annexure-III: Exceptions and Deviations format d. Duly filled, signed & stamped Annexure-IV: Pre-Qualification Criteria, along with necessary documentary evidence. e. Duly filled, signed & stamped Annexure-V: Bidder Evaluation format, along with necessary documentary evidence. f. Duly filled, signed & stamped Annexure-VI: Compliance statement along with necessary documentary evidence. iii. Audited balance sheet including profit & loss account and IT returns for last 3 financial years ending with 31.03.2023 along with annual turnover statement of bidder. iv. Valid latest Income-Tax Clearance Certificate (ITCC) of bidder. In the absence of valid ITCC, bidder may not be considered for award of work. v. List of equipment/facilities available for processing Extruded Rubber sheets shall be submitted. vi. Any other relevant documents bidder desires to submit. vii. Validity of offer as per requirement indicated under above stated Clause No. 2.2 of tender document. <p>Note:</p>

			All the above documents shall be uploaded in the ISRO e-procurement portal.
3.			SUBMISSION OF BID
		a.	Bid duly filled shall be submitted in the following two parts in e- procurement portal only within stipulated time. i. Part -1: Techno-Commercial part of the Bid ii. Part-2: Price part of the Bid
		b.	Offers should be submitted online using standard digital signature of Class -3 with encryption/decryption options.
		c.	Prices shall be mentioned in the space/column provided in the ISRO e-procurement portal.
		d.	Department may open Part-I of the bid on the due date of opening at stipulated time. Price Bid (Part-II) of the bid of the technically and commercially acceptable bids shall be opened at a later date. Price-bid of technically and commercially suitable offer only shall be opened.
		e.	Department reserves the right to reject any or all the Bids without assigning any reasons thereof.
		f.	The Price shall be quoted in the on-line price bid in Indian rupees only.
		g.	In case of incomplete submissions, Department will not be under any obligation to give the bidder an opportunity to make good such deficiencies and Department may at its discretion treat such bids as incomplete and not consider for further evaluation.
4			BID OPENING AND EVALUATION
		a.	The bid which does not satisfy the pre-qualification criteria as mentioned in Annexure-IV or elsewhere in the document shall summarily be rejected and shall not be considered for further evaluation.
		b.	The complete scope of work is defined in the tender document. Only those Bidders who undertake total responsibility for the complete scope of work as defined in the tender document will only be considered. Part/Spilt offer is NOT acceptable.
		c.	During evaluation, purchaser may request Bidder for any clarification on the bid upon additional documents which is to be complied with; otherwise offer will be deemed incomplete.
		d.	Only bids of those Bidders who undertake total responsibility for the complete scope of supply (supply of 2 mm and 1 mm thick Rocasin rubber sheet) as defined in Section B & C shall be considered.
		e.	In case Bid does not fully comply with the requirement of tender document,

			Bidder has to stipulate deviations to the clauses of the tender in Annexure-III: Exceptions and deviations. In the event of these deviations are unacceptable to the Purchaser, the Bid will be rejected.
		f.	Bidder shall comply with the delivery schedule and contract period as per the tender document unconditionally.
		g.	The Overall Lowest Offer of the entire items (S. No 1 & 2 of Annexure-I: Schedule of price) will be considered for the evaluation. Award of contract shall be as mentioned in clause 6 below.
		h.	Purchaser reserves right to visit Bidder's site for verification/validation.
		i.	<u>Performance of Bidder</u> on similar nature of works executed/ under execution shall be taken into consideration before selecting the Bidder for opening his price bid.
		j.	<u>Purchaser's site visit during Technical evaluation:</u> In this regard, Purchaser's representative may visit the site where similar equipment, is in working condition, to evaluate the performance. Purchaser reserves right to visit client's site for verification/validation.
		k.	<u>Clarification & additional information:</u> During evaluation, Department may request Bidder for any clarification on the bid/ additional documents/ information required. Bidder shall submit all clarifications/ additional documents/ information requested in original. If not submitted within the stipulated time department has right to reject such bids.
		l.	<u>Techno-commercial discussions:</u> Techno-commercial discussions with bidder shall be arranged, if needed. Bidder shall depute his authorized representative(s) for attending the discussions. The representative(s) attending the discussions shall produce authorization from his organization to attend the discussions and sign the minutes of meeting on behalf of his organization. The authorized representatives must be competent and empowered to settle all technical and commercial issues.
		m.	Department reserves the right to accept a bid other than a lowest and to accept or reject any bid in full or part without assigning any reasons. Such decisions by the Purchaser shall bear no liability on the Department whatsoever consequent upon such decision. Department shall not be obliged to furnish any information / clarification to unsuccessful bidder as regard to non-acceptance of their bids.
		n.	Department reserves right to split order among three parties as detailed in Clause-6: Award of Work.

4.1		General
	a.	Bid is the responsibility of bidder and no relief or consideration can be given for errors and omissions made by the bidder inadvertently or advertently. Bid with incomplete information is liable for rejection.
	b.	The bid shall be evaluated as per bid evaluation criteria, wherever indicated in the tender document.
	c.	Non-submission of details / documents may lead to rejection of bid.
	d.	The bid of the bidder quoting completion time more than the time schedule specified in the proposal document may not be considered for evaluation.
	e.	In case the bid does not fully comply with the requirement of tender document and the bidder stipulates / retains exceptions and deviation to the clauses of tender document considered unacceptable or to any other clause considered unacceptable in the opinion of Department, the bid will be rejected.
4.2		Evaluation of price bid
		Priced bids of technically suitable bidders will only be opened and considered for evaluation. Bids shall contain clearly indicated figures.
4.3		Process to be confidential
	a.	Information related to the examination, clarification, evaluation and comparison of bids and recommendations not be disclosed to bidder or other person not officially concerned with such process. Any effort by bidder to influence the Department in processing of bid or award decisions may result in rejection of such bidder's offer.
	b.	Advertisements, press release or other specialized publicity documents, which are related to or reveal the existence of a tender and are intended by the Bidder for public distribution and/or the press, broadcasting, or television, shall be cleared/approved by the Department.
	c.	Department may direct the Bidder to withhold such publicity or to require modifications to the publicity material. The Bidder shall comply with such direction.
4.4		Department's right to accept or reject a bid
		Department reserves the right to accept a bid other than the lowest and to accept or reject any bid in whole or part, to annul the bid process or to reject all bids with or without notice or reasons. Such decisions by Department shall bear no liability whatsoever consequent upon such decisions.
5		DETERMINATION OF RESPONSIVENESS

		SDSC SHAR will scrutinize the bids to determine whether the bid is substantially responsive to the requirements of the tender document. For the purpose of this clause, a substantially responsive bid is one which inter-alia conforms to all the terms and conditions of the entire Tender document without any deviations and reservations. The decision of Purchaser shall be final in this regard.
6		AWARD OF WORK
		<p>Department reserves right to split order among three parties in the ratio of 40:30:30.</p> <p>The Overall Lowest Offer of the two items (S. No 1 & 2 of Annexure-I: Schedule of price) will be considered for the evaluation. If, in case, overall L1 is L2/L3/L4 for other item, the price for the item will be normalized with item-wise L1 of the price bids. After normalization, the party shall be awarded 40% of the total order quantities (for both the items). The L1 price, now, shall be offered to the L2 & L3 for price match and upon their acceptance, the balance quantities shall be split among these parties equally. In case, if L2 or L3 disagrees to match the price of L1, L4 and subsequently L5 shall be offered to match the price of L1 and the quantities shall be split as mentioned above, upon their acceptance.</p> <p>However, if the above exercise results in only two parties with L1 price (L1 & any of L2/L3/L4/L5), the order shall be split among the two parties in the ratio of 55:45.</p>

SECTION-A
GENERAL TERMS AND CONDITIONS OF CONTRACT

1.		MAKE IN INDIA CLAUSE
		For this procurement, bids from Class-I & class-II Local Suppliers are admissible. hence provisions contained in Public Procurement (Preference to Make in India), Order 2017 issued by Department for Promotion of Industry and Internal Trade (DIPP), Ministry of Commerce & Industries vide letter No. P-45021/2/2017-PP(BE-II) dated 04.06.2020 and subsequent amendment & directives shall be followed. Accordingly, offer will be evaluated & processed in conformation with above referred GOI order (Specially mentioned below). The bidder shall provide compliance and undertaking as per order and hereafter amendments:
	1.1	Order no: F.No.6/18/2019 PPD dated 16.09.2020 of Department of Expenditure), Ministry of Finance Under Public procurement division for the General Financial rule (GFRs) and subsequent amendment & directives shall be followed.
	1.2	Class-I local supplier means a supplier or service provider, whose goods, service or works offered for procurement, has local content equal to or more than 50%, as defined under Order.
	1.3	Class-II local supplier means a supplier or service provider, whose goods, services or works offered for procurement, has local content equal to or more than 20% but less than 50%, as defined under this Order.
	1.4	<p>Verification of local content:</p> <ul style="list-style-type: none"> i. The Class I local supplier/ Class- II local supplier at the time to tender, bidding or solicitation shall be required to indicate percentage of local content and provide self-certification that the item offered meets the local content requirement for Class-I local supplier / Class II local supplier as the case may be. They shall also give details of the location(s) at which the local value addition is made. ii. In case bid value is in excess of INR 10 Cr., Class-I local supplier / Class-II local supplier shall be required to provide a certificate from the statutory auditor or cost auditor of the company (in the case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content. iii. False declarations will be in breach of the code of Integrity under Rule

		<p>175(1)(i)(h) of the General Financial Rules (GFR) for which a bidder or its successors can be debarred for up to two years as per Rule 151(iii) of the general Financial Rules along with such other actions as may be permissible under Law.</p> <p>iv. A supplier who has been debarred by any procuring entity for violation of this order shall not be eligible for preference under this order for procurement by any other procuring entity for the duration of the debarment.</p>
	1.5	The percentage of local content should be specifically mentioned in the offer, without which it will be summarily rejected.
	1.6	Preference will be given to Class-I Local supplier and in their absence, Class-II Local supplier will be considered.
2.		PAYMENT TERMS
	2.1	In general, our payment terms will be 100% within 30 days after receipt and final acceptance at SHAR site on pro-rata basis.
3.		MODE OF PAYMENT
		Bidders can submit the banker details and Payments can be made through NEFT/RTGS/ECS through PFMS.
4.		DELIVERY TERMS
	4.1	The rate quoted shall be on F.O.R SDSC SHAR, Sriharikota basis.
	4.2	Vendor is responsible for transportation of the item to purchaser's site at SHAR.
	4.3	All risk in transit shall be exclusively borne by the contractor. Purchaser shall pay only for such items as are actually received in good condition & finally accepted in accordance with the purchase order.
5.		DELIVERY SCHEDULE
	5.1	The delivery of ROCASIN sheets shall be in staggered manner in 4 years and as per the requirement of the Purchaser.
	5.2	For supply of Extruded ROCASIN sheets, delivery of the required material shall be within 15 days from the date of intimation of the requirement.
	5.3	Failure to supply material within 30 days from the date of intimation, the purchaser reserves the right to short-close the PO and prohibit the vendor from participating in any bidding processes of Govt. of India.
6.		PRICE ESCALATION/REVISION FORMULA
	6.1	The prices for the material supply shall be firm and fixed for 18 months. These prices are based on the cost of input raw materials for the

		manufacturing of rubber and the cost of other utilities like power, cooling water etc. The prices will be subjected to revision as per price escalation formula as given below.
	6.2	$P_N = P_O \left\{ \left(0.55 \times \frac{ML_n}{ML_o} \right) + \left(0.25 \times \frac{CPI_n}{CPI_o} \right) + 0.2 \right\}$ <p>Where</p> <p>P_N = Revised Price</p> <p>P_O = Initial PO Price</p> <p>ML_n = New landed cost of Raw materials in Rupees, at vendor premises</p> <p>ML_o = Base landed cost of Raw materials in Rupees, at vendor premises, calculated at the time of offer submission</p> <p>CPI_n = New All India Consumer Price Index for Industrial Workers of the previous month from which the price revision/amendment is proposed</p> <p>CPI_o = All India Consumer Price Index for Industrial Workers at the time of release of Contract.</p> <ul style="list-style-type: none"> • ML_o & ML_n shall exclude GST. • This clause shall be applicable only when the calculated escalation is above 2%, otherwise price shall remain same for that duration. • For increase up to 12%, the actual increase or 10% whichever is less • For increase more than 12%, the actual increase with less 2% discount • Bidder shall provide the value of ML_o along with necessary documentary evidence, at the time of bid submission, as in the format of Annexure-II. This value shall be considered for price revision as and when applicable.
	6.3	<p>Landed cost of raw materials listed in technical document, required to produce one Kg of ROCASIN rubber compound. The invoice cost as procured by the party is taken as proof.</p> <p>All India Consumer Price Index for Industrial Workers (CPI) means, the index as published by the Ministry of Labor from time to time. (Base 2016 = 100)</p>
	6.4	The price for supply of ROCASIN rubber will be revised both upward and downward as per the above price revision formula every year, after 18 months of order placement. All elements of cost as per above price revision formula shall be supported by relevant documents to be provided by contractor to the Purchaser. The decision of the Purchaser to accept or

		reject or provide alternative documentary proof is final and binding and the same is to be considered for price revision.
	6.5	The vendor shall procure the raw materials through a mechanism to ensure that the raw materials are procured at the lowest price offered by the technically suitable sources i.e., at least two quotes should be received, of which order shall be placed on lowest technically suitable bidder for each raw material. At least two quotes received for each raw material shall be submitted for price escalation. Any deviation in this regard shall be brought to the notice of the department prior to procurement, to be considered for price escalation.
	6.6	With reference to the above sub-clause, if at any stage it comes to the notice of the department that the aforementioned clause is not complied with, the department reserves the right to arrive and pay the amount considering the lowest technically suitable sources prevailing in the market at the time of procurement by the vendor.
	6.7	For price escalation during a particular period, the vendor shall submit all the invoices of all the raw materials procured during last 12 months (in line with the quantity of Rocasin rubber supplied) and the weight-average price of the raw materials only shall be considered in price revision/escalation formula.
7.		CONTRACT DURATION
	7.1	Duration of the Contract shall be 4 years or till the completion of the quantities mentioned in the P.O, whichever is later. However, if the quantities are not exhausted within the period, the contract duration may be extended following DOS Purchase guidelines with the consent of the vendor.
	7.2	± 25% tolerance in the PO quantities may be applied by the Department, if required.
8.		LIQUIDATED DAMAGES/PENALTY CLAUSE
		In the event of the Vendor failing to supply the material within the delivery period specified in the contract agreement (as per delivery schedule provided in Clause 5 above) or any extension agreed thereto, the Purchaser shall reserve the right to recover from the Vendor as liquidated damages/penalty clause, a sum of 0.5 percentage per week or part thereof of the undelivered portion of the of that material lot. The Total liquidated damages shall not exceed the 10.0 percentage of the cost of the material lot requested for.
9.		TAXES AND DUTIES

	9.1	GST
		5% IGST shall be applicable. As per the Notification No. 6/2018-Central Tax (Rate) dt:25.01.2018 A(ix) S.No.243A as amended by Notification No.25/2018-Integrated Tax (Rate) Dt: 31.12.2018 b(viii) S.No.243B issued by Ministry of Finance (Dept. of Revenue), SDSC SHAR is eligible to avail IGST @5% for the procurements related to Scientific and technical instruments, apparatus, equipment, accessories, parts, components, spares, tools, mock ups and modules, raw material and consumables required for launch vehicles and satellites and payloads. End user certificate for the same shall be provided by the department, based on the vendor's request.
10.		RISK COVERAGE
		SDSC SHAR will not pay any insurance taken by the vendor. The Vendor shall include the cost of arranging comprehensive risk coverage at his own cost covering the value of material lot including transportation to the site from manufacturer's works.
11.		SECURITY DEPOSIT
	11.1	If Order value exceeds Rs. 5 Lakhs, Security Deposit shall be submitted at 3% (or as notified by Govt. Of India/ISRO from time to time) contract price of the work awarded per year as per the format issued by the purchaser for satisfactory execution of the Purchase Order/Contract. Security Deposit may be furnished in the form of Insurance Security Bonds, Account Payee Demand Draft, Fixed Deposit Receipt from a commercial Bank, Bank Guarantee (including e-Bank Guarantee) from a Commercial bank executed on Rs.100/- non-judicial stamp paper or online payment in an acceptable form and shall be valid for a period of sixty days beyond the date for completion of the Purchase Order/Contract. The bank guarantee or fixed deposit receipt submitted by the tenderer/Contractor shall be verified immediately from the issuing bank. In case the vendor fails to furnish the security deposit within the specified date, the Purchase Order/Contract shall be cancelled, and the EMD, if any, made earlier shall be forfeited.
	11.2	The security deposit (bearing no interest) shall be held by the Purchaser as security till satisfactory completion, testing and handing over of all the system and for the due performance of all vendors' obligations under the contract as per delivery period or extension granted thereof by the Purchaser.

	11.3	Within 10 days from the date of receipt of contract, vendor shall deposit the security deposit to the Accounts officer, Satish Dhawan Space Centre SHAR, Sriharikota as detailed above by any of the following modes. i. By a crossed demand draft in favor of Accounts officer, Satish Dhawan Space Centre SHAR drawn on SBI and payable at Sriharikota. ii. By an acceptable bank guarantee. The bank guarantee shall be from a reputed international/nationalized/scheduled bank.
	11.4	In case of breach of contract, the Security deposit shall stand forfeited in addition to other relief available to the Purchaser under this contract.
12.		PACKING AND FORWARDING
	12.1	The Vendor shall arrange to have all the material suitably packed as per the standards & statutes. The wrapping cloth shall be qualified and approved by the purchaser before using it for packing initially. All containers (including packing cases, boxes, tins, drums, pipes and wrappings) used by the Vendor for packing shall be returnable on the basis of returnable document, the collection and transportation, of which is under the scope of vendor. However, the wrapping cloth needs to be suitably cleaned before being used for subsequent lots.
	12.2	All packing and transport charges, transit handling costs, transit risk coverage and transport fees of agents employed at the place of delivery or elsewhere, shall be deemed included in the price to be paid to the Vendor.
	12.3	Material and samples shall reach their respective destination within 3-5 days of accelerator addition.
13.		DISCLOSURE AND USE OF INFORMATION BY THE VENDOR
	13.1	Vendor shall take all necessary steps to ensure that the requirements of the contract or any specification, plan, formulation, drawing, pattern, sample or information supplied by, or on behalf of, the Purchaser in connection therewith shall not be disclosed to any person other than a person employed or engaged by the Vendor, whether under sub-contract or otherwise, for the performance of the contract.
	13.2	Bidder shall guarantee that all information and data received during execution of Contract from Purchaser shall be classified as confidential within the meaning of the Official Secrets Act and will not be divulged to any third bidder without prior written permission of Purchaser.
14.		ARBITRATION
		In the event of any dispute/s, difference/s or claim/s arising out of or relating

		<p>to the interpretation and application of the Contract, such dispute/s or difference/s or claim/s shall be settled amicably by mutual consultations of the good Offices of the respective Parties and recognizing their mutual interests attempt to reach a solution satisfactory to both the parties. If such a resolution is not possible, within 30 days from the date of receipt of written notice of the existence of such dispute/s, then the unresolved dispute/s or difference/s or claim/s shall be referred to the Sole Arbitrator appointed by the Parties by mutual consent in accordance with the rules and procedures of Arbitration and Conciliation Act 1996 as amended from time to time. The arbitration shall be conducted at Sriharikota as per its rules and regulations. The expenses for the Arbitration shall be shared equally or as may be determined by the Arbitrator. The considered and written decision of the Arbitrator shall be final and binding between the Parties. The applicable language for Arbitration shall be “English” only.</p> <p>Work under the Contract shall be continued by the CONTRACTOR during the pendency of arbitration proceedings, without prejudice to a final adjustment in accordance with the decision of the Arbitrator unless otherwise directed in writing by the DEPARTMENT or unless the matter is such that the works cannot be possibly continued until the decision (whether final or interim) of the Arbitrator is obtained.</p> <p>In case order is concluded on the Public-Sector Undertakings, the following Arbitration Clause will be applicable:</p> <p>In the event of any dispute(s) or difference(s) relating to the interpretation and application of the provisions of the commercial contracts between ISRO/SDSC SHAR & Central Public Sector Enterprises (CPSEs)/Port Trusts inter se and also between ISRO/SDSC SHAR & CPSEs and Government Departments/Organizations (excluding disputes concerning Railways, Income Tax, Customs & Excise Departments), such dispute(s) or difference(s) shall be taken by either party for resolution through the “Administrative Mechanism for Resolution of CPSEs Disputes (AMRCD)”, as mentioned in the Office Memorandum F No. 4(1)/2013-DPE(GM)/FTS-1835 dated 22nd May, 2018 issued by the Director of the Department of Public Enterprises (DPE) under the Ministry of Heavy Industries and Public Enterprises, Government of India.</p>
15.		IPR
		Any IPR related issues arising out of infringement by the Vendor shall be

			totally to his account and SDSC SHAR shall not be held responsible in any manner.
16.			APPLICABLE LAW AND JURISDICTION
			The laws of India shall govern this contract for the time being in force. The Courts of Andhra Pradesh, India only shall have jurisdiction to be with and decide any legal matters or disputes what so ever arising out of the contract.
17.			FORCE MAJEURE
	17.1		Force Majeure is an event beyond the control of the bidder and not involving the bidder's fault or negligence and which is not foreseeable. Such events may include, but are not restricted to, acts of the purchaser either in its sovereign or contractual capacity, wars or revolutions, hostility, acts of public enemy, civil commotion, sabotage, fires, floods, explosions, epidemics, quarantine restrictions, strikes, lockouts, and freight embargoes.
	17.2		If there is delay in performance or other failures by the bidder to perform its obligation under its contract due to event of a Force Majeure i.e., if a Force Majeure situation arises, the bidder shall promptly notify the purchaser in writing of such conditions and the cause thereof within 7 days of occurrence of such event. The Purchaser shall determine, in the light of circumstances reported, whether or not any respite or modification of the delivery requirements of the contract can be permitted on this account.
	17.3		Unless otherwise directed by the purchaser in writing, the bidder shall continue to perform its obligations under the contract as far as reasonably practical and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.
	17.4		An extension of the time limit for execution or postponement of delivery shall be granted only in the respect of delay, which is not attributable to the fault or the negligence of the Bidder. An extension of the time limit for execution shall be granted to the bidder to the extent that bidder establishes force majeure events.
	17.5		There may be a Force Majeure situation affecting the purchase organization only. In such a situation the purchase organization is to take up with the bidder on similar lines as above for further necessary action.
18.			EXTENSION OF WORK COMPLETION PERIOD
	18.1		If the completion of deliveries of material is delayed due to reason of Force Majeure the Bidder shall without delay give notice to the Purchaser in

		writing of their claim for an extension of time. The Purchaser on receipt of such notice may agree to extend the delivery date as may be reasonable but without prejudice to other terms and conditions of the Contract.
	18.2	Both parties shall keep a record of the circumstances referred to above which are responsible for causing delays in the execution of the services and shall give notice to the other bidder of any such cause as soon as it occurs. An event of Force Majeure, where so ever it occurs, provided it affects either bidder in fulfilling its obligations under this contract, shall justify the affected bidder's claim of Force Majeure. Should one or both the parties be prevented from fulfilling their contractual obligations by a state of Force Majeure lasting continuously for more than a month, the parties shall consult with each other regarding the future execution of the contract.
19.		SAFETY AND SECURITY
		Vendor shall follow the safety regulations / codes or safety instructions issued by PURCHASER and shall take necessary measures at his own cost. The contractor personnel have to undergo security checks by security force i.e., CISF. All the working personnel shall comply with code of conduct during their stay inside the SHAR campus.
20.		SITE DETAIL
		The indented material is to be supplied to HIL, SMPC Unit-II in SDSC SHAR, Sriharikota. The place "Sriharikota" is 20 km East of Sullurupeta (nearest town) which is 80 km East of Tirupati, Andhra Pradesh, INDIA.
21.		SUB-CONTRACT
		The vendor shall manufacture Rocasin rubber sheets on their own and supply to SDSC SHAR. Any of the work shall not be subcontracted.
22.		ACCEPTANCE AND REJECTION
	22.1	On completion of production of material (based on the user requirement) as specified in the contract by the bidder, bidder shall inform the same to the Purchaser and transport the samples for testing.
	22.2	If the ordered material does not meet the prescribed specifications or are damaged at the time of delivery or fail during inspection/testing, they shall be rejected, and the Bidder / manufacturer shall replace them at their own cost.
	22.3	Purchaser has the right to reject the material on receipt at site during final inspection though the material has already been inspected and cleared post production, if they found not meeting the overall performance requirements.

	22.4		The material rejected shall be deemed as material not supplied and LD shall be suitably levied.
23.			SUSPENSION
	23.1		Purchaser may notify the Bidder to suspend performance of any or all of his obligations under the Contract. Such notice will specify the reasons for suspension and the effective date of suspension. Bidder there upon shall suspend the performance of such obligations until ordered in writing to resume performance of Contract by Purchaser.
	23.2		If Bidder's performance or his obligations remain suspended or the rate of progress is reduced, then, the time of completion will be suitably extended and all costs incurred by Bidder as a result of suspension or reduction in rate of progress will be paid to Bidder provided that the suspension or reduction in the rate of progress is not by reasons of Bidder's default or breach of Contract.
24.			CANCELLATION
	24.1		GENERAL RULE: The Purchaser shall have the right at any time to cancel a contract either wholly or in part by giving written notice by registered mail. From the time of receipt of the written notice the Bidder shall undertake to observe the instructions of the Purchaser as to the winding up of the contract both on his own part and on the part of his sub-bidders.
	24.2		WITHOUT FAULT OF BIDDER: In the case of cancellation of a contract by the Purchaser without any fault of the Bidder, the Bidder shall on receipt of Purchaser's instructions forthwith take the necessary steps to implement them. The period to be allowed to implement them shall be fixed by the Purchaser after conclusion with the Bidder and, in general, shall not exceed three months. Subject to the Bidder confirming, Purchaser shall take over from the Bidder at a fair and reasonable price all finished parts not yet delivered to the Purchaser, all unused and undamaged material, bought-out components and articles in course of manufacture in the possession of the bidder and property obtained by or supplied to the Bidder for the performance of the contract, except such material, bought-out components and articles in course of manufacture as the bidder shall, with the agreement of the Purchaser, elect to retain.
	24.3		WITH FAULT OF BIDDER: The Purchaser reserves the right, after full consideration of all relevant circumstances, including the observations of

			the bidder, to cancel a contract in any of the following circumstances.
		a.	In the event of the Bidder's failure to meet requirement of the purchase order. 1) The Technical requirements of the Bidder. 2) The Progress and/or delivery requirements.
		b.	If the Bidder has not observed the provisions of the contract concerning the disclosure and use of information provided by the Purchaser.
		c.	If the Bidder fails to comply with the provisions of the contract concerning the equipment, supplies and technical documents made available by the Purchaser.
		d.	If the Bidder transfers his contract without the Purchaser's authorization or concludes sub-contracts against the Purchaser's explicit directives.
		e.	In the event that Bidder unjustifiably repudiates the Contract or fails to ship or dispatch all or part of the goods ordered for reasons other than those attributed to the Purchaser's actions or as provided in the Force Majeure clause, the Purchaser may, by giving an appropriate notice in writing to the Bidder, fix a Date of Essence by which the Bidder shall complete the dispatch in full. If the Bidder fails to do so, the Purchaser, in addition to his right to recover Liquidated Damages in terms of the Contract, shall also have the right to cancel this Contract and make substitute purchases from other sources.
		f.	In the event of such cancellation, the Purchaser shall unless otherwise specified in the contract, there is no obligation on the Purchaser to pay losses incurred by the bidder.
		g.	In the event of such cancellation, the Purchaser shall unless otherwise specified in the contract, only pays. 1) In the case of a fixed-cost contract for the supply of equipment or material – The contractual value of items delivered and accepted under the contract before receipt of notification of cancellation, or to be accepted under the special conditions of cancellation. 2) In the other cases – A fair and reasonable price in respect of such work as has been carried out prior to the receipt by the Vendor of notification of cancellation.
25.			Purchase preference to Micro and Small Enterprises (MSEs)
			Purchase preference will be given to MSEs as defined in Public Procurement Policy for Micro and Small Enterprises (MSEs) Order, 2012

		<p>dated 23.03.2012 issued by Ministry of Micro, Small and Medium Enterprises and its subsequent Orders/Notifications issued by concerned Ministry. If the bidder wants to avail the Purchase preference, the bidder must be the manufacturer of the offered product in case of bid for supply of goods. Traders are excluded from the purview of Public Procurement Policy for Micro and Small Enterprises. In respect of bid for Services, the bidder must be the Service provider of the offered Service. Relevant documentary evidence in this regard shall be uploaded along with the bid in respect of the offered product or service. If L-1 is not an MSE and MSE Seller (s) has/have quoted price within L-1 plus 15% (Selected by Buyer) of margin of purchase preference/price band defined in relevant policy, such Seller shall be given opportunity to match L-1 price and contract will be awarded for 25% (selected by Buyer) percentage of total QUANTITY. Please specify whether you belong to MSE or not. If YES, supporting documents shall be uploaded. Latest Udayam registration certificate for the current Financial year shall be submitted.</p> <p>MSE Purchase preference will be applicable only to the manufacturers of the items offered and supporting documents to that shall be submitted. Traders are not eligible for MSE Purchase preference.</p>
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SECTION – B SCOPE OF WORK

1.		INTRODUCTION
		ROCASIN rubber is an insulation material to be lined inside Solid rocket motors. It is based on the copolymer of Acrylonitrile and Polybutadiene known as NBR as per ASTM code. Its formulation contains heat resistant silica filler, cross linking chemicals, plasticizer and other special additives to render ROCASIN as a good insulation rubber compatible with different hardware. With high tensile strength and strain capability and excellent thermal resistance properties, it finds application in many areas. ROCASIN rubber was specially developed by ISRO for specific applications
2.		VENDOR'S SCOPE
	2.1	<p>Vendor's scope includes</p> <ul style="list-style-type: none"> a) Sourcing of raw materials of specific brands/grades (as mentioned in Clause 1.3 of Section-C) from purchaser approved manufacturers/dealers b) Testing and qualification of the raw materials by Government approved third party agencies (with the prior approval of purchaser) whenever vendor procures raw material c) Production & Transportation of Rocasin rubber meeting the required specifications (as mentioned in Clause 2 of Section – C). d) Transportation of Rocasin rubber samples (2 sets to VSSC & 2 sets along with material to SDSC SHAR) for qualification. e) Forwarding the reports of Thickness values and mechanical properties achieved by testing at vendor's site. f) Forwarding the log-sheets containing the validity periods of raw materials used in the production of material
	2.2	Delivery and Storage:
	a.	Finished rubber rolls are to be stored in an air-conditioned area, till they are dispatched to SDSC SHAR for lining works. The temperatures are to be monitored regularly. Vendor shall take proper care while storing the material and shall provide watch and ward at his own cost.
	b.	The Vendor shall be responsible for transporting material to site. All the material shall be properly packed to avoid any damage during transportation / handling / storage.
	c.	Party shall undertake the responsibility of the material during transportation

		to Sriharikota.
	2.3	Total requirement over a period of 4 years
		<p>2 mm thick extruded Rocasin rubber sheet – 1,22,000 Kg</p> <p>1 mm thick extruded Rocasin rubber sheet – 5,350 Kg</p> <p>The purchaser reserves the right to split order among the vendors. It implies that the required quantity projected in the tender document shall not be completely awarded to single vendor.</p>
3.		PURCHASER'S SCOPE
	3.1	<p>Testing of Rocasin rubber samples for thermal, mechanical and erosion properties. Final acceptance of the lot shall be given only after successful qualification of samples in all aspects viz. visual, dimensional along with mechanical & thermal properties.</p>

SECTION – C TECHNICAL SPECIFICATIONS

1.			ROCASIN RUBBER PROCESSING
	1.1		Introduction
		a.	ROCASIN is a rubber compound based on the copolymer of Acrylonitrile and polybutadiene known as NBR as per ASTM code. Its formulation contains heat resistant silica filler, cross linking chemicals, plasticizer and other special additives to render ROCASIN as a good insulation rubber compatible with different hardware. With high tensile strength and strain capability and excellent thermal resistance properties, it finds application in many areas. This ROCASIN rubber was specially developed by ISRO for specific applications and hence the details given here are confidential.
		b.	The ROCASIN rubber manufacturing starts with the compounding of the chemicals as specified in the composition and sheeting by extrusion in the un-vulcanized condition.
		c.	This document gives the processing details of ROCASIN Rubber. The contractor shall have sufficient infrastructure and storage facilities. It shall have stock register and bin tag in an identified location for all raw materials and finished products at their factory separately.
		d.	The contractor shall have rubber compounding and extruding machinery to manufacture the extruded ROCASIN rubber meeting ISRO specifications, with sufficient manpower to operate in shifts.
		e.	This product is a white line rubber and hence the machinery should not be used for any other color lines.
	1.2		Raw materials used for production of Rocasin
			<p>Raw materials used for production of Rocasin is given below, specifications of which are given in Clause 4 of Section – C.</p> <ul style="list-style-type: none"> i. NBR Polymer - Perbunan NT/3445 (Medium high acrylonitrile) ii. Silica - Ultrasil VN-3 iii. Insoluble Sulfur - Crystex-N (DS-90) iv. Dioctyl Phthalate v. Zinc Oxide – White seal grade vi. Stearic acid – Hytitre grade vii. Terpene Phenolic Resin - DRT-70-TP viii. Mercapto Benzo thiazyl disulphide (MBTS) ix. Tetra methyl Thiuram Disulphide (TMTD) x. Diethylene Glycol

	1.3		Procurement of Raw Materials																																	
		a.	<p>The raw materials required for processing of Rocasin rubber can be sourced from primary rubber chemicals manufacturers and their dealers located all over India, as per the details given in table.</p> <p>Recommended raw materials sources:</p> <table><tr><th>MATERIAL</th><th>BRAND/GRADE</th><th>MAKE</th></tr><tr><td>NBR Polymer (Medium high acrylonitrile)</td><td>Perbunan NT 3445 JSR230SL</td><td><ul style="list-style-type: none">M/s. Lanxess/ Arlanexo, GermanyM/s. JSR, Japan</td></tr><tr><td>Silica</td><td>Ultrasil VN-3</td><td><ul style="list-style-type: none">M/s. Evonic, Germany</td></tr><tr><td>Insoluble Sulfur</td><td>Crystex N (DS-90)</td><td><ul style="list-style-type: none">M/s. Oriental carbon & Chemicals, India</td></tr><tr><td>Diocetyl Phthalate</td><td>---</td><td><ul style="list-style-type: none">M/s. Indo GSP Chemicals, GujaratM/s. KLJ Plasticizers, Mumbai</td></tr><tr><td>Zinc Oxide</td><td>White seal grade</td><td><ul style="list-style-type: none">M/s. AVR Zinc products Pvt. Ltd., IndiaM/s. Multichem, MumbaiM/s. Vora Bros, Mumbai</td></tr><tr><td>Stearic acid</td><td>Hytitre grade</td><td><ul style="list-style-type: none">M/s. Godrej India, Mumbai</td></tr><tr><td>Terpene Phenolic Resin</td><td>DRT-70TP</td><td><ul style="list-style-type: none">M/s. Camphor & Allied Products, ChennaiM/s. Mangalam Ltd., Mumbai</td></tr><tr><td>Mercapto Benzothiazyl disulphide (MBTS)</td><td>---</td><td><ul style="list-style-type: none">M/s. Bayer, IndiaM/s. NOCIL, MumbaiM/s. Arlanexo, Germany</td></tr><tr><td>Tetra methyl thiuram disulphide (TMTD)</td><td>---</td><td><ul style="list-style-type: none">M/s. Bayer, IndiaM/s. NOCIL, MumbaiM/s. Arlanexo, Germany</td></tr><tr><td>Diethylene Glycol</td><td>---</td><td><ul style="list-style-type: none">M/s. KLJ Plasticizers, Mumbai</td></tr></table>	MATERIAL	BRAND/GRADE	MAKE	NBR Polymer (Medium high acrylonitrile)	Perbunan NT 3445 JSR230SL	<ul style="list-style-type: none">M/s. Lanxess/ Arlanexo, GermanyM/s. JSR, Japan	Silica	Ultrasil VN-3	<ul style="list-style-type: none">M/s. Evonic, Germany	Insoluble Sulfur	Crystex N (DS-90)	<ul style="list-style-type: none">M/s. Oriental carbon & Chemicals, India	Diocetyl Phthalate	---	<ul style="list-style-type: none">M/s. Indo GSP Chemicals, GujaratM/s. KLJ Plasticizers, Mumbai	Zinc Oxide	White seal grade	<ul style="list-style-type: none">M/s. AVR Zinc products Pvt. Ltd., IndiaM/s. Multichem, MumbaiM/s. Vora Bros, Mumbai	Stearic acid	Hytitre grade	<ul style="list-style-type: none">M/s. Godrej India, Mumbai	Terpene Phenolic Resin	DRT-70TP	<ul style="list-style-type: none">M/s. Camphor & Allied Products, ChennaiM/s. Mangalam Ltd., Mumbai	Mercapto Benzothiazyl disulphide (MBTS)	---	<ul style="list-style-type: none">M/s. Bayer, IndiaM/s. NOCIL, MumbaiM/s. Arlanexo, Germany	Tetra methyl thiuram disulphide (TMTD)	---	<ul style="list-style-type: none">M/s. Bayer, IndiaM/s. NOCIL, MumbaiM/s. Arlanexo, Germany	Diethylene Glycol	---	<ul style="list-style-type: none">M/s. KLJ Plasticizers, Mumbai
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		b.	In order to accept new sources, qualification trials are to be carried out and the data is to be generated.																																	
		c.	In case of NBR polymer & Silica, any change in source/grade shall be only after obtaining clearance from the Department, by evaluation and assessment of mechanical, thermal and interface properties by																																	

			compounding number of small batches with the chosen NBR polymer & Silica.																																																
		d.	Any other brands/makes developed at ISRO and cleared by the Department, will be intimated accordingly for future procurement/usage in process.																																																
		e.	If any quality related issues are observed with a particular source of any raw material, the Department reserves the right to change the source and the vendor shall comply with the same.																																																
	1.4		Rubber Processing																																																
		a.	ROCASIN rubber shall be manufactured in continuous sheets of 1mm and or 2mm thick as required using a two-roll mixing mill and an EXTRUDER. The below process steps may be tailored to suit the infrastructure available with the vendor for achieving the desired properties of ROCASIN rubber with the prior approval of the purchaser.																																																
		b.	For a batch size of 18.125 kg of the rubber, following is the composition. Rocasin Rubber Composition <table border="1"> <thead> <tr> <th>S. No.</th><th>Description</th><th>Unit</th><th>Required Qty</th></tr> </thead> <tbody> <tr> <td>1.</td><td>NBR Polymer (Medium High Acrylonitrile)</td><td>Kg</td><td>10.000</td></tr> <tr> <td>2.</td><td>Ultrasil VN-3 Silica</td><td>Kg</td><td>5.000</td></tr> <tr> <td>3.</td><td>Insoluble Sulphur (Crystex N DS90 Grade)</td><td>Kg</td><td>0.150</td></tr> <tr> <td>4.</td><td>Diocetyl Phthalate(DOP)</td><td>Kg</td><td>1.000</td></tr> <tr> <td>5.</td><td>Zinc Oxide</td><td>Kg</td><td>0.500</td></tr> <tr> <td>6.</td><td>Stearic Acid (Hytitre Grade)</td><td>Kg</td><td>0.100</td></tr> <tr> <td>7.</td><td>DRT-70 TP</td><td>Kg</td><td>1.000</td></tr> <tr> <td>8.</td><td>Mercapto Benzothiazyl Disulphide (MBTS)</td><td>Kg</td><td>0.150</td></tr> <tr> <td>9.</td><td>Tetra methyl Thiuram Disulphide (TMTD)</td><td>Kg</td><td>0.025</td></tr> <tr> <td>10.</td><td>Diethylene Glycol (DEG)</td><td>Kg</td><td>0.200</td></tr> <tr> <td></td><td>Total</td><td></td><td>18.125</td></tr> </tbody> </table>	S. No.	Description	Unit	Required Qty	1.	NBR Polymer (Medium High Acrylonitrile)	Kg	10.000	2.	Ultrasil VN-3 Silica	Kg	5.000	3.	Insoluble Sulphur (Crystex N DS90 Grade)	Kg	0.150	4.	Diocetyl Phthalate(DOP)	Kg	1.000	5.	Zinc Oxide	Kg	0.500	6.	Stearic Acid (Hytitre Grade)	Kg	0.100	7.	DRT-70 TP	Kg	1.000	8.	Mercapto Benzothiazyl Disulphide (MBTS)	Kg	0.150	9.	Tetra methyl Thiuram Disulphide (TMTD)	Kg	0.025	10.	Diethylene Glycol (DEG)	Kg	0.200		Total		18.125
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		a.	Premixing																																																
			This involves the thorough mixing of all ingredients with the Polymer except the accelerators. A two-roll rubber mixing mill is used for this process.																																																

		<p>Before start of the mixing operation, the mixing mill shall be thoroughly cleaned. All the ingredients required for the batch except NBR should be screened to remove any foreign bodies and weighed out accurately using highly accurate balances, to be calibrated periodically. The weighed polymer is taken on the mixing mill (with a close nip) for mastication. During mastication the slabs of polymer are broken down and reduced to a sticky band of sheet holding on to the slower roll. Incorporation of Zinc oxide and stearic acid is carried out next.</p> <p>DRT-70-TP is added, followed by the addition of Ultrasil VN-3. After completing all additions, mixing is continued to get uniform dispersion. The band is frequently parted off from the mill using scrapper blades and returned to the nip. Fallouts on the pan are swept and reincorporated. After completing the dispersion, the compound is released from the mill as a continuous sheeting of about 4 to 5 mm. thick. This thick sheet from each compounded batch is kept under ambient the conditions for de-aeration/cooling for a minimum duration of 12 hours.</p>
		b. Final Mixing & Extrusion
		<p>The compound in the form of a blank, taken to the required weight, is once again fed to the mixing mill and is warmed up by mastication. After the mix has become sufficiently plastic, the accelerators are added and the mixing is continued to ensure uniform dispersion. Extreme care should be taken to ensure thorough dispersion. Fallen materials should be collected carefully and added. At the end of this final mixing the gap between the roller are suitably adjusted to draw a coarse band of 5mm thick. This coarse band is fed directly into the extruder to produce sheets of either 1 mm or 2 mm uniform thickness. The sheets are rolled up in clean cloth ensuring that the cloth doesn't make any impression on the rubber.</p>
		c. Storage of Rubber Rolls
		<p>Finished rubber rolls are to be stored in an air-conditioned area, till they are dispatched to SDSC SHAR for lining works. The temperatures are to be monitored regularly.</p>
		d. QAP & Terms for qualification
		<p>The brief description of the rubber processing is given above. The party shall submit detailed manufacturing process operations in compliance with QAP along with the quote.</p>
	1.5	Rubber Manufacturing Process Qualification Trials:

		a.	PHASE-1 Trials
			<p>Supply of approximately 50 Kg of Extruded ROCASIN rubber-sheet processed using the infrastructure identified for ROCASIN rubber Manufacture as per the adapted procedure.</p> <ul style="list-style-type: none"> i. Acceptance criteria for the above sheet: Thickness: $2 \pm 0.2\text{mm}$ and $1 \pm 0.1\text{mm}$ sheets. ii. Appearance: Free from air inclusions, blisters, other surface defects and discoloration. iii. Samples drawn from the above Rocasin lot will be tested for the Mechanical properties, Thermal properties and Rheological properties as mentioned in Section-C/Clause-2.
		b.	PHASE-2 Trials
			<p>Evaluation of the interfacial bond properties and Sub-scale motor test following Quality acceptance plan laid down by ISRO are to be carried out after order confirmation.</p> <ul style="list-style-type: none"> i. Evaluation of Interfacial bond properties: Metal to rubber, Propellant to rubber, inhibition to rubber, Twaron to rubber Tensile & peel bond properties will be evaluated. ii. Sub-scale motor test for evaluating the thermal performance. iii. Evaluation of shelf life of ROCASIN rubber.
2.			ROCASIN RUBBER SPECIFICATIONS
			After manufacturing, the Extruded ROCASIN rubber sheet shall be delivered at SDSC SHAR. The following inspection procedures will be followed for the acceptance.
	2.1		Visual & Dimensional Inspection
			The extruded ROCASIN rubber shall be supplied in rolls of 20 to 25 meters with a nominal width of 1 meter and it shall have a smooth surface, free from pores, bubbles, inclusions, blisters, color shades and other surface defects. The thickness shall be 1 or 2mm with a tolerance of $\pm 10\%$. The thickness measurement is done on number of random locations across the width and length of the sheet. It has to be ensured that the cloth used to wrap Rocasin rubber shall not leave impression on the rubber.
	2.2		Mechanical & Physical Properties
			For this purpose, from each roll a sample will be drawn, identified by a Roll No, vulcanized and properties evaluated. Samples are vulcanized in a hot air oven at 120°C for 4 h and then sent to Mechanical property evaluation.

			<p>This testing will be carried out by Purchaser and shall meet the following specifications.</p> <table><tr><th>S. No.</th><th>Mechanical Property</th><th>Specification</th></tr><tr><td>1.</td><td>Tensile Strength (Kg/sq.cm)</td><td>Min.100</td></tr><tr><td>2.</td><td>Elongation (%)</td><td>Min. 600</td></tr><tr><td>3.</td><td>Hardness (Shore A)</td><td>60 - 75</td></tr><tr><td>4.</td><td>Density (gm /cc)</td><td>1.19 ± 0.02</td></tr></table>	S. No.	Mechanical Property	Specification	1.	Tensile Strength (Kg/sq.cm)	Min.100	2.	Elongation (%)	Min. 600	3.	Hardness (Shore A)	60 - 75	4.	Density (gm /cc)	1.19 ± 0.02	
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	2.3		Determination of physical and mechanical properties																
		a.	Tensile strength, percentage elongation, hardness and density are the properties to be evaluated by the party for quality control of vulcanized Rocasin sheets.																
		b.	<p>Tensile strength and elongation are found out using uniaxial tensile testing specimen as per Indian Standard IS 3400 (Part-1) –1987 in a tensile testing machine.</p> <table><tr><td>Dimension of Dumb-Bell test piece (Type-1)</td><td>specimen (mm)</td></tr><tr><td>Overall length(A)</td><td>115</td></tr><tr><td>Width of ends (B)</td><td>25 ± 1</td></tr><tr><td>Length of narrow parallel portion (C)</td><td>33 ± 2</td></tr><tr><td>Width of narrow parallel portion (D)</td><td>6.0 ± 0.1</td></tr><tr><td>Small radius (r)</td><td>14 ±1</td></tr><tr><td>Large radius (R)</td><td>25 ±1</td></tr><tr><td>Thickness (maximum)</td><td>2.5</td></tr></table>	Dimension of Dumb-Bell test piece (Type-1)	specimen (mm)	Overall length(A)	115	Width of ends (B)	25 ± 1	Length of narrow parallel portion (C)	33 ± 2	Width of narrow parallel portion (D)	6.0 ± 0.1	Small radius (r)	14 ±1	Large radius (R)	25 ±1	Thickness (maximum)	2.5
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		c.	<p>Specimens are cut from a 1 – 2.2 mm thick vulcanized Rocasin sheet of uniform thickness using a die in a punch press.</p> <p>i. <u>Tensile strength</u> is calculated by dividing the maximum load by the minimum cross-sectional area of the specimen.</p> <p>ii. <u>% of Elongation:</u> (increase in length /45) X 100</p> <p>a. 45 mm being the effective gauge length is used for all calculations for this specimen.</p> <p>b. Nos. of samples to be tested: 03</p> <p>c. Cross head speed : 500mm/minute</p> <p>iii. <u>Hardness:</u> Vulcanized Rocasin rubber sheet hardness is determined by using a shore-A Durometer. For determination of hardness by pocket hardness meters, the thickness of the test piece shall be at least 6mm. For thinner sheets, a test piece may be composed of not more than three thinner layers, as per standard ISO 7619-1986 (E).</p>																

			iv. <u>Density</u> is found out by noting the loss of weight in water using a Mettler/Sartorius balance or specific gravity bottle method.																				
	2.4		Thermal Properties																				
		a.	Supplier has to prepare samples for thermal property evaluation and deliver for every lot of Rubber supply from the first roll, middle roll and the last roll of the total rubber quantity being supplied. Thermal Property evaluation will be carried out by Purchaser																				
		b.	Thermal Properties shall be evaluated in the following cases for acceptance <ul style="list-style-type: none"> i. For every Rocasin Rubber lot for use in Rubber lining. ii. For each Perbunan NT 3445 lot qualification after procurement and for every six months on subsequent storage. iii. For each Silica lot qualification after procurement. iv. For every change of source (or) lot for Perbunan NT 3445 & Silica 																				
		c.	Thermal Property Samples Preparation																				
			Molding of the samples shall be carried out at pressure of 35 ± 5 ksc and coincident temperature of 140 ± 5 °C for a duration of 30 minutes as per the procedure given in the approved process document. The process parameters and the sample dimensional and mass details shall be logged in the log sheets. Details of the samples for thermal properties evaluation are: <table border="1" data-bbox="434 1205 1426 1619"> <thead> <tr> <th>S. No.</th><th>Test Details</th><th>Sample Dimensions</th><th>Quantity/roll</th></tr> </thead> <tbody> <tr> <td>1</td><td>Thermal Conductivity</td><td>Disc of 50mm diameter and 8mm thick</td><td>2 Nos.</td></tr> <tr> <td>2</td><td>Specific heat</td><td>Cylinder of 6mm diameter and 8mm height</td><td>4 Nos.</td></tr> <tr> <td>3</td><td>Coefficient of linear Expansion</td><td>Cylinder of 6mm diameter and 8mm height</td><td>4 Nos.</td></tr> <tr> <td>4</td><td>Erosion rate</td><td>a) Square of 32mm x 6mm thickness b) Rod of Ø 10mm and 25mm length.</td><td>4 Nos. each</td></tr> </tbody> </table>	S. No.	Test Details	Sample Dimensions	Quantity/roll	1	Thermal Conductivity	Disc of 50mm diameter and 8mm thick	2 Nos.	2	Specific heat	Cylinder of 6mm diameter and 8mm height	4 Nos.	3	Coefficient of linear Expansion	Cylinder of 6mm diameter and 8mm height	4 Nos.	4	Erosion rate	a) Square of 32mm x 6mm thickness b) Rod of Ø 10mm and 25mm length.	4 Nos. each
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		d.	Thermal Property Specifications																				
			Thermal conductivity (Cal /cm sec.°C) : 6.5×10^{-4} maximum Specific heat (Cal /gm.°C) : 0.35 minimum Coefficient of linear Expansion (mm/mm .°C) : 3×10^{-4} maximum Erosion rate (300 W/sq.cm) : 0.2 mm/sec Maximum																				
	2.5		Acrylonitrile Content of Rocasin																				
		a.	In addition to the evaluation of physical properties of Rocasin, chemical analysis of Rocasin shall be done by the party to determine the acrylonitrile																				

			content in every six months for accepted lot of rubber.
		b.	The specified acrylonitrile content is 16% to 19%. The analysis method for acrylonitrile content is the same as that for NBR polymer.
	2.6		Rheological properties:
			Rheological properties shall be evaluated by the party for the rubber whenever required.
3.			QUALITY CONTROL & INSPECTION
	3.1		Quality control and Inspection is carried out at three stages as given below: I. Raw material procurement stage II. Rubber sheet manufacturing stage III. Rubber sheets acceptance stage
	3.2		All the raw materials used for processing of rubber sheets (ROCASIN) shall be analyzed and tested and only those meeting laid down specifications, as detailed in Clause 4 of Section – C, shall be used by the party for compounding. The accepted raw materials shall be separately identified and stored. The analysis /test certificates issued by Government approved laboratories shall be provided to the Purchaser.
	3.3		Rubber rolls after receipt at SDSC SHAR shall be tested by Purchaser for mechanical properties and other acceptance parameters as specified in Clause 2 of Section-C above. For this purpose, adequate number of samples will be drawn from each roll and tested as per the standard procedures at SDSC SHAR. Only those rolls which meet the specification will be accepted for adhesive preparation / lining works and the rolls deferring the specification will be rejected.
	3.4		In addition, the contractor shall also qualify the rolls, using his facilities, prior to dispatch to ensure that rubber rolls meeting specifications (as per clause 2.3) only are sent to work site.
	3.5		The contractor shall provide all facilities for the Purchaser's inspection personnel for carrying the stage inspection as well as product inspection. The Purchaser's engineers shall have the liberty to draw the samples of the raw materials/finished products at any stage of manufacture for evaluation/testing. The Purchaser shall test the rubber rolls supplied by the contractor and on testing if the sheets are not in accordance with the specifications and other acceptance parameters, the same shall be rejected.
	3.6		Visual and dimensional inspection of the rubber sheets shall be carried out

		prior to acceptance. The surface shall be smooth and be free from voids, cuts, blisters, blooming, discoloration and contamination.
	3.7	All the in-process inspection at manufacture site/at work center should be done by the contractor and certified. However, for the initial few batches, surveillance may be done by the concerned personnel of the Purchaser.
	3.8	Mechanical properties of the sheet are to be evaluated for all rolls. Thermal properties are to be evaluated for 1 st roll, middle roll and last roll of each lot. Thermal properties of rubber are to be evaluated for every new lot of PERBUNAN polymer or silica for purchaser's clearance for processing rubber. The same are to be repeated at every 6 months for revalidation.
	3.9	The vendor shall supply molded samples for thermal properties evaluation as per the specifications provided by the Purchaser for each vendor's lot as detailed above.
	3.10	The process log sheets as required by the Purchaser shall be maintained by the contractor and calibration of the measuring instruments like weighing balances, temperature gauges shall be carried out periodically and the data to be supplied to the Purchaser, if requested.
	3.11	Raw material analysis procedures given by the Purchaser shall be strictly followed. In case any clarifications regarding the analysis procedures are required, the same may be obtained from SMPC, SDSC SHAR.
	3.12	A government approved test house shall be used for analysis of all the raw materials. Purchaser shall be involved while finalizing the test house.
	3.13	All the raw materials used for the processing of rubber shall be identified with a distinct lot no/ batch no.
	3.14	Contractor shall maintain the process log in such a way that any processed "rubber lot" shall have the trace back to get the total history of the raw materials used and the process conditions employed. These logs will be periodically checked by the Purchaser and if asked the copy shall be produced.
	3.15	Quality on the process and related activities will be carried out by the Purchaser periodically. All the input data for this shall be made available to the quality team.
	3.16	Any suggestions made from time to time to improve the quality of the product shall be incorporated in the process by the contractor.
	3.17	The analytical reports of the raw materials are to be provided to SDSC - SHAR before use in rubber manufacturing and shall get clearance from the

			Purchaser for use.					
4.			RAW MATERIALS & ROCASIN SPECIFICATION and ANALYSIS METHODS					
			Raw materials and Rocasin specification along with analysis procedure is mentioned below.					
	4.1		Raw material Specifications:					
			All the raw material listed below are to be tested for the specifications periodically once in a year and whenever a new lot/batch is procured.					
		a.	Nitrile Butyl Rubber (Medium High Acrylonitrile) – Grade JSR-230SL, PERBUNAN 3445					
			S. No	Parameter	Specification	Parent analysis	Re-validation	Periodicity
			1.	Physical form	Translucent honey colored Slab/ crumbs/ biscuits	√	√	One year
			2.	Density @ 25°C, g / cc	0.93-0.97	√	√	One year
			3.	Acrylonitrile content, %	30 – 35	√	√	One year
			4.	Mooney viscosity@ 100°C	40-50	√	√	One year
		b.	Silica Powder – Grade: Ultrasil VN ₃ (SiO ₂)					
			S. No	Parameter	Specification	Parent analysis	Re-validation	Periodicity
			1.	Specific gravity @25°C	1.9 – 2.1	√	√	One year
			2.	Silica content, %	Min. 85.0	√	√	One year
			3.	Volatile matter @ 105°C for 2h, %	Max. 7.0	√	√	One year
			4.	Loss on drying @ 800°C for 2hrs, %	Max. 12.5	√	√	One year
			5.	pH of aqueous slurry (5 g in 100ml of distilled water)	5.5 – 6.5	√	√	One year
			6.	Average particle size, µm (sub sieve sizer)	To be generated	√	-	One-time analysis.
		c.	Sulphur Insoluble (Polymeric Sulphur) DS-90					

			S. No	Parameter	Specification	Parent analysis	Re-validation	Periodicity
			1.	Specific gravity @ 25°C	1.9 – 2.1	√	√	One year
			2.	Assay, %	Min. 99.0	√	√	One year
			3.	Insoluble Sulphur (in CS ₂), %	Min.90.0	√	√	One year
			4.	Acidity, (mg KOH / g)	Max.0.15	√	√	One year
			5.	Ash content, %	Max.0.15	√	√	One year
		d.	Diethyl Phthalate-DOP (2 Ethyl hexyl Phthalate)					
			S. No	Parameter	Specification	Parent analysis	Re-validation	Periodicity
			1.	Color and appearance	Colorless liquid	√	--	--
			2.	Specific gravity @ 25 °C	0.97 – 0.99	√	--	One-time analysis.
			3.	Moisture, %	Max.0.1	√	√	Six months
			4.	Volatile matter @ 105°C for 2 h, %	Max.0.2	√	--	One-time analysis.
			5.	Acid value, mg KOH / g	Max. 0.5	√	√	Six months
			6.	Saponification value, mg KOH / g	286 - 292	√	√	Six months
			7	Purity, % (by GC)	Min. 99.0	√	--	One-time analysis.
			8	Refractive Index at 25°C	Max 0.20	√	--	One-time analysis.
		e.	Diethylene Glycol- DEG (HOCH₂CH₂OCH₂CH₂OH)					
			S. No	Parameter	Specification	Parent analysis	Re-validation	Periodicity
			1.	Color and appearance	Colorless clear liquid	√	--	--
			2	Specific gravity @ 25°C	1.10 – 1.12	√	√	One-time analysis.
			3	Refractive index @ 25°C	1.442 – 1.446	√	√	One-time analysis.
		f.	Mercapto Benzothiazyl disulphide (MBTS)					

			S. No	Parameter	Specification	Parent analysis	Re-validation	Periodicity
			1.	Color and appearance	Yellow/ cream white powder	√	--	--
			2.	Specific gravity @25-30°C	1.4- 1.6	√	√	One year
			3.	Melting Range °C	174 - 180	√	√	One year
			4.	Total Sulphur Content %	36 - 39	√	√	One year
		g.	Stearic Acid- Grade: HYTITRE (C₁₇H₃₅COOH)					
			S. No	Parameter	Specification	Parent analysis	Re-validation	Periodicity
			1.	Specific gravity @ 25 °C	0.94 –0.98	√	√	One year
			2	Melting range, °C	65-70	√	√	One year
			3.	Purity, % (by acid value)	Min.98.0	√	√	One year
		h.	Terpene Phenolic Resin (DRT-70TP)					
			S. No	Parameter	Specification	Parent analysis	Re-validation	Periodicity
			1.	Color and appearance	Resin like medium pale-yellow solid	√	√	One year
			2.	Specific gravity @ 25°C	0.90 – 1.10	√	√	One year
			3.	Softening point, °C	65 - 75	√	√	One year
		i.	Tetra methyl Thiuram Di Sulphide (TMTD)- (CH₃)₂NCS₂ CS₂ N(CH₃)₂					
			S. No	Parameter	Specification	Parent analysis	Re-validation	Periodicity
			1.	Physical form	Yellow powder	√	√	One year
			2.	Specific gravity @ 25 °C	1.4 – 1.5	√	√	One year
			3.	Melting range, °C	140 -150	√	√	One year
			4.	Total Sulphur content, %	51 -53	√	√	One year
		j.	Zinc oxide (ZnO) (White seal)					

			<table><tr><th>S. No</th><th>Parameter</th><th>Specification</th><th>Parent analysis</th><th>Re-validation</th><th>Periodicity</th></tr><tr><td>1.</td><td>Physical form</td><td>White, fine powder</td><td>√</td><td>√</td><td>One year</td></tr><tr><td>2</td><td>Specific gravity@25°C</td><td>5.4 - 6.0</td><td>√</td><td>√</td><td>One year</td></tr><tr><td>3</td><td>Assay, %</td><td>Min 95.0</td><td>√</td><td>√</td><td>One year</td></tr><tr><td>4</td><td>Average Particle size, μm</td><td>Max 4</td><td>√</td><td>√</td><td>One year</td></tr><tr><td>5.</td><td>XRD</td><td>To be generated</td><td>√</td><td colspan="2">For new source qualification</td></tr><tr><td>6.</td><td>Volatile matter @ 105°C for 2h, %</td><td>To be generated</td><td>√</td><td>√</td><td>One year</td></tr></table>	S. No	Parameter	Specification	Parent analysis	Re-validation	Periodicity	1.	Physical form	White, fine powder	√	√	One year	2	Specific gravity@25°C	5.4 - 6.0	√	√	One year	3	Assay, %	Min 95.0	√	√	One year	4	Average Particle size, μm	Max 4	√	√	One year	5.	XRD	To be generated	√	For new source qualification		6.	Volatile matter @ 105°C for 2h, %	To be generated	√	√	One year																																			
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		<p>wiping out the surface with blotting paper.</p> <p><u>Calculation:</u></p> <p>Weight of specific gravity bottle = W_1 gm</p> <p>Weight of specific gravity bottle + sample = W_2 gm</p> <p>Weight of specific gravity bottle + sample + water = W_3 gm</p> <p>Weight of specific gravity bottle + water = W_4 gm</p> <p>Specific Gravity = $\frac{(W_2 - W_1)}{(W_4 - W_1) - (W_3 - W_2)}$</p>
	b.	Acrylonitrile content
		<p>One gram of finely shredded NBR is digested with con. H_2SO_4. The ammonium salt formed is estimated as NH_3 using Kjeldhals method. Calculate the percentage of Nitrogen as acrylonitrile percentage.</p> <p>Take 0.3 gm of the sample in a 1-liter Kjeldhals flask. Add 20 cc of con. H_2SO_4. 10 g of potassium sulphate and 0.5 gm of copper sulphate. Heat the flask strongly in a fume cupboard using a burner for several hours. When the solution becomes clear, stop heating, cool and dilute it with 100 ml distilled water. Connect the flask with Kjeldhals apparatus used for estimating nitrogen. Add 100 ml of 30 – 10% NaOH through the funnel and start heating. Absorb the ammonia evolved in 50 ml 0.1 H_2SO_4 solution. Continue heating for one hour and titrate the excess acid against 0.1N NaOH using methyl red indicator. Conduct blank experiment. From the volume of NaOH calculate:</p> $\text{Acrylonitrile content \%} = \frac{(B - TV) \times N \times 53 \times 100}{W \times 1000}$ <p>Where</p> <p>N = Normality of Alkali</p> <p>TV = Volume of Alkali consumed for the sample</p> <p>B = Volume of Alkali consumed for the blank</p> <p>W = Weight of sample</p>
	4.3.2	ULTRASIL - VN-3 (Pyrogenic Silica)
	a.	Specific Gravity:
		<p>Specific gravity is found out using a specific gravity bottle with water.</p> <p>Take a clean dry specific gravity bottle and find its weight with stopper accurately. Fill about 1/3rd of its volume with the sample. Put the stopper and find out the weight of the specific gravity bottle with the sample. Then fill the bottle 1/3 with water over the sample. De-aerate for half an hour to remove the air bubbles. Then fill with water. Put the stopper. Wipe out the surface of the specific gravity bottle with blotting paper and find the weight. Now empty the bottle. Clean dry and fill it with distilled water. After putting the stopper without air bubbles, wipe the surface and note the weight with distilled water alone.</p> <p>Weight of specific gravity bottle = W_1 gm</p>

			<p>Weight of specific gravity bottle + sample = W_2 gm</p> <p>Weight of specific gravity bottle + sample + water = W_3 gm</p> <p>Weight of specific gravity bottle + water = W_4 gm</p> <p>Specific Gravity = $\frac{(W_2 - W_1)}{(W_4 - W_1) - (W_3 - W_2)}$</p>
		b.	Silica as SiO₂
			<p>Take 1 gm of Ultrasil VN-3 in a platinum crucible. Add 2 – 3 drops of conc. H₂SO₄, followed by HF (about 1 ml). Continuously heat on hot plate till all the dense fumes of hydro-floro silica acid are expelled. (about 4 hours). Heat the crucible muffle furnace at 800°C for 2 hours and cool in desiccator. Weight the residue left. Find the SiO₂ percentage. Subtract the percentage of loss on ignition to get the SiO₂ content.</p> <p>Weight of platinum crucible = W_1 gm</p> <p>Weight of crucible + sample = W_2 gm</p> <p>Before heating, Weight of crucible + sample = W_3 gm</p> <p>After heating, Loss on ignition = X %</p> <p>Silica content (%) = $\left\{ \frac{(W_3 - W_2)}{(W_2 - W_1)} \times 100 \right\} - X$</p>
		c.	Weight loss at 105°C
			<p>Weight exactly 10 g of the material in a crystallization dish which is dried and previously weighed. Heat the dish in an air oven kept at 105° for 2 hours. Finally, cool and weigh the dish.</p> <p>Weight loss (%) = $\frac{(W_1 - W_2)}{(W_1 - W)} \times 100$</p> <p>W = Weight of empty dish W₁ = Weight of dish + sample before heating W₂ = Weight of dish + sample after heating</p>
		d.	Loss on Ignition
			<p>Weight exactly 5 gm of the material in a dry platinum crucible. Keep it in an electric furnace for 2 hours at 800°C. After ignition cool and weigh the crucible.</p> <p>Loss on ignition (%) = $\frac{(W_1 - W_2)}{(W_1 - W)} \times 100$</p> <p>Where,</p>

			<p>W = Weight of empty platinum crucible</p> <p>W₁ = Weight of crucible + silica before heating</p> <p>W₂ = Weight of crucible + silica after heating</p>
		e.	pH of aqueous slurry
			Weight 5 gm of material into 100 ml of previously boiled and cooled distilled water and stir well. Take the pH of the slurry using a calibrated pH meter.
		4.3.3	CRYSTEX SULPHUR / DIAMOND SULPHUR (DS 90):
		a.	Specific gravity:
			<p>Specific gravity is found out using a specific gravity bottle using alcohol/light liquid paraffin oil. Take a clean dry specific gravity bottle and find its weight with stopper accurately. Fill about 1/3rd of its volume with the sample. Put the stopper and find the weight of the specific gravity bottle with the sample. Then fill the bottle 1/3rd with ethyl alcohol over the sample. De-aerate for half an hour to remove the air bubbles. Then fill with ethyl alcohol. Put the stopper, wipe out the surface of the specific gravity bottle with blotting paper and find the weight. Now empty the bottle, clean and fill it with ethyl alcohol alone and find out its weight after putting stopper and wiping out the surface with blotting paper. Finally empty the bottle, clean and dry and fill it with distilled water. After putting the stopper without air bubbles, wipe the surface and note the weight with distilled water alone.</p> <p><u>Calculation</u></p> <p>Weight of empty Specific gravity bottle = W₁ gm</p> <p>Weight of Specific gravity bottle + sample = W₂ gm</p> <p>Weight of Specific gravity bottle + sample + ethyl alcohol = W₃ gm</p> <p>Weight of Specific gravity bottle + ethyl alcohol alone = W₄ gm</p> <p>Weight of Specific gravity bottle + water = W₅ gm</p> $\text{Specific Gravity} = \frac{(W_2 - W_1)}{(W_4 - W_1) - (W_3 - W_2)} \times \frac{(W_4 - W_1)}{(W_5 - W_1)}$
		b.	Insoluble Sulphur
			<p>2 g of the material is stirred with 50 ml carbon disulphide and filtered through a G-4 sintered crucible. Wash the residue with LR grade CS₂ four times and weigh the residue.</p> <p>Weight of sample = W₁ gm</p> <p>Weight of the residue = W₂ gm</p> $\text{Insoluble Sulphur (\%)} = \frac{(W_2)}{(W_1)} \times 100$
		c.	Ash
			<p>5 gm of the material is weighed in a silica crucible and slowly burned. Heat the crucible at 800 – 900°C muffle furnace for at least one hour. Cool in desiccators and weigh.</p> <p>Weight of silica crucible = W₁ gm</p> <p>Weight of crucible + sample before heating = W₂ gm</p>

			Weight of crucible + sample after heating = W3 gm Ash (%) = $\frac{(W_3 - W_1)}{(W_2 - W_1)} \times 100$
		d.	Purity
			Refer the procedure for TMTDS. Calculate purity by Sulphur.
		4.3.4	DIOCTYL PHTHALATE
		a.	Specific Gravity
			Specific gravity is found out using a specific gravity bottle. Take a clean dry specific gravity bottle and find its empty weight with stopper. Then fill it with the plasticizer and put the stopper taking care not to enter any air bubbles inside the bottle. Now wipe out the surface of the bottle to dry and find its weight. Then empty the bottle, clean and dry it and then fill the specific gravity bottle with distilled water. Put the stopper and wipe out the surface to dry and find out its weight. Calculate the specific gravity of the sample. Weight of specific gravity bottle = W1 gm Weight of specific gravity bottle + sample = W2 gm Weight of specific gravity bottle + distilled water = W3 gm Specific Gravity of sample = $\frac{(W_2 - W_1)}{(W_3 - W_1)}$
		b.	Volatile Mater
			Accurately weigh 20 ml of the sample in a previously dried and weighed Petri dish. Keep in an oven at 105°C for 2 hrs. Take the dish out, cool in a desiccator, and weigh. Find the loss in weight. Calculate the loss in weight and V.M. Run duplicate. Weight of petri dish = W ₁ Weigh of dish + sample before heating = W ₂ Weigh of dish + sample after heating = W ₃ Volatile mater (%) = $\frac{(W_2 - W_3)}{(W_2 - W_1)}$
		c.	Saponification value
			Weigh exactly 0.5 gm of the sample and transfer it into the 250 ml iodine flask. Then add exactly 25 ml of alcoholic potassium hydroxide of about 0.5N. Now fit it with air condenser and reflux on a water bath heated slow boiling until the reaction is complete (about 6 minutes). Allow to cool and wash the condenser using 2 ml distilled water. Then titrate with standard hydrochloric acid of 0.25N, in presence of phenolphthalein indicator. Similarly, a blank also is to be carried out. <u>Calculation:</u> Saponification value (mg KOH/gm) = $\frac{(B - V) \times N \times 56.1}{W}$ Where V = Volume of HCl used for titration in real test N = Normality of HCl

			<p>B = Volume of HCl used for blank test</p> <p>W = Weight of the sample used for the test</p>
		d.	<p>Acid Value</p> <p>The sample dissolved in ethyl alcohol which is neutralized and titrated against standard sodium hydroxide using phenolphthalein as indicator.</p> <p>Procedure:</p> <p>In a clean dry conical flask transfer about 5 to 6 gm of sample exactly weighed. Add 50 ml of 1:1 toluene - methanol mixture, shake well for dissolution. Then titrate against standard 0.05 N alcoholic sodium hydroxide using phenolphthalein as indicator. Conduct a blank titration.</p> <p>Calculation:</p> $\text{Acid value (mg KOH/gm)} = \frac{(TV - B \times N \times 56.1)}{W}$ <p>Where</p> <p>TV = Volume of KOH used for titration of sample</p> <p>N = Normality of Sodium hydroxide</p> <p>W = Weight of the sample taken for analysis</p> <p>B = Volume of KOH consumed for blank</p>
		e.	<p>Moisture Content by Karl Fisher Titration</p> <p>Moisture in the plasticizer is determined by the Karl fisher method with Aqua meter. Benzene is used for the media.</p> <p>Apparatus:</p> <p>Aqua meter Beckman KF3 model or similar make</p> <p>Procedure:</p> <p>Check up the Aqua meter for its perfect working condition. Then fill the Karl Fisher reagent bottle provided with the aqua meter and fill the burette with Karl Fisher reagent. Take about 50 ml of pure anhydrous methanol in clean dry beaker provided with the aqua meter and titrate with Karl Fisher reagent for anhydrous medium. Now, weigh exactly 10 micro liters of H₂O in a syringe. Of sodium titrate di-hydrte in a weighing bottle and transfer it into the beaker containing anhydrous methanol. Now, operate the instrument and titrate against Karl Fisher reagent used for titration from this calculate how much mgs.H₂O is equivalent to one milliliter of Karl Fisher reagent. Weigh exactly about 5 grams of the sample in a clean dry weighing bottle and introduce into the beaker, stir well and titrate as before and note the volume of Karl Fisher used for titration. Now calculate the % of moisture as given below. For detailed operation procedure of the instrument refer to the instruction manual.</p> <p>Calculation:</p> <p>Let 1 ml of KF solution = mgs of H₂O and W be the Weight of sample taken and 'V' be the volume of Karl Fisher solution used for titration.</p> <p>X = Strength of KFR</p>

			Moisture (%) = $\frac{(X \times V \times 100)}{(W \times 1000)}$
		4.3.5	DIETHYLENE GLYCOL
		a.	Boiling point
			<p>Boiling point of Diethylene glycol is found out using the boiling point apparatus.</p> <p>The apparatus consists of a distilling flask attached by a cork to a Liebling condenser at the end of which an adapter is fitted. There is a receiver for collecting the distillate. A thermometer is fitted into the neck of the distilling flask by means of a well bored cork, the bulk of the thermometer should be in the center of the neck of the flask and slightly below the level of the side tube. The flask may be heated on a wire gauze with asbestos center. The liquid is poured in the distilling flask and a few fragments of unglazed porous porcelain are added and the thermometer is placed in position. The flask is heated on a wire gauze. Heating may be rather rapid until boiling commences; the flame must then be decreased and adjusted so that the distillate is collected at the rate of one or two drops per second.</p> <p>It will be found that the temperature will first rise rapidly until it is near the boiling point of the liquid then slowly and finally will remain practically constant. The distillation should be continued until only a small volume of liquid remaining in the flask, the temperature is noted at regular intervals. This constant temperature is the boiling point of the liquid.</p>
		b.	Specific gravity
			<p>Take a clean dry specific gravity bottle of about 25 ml capacity and note the exact weight of it along with the stopper. Fill the bottle with distilled water and put the stopper carefully so that no air bubble is left inside. Wipe off the water on the outer surface of specific gravity bottle and weigh it accurately. Empty the bottle and dry it in an air oven. Fill the bottle with diethylene glycol, put the stopper, clean the surface and weigh it again.</p> <p>Specific gravity = $\frac{(W_3 - W_1)}{(W_2 - W_1)}$</p> <p>Where,</p> <p>$W_1$ = Weight of Specific gravity bottle</p> <p>W_2 = Weight of Specific gravity bottle + water</p> <p>W_3 = Weight of Specific gravity bottle + Diethylene glycol</p>
		4.3.6	ZINC OXIDE
		a.	Specific Gravity
			<p>Specific gravity is found out using specific gravity bottle with water.</p> <p>Take a clean dry specific gravity bottle and find its weight with stopper accurately. Fill about 1/3rd of the volume with the zinc oxide. Put the stopper and find out the weight of the specific gravity bottle with the sample. Then fill the bottle 1/3rd with water over the sample. De-aerate for half an hour to remove the air bubbles. Then fill with water, put the stopper, wipe out the surface. Clean the specific gravity bottle with blotting paper and find the weight. Now empty the bottle, clean dry and fill it with distilled water. After putting the stopper without air bubbles, wipe the surface and note the</p>

		<p>weight with distilled water alone.</p> <p><u>Calculation</u></p> <p>Weight of empty Specific gravity bottle = W₁ gm</p> <p>Weight of Specific gravity bottle + sample = W₂ gm</p> <p>Weight of Specific gravity bottle + sample + water = W₃ gm</p> <p>Weight of Specific gravity bottle + water = W₄ gm</p> <p>Specific Gravity = $\frac{(W_2 - W_1)}{(W_4 - W_1) - (W_3 - W_2)}$</p>
	b.	Particle size:
		<p>Particle size is found out using sub-sieve sizer. First of all, checkup the sub-sieve for its good work condition. Now insert the standard tube in the measuring circuit and standardize the instrument for both ranges up to 20 microns and 20 to 50 microns at 0.75 porosity. Weigh exactly 5-6 gm of the sample of zinc oxide and pour it in to the sample tube provided at the lower part of the porous plate covered with disc of filter paper. Put the second plate at the upper part covered with filter paper. Put the index of the rack on the optimum porosity – Value. Then compress the sample between the two plugs by means of rack until the index moves to the top of the curve height of the sample. Insert the tube in the measuring circuit and set the apparatus working. When the level in the manometer is steady remount the rack and make it coincide with the lower portion of the meniscus of the liquid in the manometer. Read the value in the index on chart.</p>
	c.	Purity:
		<p>Dissolve 0.2 gm ZnO in hot 1: 1 nitric acid.</p> <p>Neutralize and add NH₄ OH / NH₄ Cl buffer. Titrate against 0.05 (%) M EDTA using Eriochrome black T indicator. (For details refer Analysis Text Book by A. I. Vogel).</p> <p><u>Calculation</u></p> <p>Weight of sample = W₁ gm</p> <p>Volume of EDTA used = V ml</p> <p>Normality of EDTA = 0.05N</p> <p>Purity of Zinc oxide (%) = $\frac{V \times N \times 81.37}{W_1 \times 10}$</p>
	4.3.7	COUMARONE INDENE RESIN
	a.	Specific Gravity
		<p>Specific gravity is found out using a specific gravity bottle with water.</p> <p>Take a clean dry specific gravity bottle and find its weight with stopper accurately. Fill about 1/3rd of its volume with the sample. Put the stopper and find out the weight of the specific gravity bottle with the sample. Then fill the bottle 1/3 with water over the sample. De-aerate for half an hour to remove the air bubbles. Then fill with water, put the stopper, wipe out the surface of the specific gravity bottle with blotting paper and find the weight. Now empty the bottle, clean dry and fill it with distilled water. After putting the stopper with air bubbles wipe out the surface and note the weight with</p>

		<p>distilled water alone.</p> <p>Weight of specific gravity bottle = W_1 gm</p> <p>Weight of specific gravity bottle + sample = W_2 gm</p> <p>Weight of specific gravity bottle + sample + water = W_3 gm</p> <p>Weight of specific gravity bottle + water = W_4 gm</p> <p>Specific Gravity = $\frac{(W_2 - W_1)}{(W_4 - W_1) - (W_3 - W_2)}$</p>
	b.	Softening point
		5 g of powdered resin is taken in a test tube. A small steel ball (bearing) is put over the resin in the test tube and heated slowly. The temperature at which the ball sinks in the resin is taken as the softening point.
	4.3.8	STEARIC ACID
	a.	Specific Gravity:
		<p>Specific gravity is found out using a Hubbard specific gravity bottle. Take a clean dry specific gravity bottle and find its weight. Fill about 1/3rd of its weight with the sample, put the stopper and find out the weight of the specific gravity bottle with the sample. Then fill the bottle with distilled water over the sample. Put the stopper, wipe out the surface of the specific gravity bottle with blotting paper and find the weight. Now empty the bottle, clean and dry and fill it with water alone and find its weight after putting stopper and wiping out the surface with blotting paper. Finally empty the bottle, clean dry and fill it with water. After putting stopper and wiping out the surface with blotting paper. Finally empty the bottle, cleaned dry and fill it with water. After putting stopper without air bubbles wipe out the surface and note the weight with distilled water alone.</p> <p>Weight of specific gravity bottle = W_1 gm</p> <p>Weight of specific gravity bottle + sample = W_2 gm</p> <p>Weight of specific gravity bottle + sample + water = W_3 gm</p> <p>Weight of specific gravity bottle + water = W_4 gm</p> <p>Specific Gravity = $\frac{(W_2 - W_1)}{(W_4 - W_1) - (W_3 - W_2)}$</p>
	b.	Melting point:
		Melting point is found out using a melting point apparatus.
	c.	Purity:
		<p>Weight exactly 0.5 gm of stearic acid in a clean dry conical flask. Add 50 ml carbon tetrachloride and shake well and if not clear add a little amount of Dioxan solvent. Add 2 or 3 drops of phenolphthalein indicator. It is then titrated against 0.05 N alcoholic potassium hydroxide.</p> <p>Purity (%) = $\frac{(V \times N \times F \times 100)}{W \times 1000}$</p> <p>Where,</p> <p>V = Volume of alcoholic KOH</p>

			<p>N = Normality of KOH</p> <p>F = 284.49 (equivalent weight)</p> <p>W = Weight of sample taken</p>
		4.3.9	BENZOTHLAZYL DISULPHIDE
		a.	Specific gravity
			<p>Specific gravity is found out using a specific gravity bottle with water.</p> <p>Take a clean dry specific gravity bottle and find its weight with stopper accurately. Fill about 1/3rd of its volume with the sample. Put the stopper and find out the wt. of the specific gravity bottle with the sample. Deaerate for half an hour to remove the air bubbles. Then fill with water, put the stopper, wipe out the surface of the specific gravity bottle with blotting paper and find the weight. Now empty the bottle, clean dry and fill it with distilled water. After putting the stopper without air bubbles wipe out the surface and note the wt. with distilled water alone.</p> <p>Weight of specific gravity bottle = W₁ gm</p> <p>Weight of specific gravity bottle + sample = W₂ gm</p> <p>Weight of specific gravity bottle + sample + water = W₃ gm</p> <p>Weight of specific gravity bottle + water = W₄ gm</p> <p>Specific Gravity = $\frac{(W_2 - W_1)}{(W_4 - W_1) - (W_3 - W_2)}$</p>
		4.3.10	TETRAMETHYL THIURAM DISULPHIDE (TMTD)
		a.	Specific gravity
			<p>Specific gravity is found out using specific gravity bottle with water. Find the weight of a clean dry empty specific gravity bottle. Fill about 1/3rd of its weight with the sample. Put the stopper and find out the weight of the specific gravity bottle with the sample. Then fill the bottle with distilled water over the sample. Put the stopper, wipe out the surface of the specific gravity bottle with blotting paper and find the weight. Now empty the bottle, clean and fill it with water alone and find its weight after putting stopper and wiping out the surface with blotting paper. Finally empty the bottle clean, dry bubbles wipe out the surface and note the weight with distilled water alone.</p> <p>Weight of specific gravity bottle = W₁ gm</p> <p>Weight of specific gravity bottle + sample = W₂ gm</p> <p>Weight of specific gravity bottle + sample + water = W₃ gm</p> <p>Weight of specific gravity bottle + water = W₄ gm</p> <p>Specific Gravity = $\frac{(W_2 - W_1)}{(W_4 - W_1) - (W_3 - W_2)}$</p>
		b.	Total Sulphur content:
			<p>1 gm of the material is burnt in oxygen in a bomb. The sulphate formed is determined gravimetrically as barium sulphate.</p> <p>Weigh exactly 1 gm of the material and burn it in oxygen in a bomb. The residue is dissolved in sodium hydroxide. Add HC1 to the solution and boil.</p>

		<p>Then add about 20 ml of 10% Barium chloride solution. Stir well and allow to settle for two hours. Now carefully filter through a filter paper (Whatman No.42) for fine precipitate. Wash the precipitate till all the chloride ion is removed. Dry the filter paper with the funnel in an oven at 100°C. Then take out and place the filter paper in a platinum crucible which is cleaned, dried and weighed previously. Heat the crucible till the filter paper is completely charred. Then after cooling add one or two drops of 50% sulphuric acid in the crucible and heat again. Then transfer the crucible into a muffle furnace and clacine for at least one hour at 800°C. Allow to cool in a desiccator and weigh.</p> $\text{Sulphur (\%)} = \frac{(P_1 \times 13.7)}{P}$ <p>Where</p> <p>P = Weight of the test sample</p> <p>P1 = Increase in Weight of the Platinum crucible</p>
	4.4	<p>QUALITY ASSURANCE PLAN</p> <p>Refer Table-1 below</p>

Table 1. Quality Assurance Plan

S. No.	Characteristics/ type of checks	Quantum of check	Reference document	Acceptance norms	Formats of record	Party	SHAR	Remarks
1	2	3	4	5	6	7	8	9
Raw material Identification, Clearance & Storage								
1.	All the raw materials meeting specifications	100 %	RFP document	As specified in RFP Document (Clause 4.1 of Sec – C)	1. Manufacturer's material test reports 2. Vendor test reports (analyzed by Gov. approved lab)	R	R & C	
2.	Clearance for raw materials from Purchaser (NBR Perbunan & Ultrasil VN3)	100 %	RFP document	As specified in RFP Document (Clause 2.3 of Sec – C)	Purchaser lab analysis report	R	C	
3.	Storage of cleared raw materials	100 %	RFP document	As specified in RFP Document (Clause 1.1 of Sec – C)	Log sheets	W	R	
Production of Rocasin rubber								
4.	Weigh balance	100 %		To be used within calibration validity	Weigh balance Calibration certificates	W	R	
5.	Weighment of raw materials per batch	100 %	RFP document	As specified in RFP Document (Clause 1.4 of Sec – C)	Weighment log sheets	W	R	
6.	Mill & Extruder cleanliness	100 %	RFP document	-	Log sheets	W	R	
7.	Maintenance of process parameters like temperature etc.	100 %	-	-	Log sheets	W	R	Detailed process document shall be provided at later stage
8.	Sequence of addition & Mixing	100 %	RFP document	-	Log sheets	W	R	

S. No.	Characteristics/ type of checks	Quantum of check	Reference document	Acceptance norms	Formats of record	Party	SHAR	Remarks
1	2	3	4	5	6	7	8	9
	of raw materials except accelerators							
9.	De-aeration/ cooling of premix sheets	100%	RFP document	-	Log sheets	W	R	Detailed storage procedure is requested from party at the time of bid submission
10.	Sequence of accelerator addition & Extrusion	100 %	RFP document	-	Log sheets	W	R	Detailed process document shall be provided at later stage
11.	Thickness of Rocasin rubber	100 %	RFP document	2 mm or 1 mm with \pm 10% tolerance	Thickness log sheets	W	R	
12.	Cloth wrap	100 %	RFP document	As specified in RFP Document (Clause 2.1 of Sec – C)		W	R	
13.	Storage of extruded Rocasin rubber	100 %	RFP document	As specified in RFP Document (Clause 1.1 & 1.4.3 of Sec – C)	Log sheets	W	R	
Pre-Delivery activities of Rocasin rubber lot								
14.	Visual & Dimensional inspection at vendor's site	100 %	RFP document	As specified in RFP Document (Clause 2.1 of Sec – C)	Inspection report & Thickness log sheets	W	R	
15.	Acrylonitrile content	On the request of purchaser	RFP document	As specified in RFP Document (Clause 2.5 of Sec – C)	Lab analysis report	R	R	
16.	Rheological properties	On the request of purchaser	RFP document	As specified in RFP Document (Clause 2.6 of Sec – C)	Log sheets	W	R	
17.	Preparation & transportation of samples for evaluating thermal & erosion properties	100 %	RFP document		Log sheets	W	R	Detailed process shall be provided at a later stage
Final Acceptance (FAT) at Purchaser's site								
18.	Dimensional inspection	100%	RFP document	RFP document	Inspection report	R	R & C	
19.	Mechanical & Physical properties	100%	RFP document	RFP document	Inspection report	R	R & C	
20.	Thermal & Erosion properties	100%	RFP document	RFP document	Inspection report	R	R & C	

R – Review; W – Witness; C – Clearance

In addition to the above, vendor shall identify

- (i) A focal point for supply of material & quality assurance
- (ii) A process team including QA team & lab personnel for processing Rocasin rubber sheet
- (iii) One set of log sheets shall be forwarded to department and another set shall be maintained at factory, for every lot

SECTION D
ANNEXURES

ANNEXURE-I

SCHEDULE OF PRICE

S. No	Description	Total Quantity	UOM	Cost per Kg
1	Supply of 2 mm thick extruded Rocasin rubber	1,22,000	Kg	
2	Supply of 1 mm thick extruded Rocasin rubber	5,350	Kg	

Note:

- 1)** The bidder shall quote for both the items (S. No. 1 & 2).
- 2)** Mention if the quoted price is inclusive or exclusive of 5% GST. However, unless specified, 5% GST is assumed extra.
- 3)** If, in case, overall L1 is L2/L3/L4 for other item, the L2/L3/L4 price will be normalized with the item-wise L1 of the price bids.
- 4)** Item being critical and essential for launch operations, tender will be evaluated on multi-party.
- 5)** After normalization, L1 prices will be offered to L2, L3, L4 & L5 for price matching, in sequence, as mentioned in Clause, '**Award of work**' in the Introduction part of the Tender document.

(SIGNATURE OF VENDOR)

BASE RAW MATERIAL COST INDEX FOR 2023

SL. NO	Description	Unit	Required Qty	Basic Raw Material (UNIT COST Rs.)	Total Cost Rs.
1	NBR Polymer (Medium High Acrylonitrile) Perbunan 3445	Kg	10.000		
2	Ultrasil VN-3 Silica	Kg	5.000		
3	Crystex N Sulphur (DS90 Grade) (Insoluble Sulphur)	Kg	0.150		
4	Diocetyl Phthalate(DOP)	Kg	1.000		
5	Zinc Oxide	Kg	0.500		
6	Stearic Acid (Hytitre Grade)	Kg	0.100		
7	Capolyte CP-70	Kg	1.000		
8	Mercapto Benzothiazyl Disulphide (MBTD)	Kg	0.150		
9	Tetra methyl Thiuram Disulphide (TMTD)	Kg	0.025		
10	Diethylene Glycol (DEG)	Kg	0.200		
	Total		18.125		
	Cost per kg				

Based on the above, the base landed cost of raw materials	(ML_o) = _____
Necessary documentary evidence (Invoices of the raw material procured in 2023) for the above are submitted along with the bid.	YES / NO
ML_o shall exclude GST.	

EXCEPTIONS AND DEVIATIONS

In line with Proposal Document, Bidder may stipulate Exceptions and deviations to the Proposal conditions if considered unavoidable.

SL. NO	Reference in Specification		Dept. Spécification	Offered Spécification	DEVIATION
	PAGE NO	CLAUSE NO			

NOTE :

Only deviations are to be written in this Annexure.

Any deviations taken by the Bidder to the stipulations of the Proposal document shall be brought out strictly as per this format and enclosed along with the bid.

Any deviations not brought out as per this format and written elsewhere in the Proposal document shall not be recognized and the same is treated as null and void.

Any willful attempt by the Bidder to camouflage the deviations by giving them in the covering letter or in any other documents that are enclosed may render the Bid itself non-responsive.

(SIGNATURE OF BIDDER)

PRE-QUALIFICATION CRITERIA

S. No	CRITERIA	Compliance (YES/NO)
	Bidder's with the following qualification shall participate in the bidding process:	
	Qualification criteria	
1.	<p>(A) The bidder shall have been qualified by ISRO for supplying Extruded ROCASIN rubber. (Or)</p> <p>(B) The bidder shall be technically competent (with infrastructure as mentioned in Clause 3 below) to produce Extruded Rocasin rubber. If the contract is awarded, the bidder shall complete phase-1 & phase-2 qualification trials as detailed in the technical part of the bid (Refer clause 1.5 of Section C), within 6 months from the date of release of PO.</p>	
2.	The bidder shall have minimum 3 years of experience in processing of Rocasin/NBR/Nitrile Rubber, using extruder. Relevant purchase orders & work execution/completion certificates shall be submitted along with the bid in the form of previous work orders along with completion/performance certificates.	
3.	<p>The bidder shall</p> <ul style="list-style-type: none"> • Possess one extruder, two-roll mill capable of supplying minimum 2000 kg of Extruded rubber sheet per month • AC storage facility to store 2000 kg Rocasin rubber • Suitable lab equipment to evaluate mechanical properties of the rubber (listed in clause 2.2 of Section C) • Prepare erosion & thermal samples as per the specifications at their site. <p>Relevant documentary proofs shall be submitted along with the offer.</p>	
4.	The bidder shall have minimum average turnover of Rs.1.75 crore during last 3 financial years (ending with Mar' 23). A documentary proof in this regard shall be produced.	
5.	The bidder shall possess current solvency certificate from any Nationalized/Commercial bank for an amount not less than Rs.60 Lakhs in the current financial year (2023-24).	

(SIGNATURE OF BIDDER)

BIDDER EVALUATION FORMAT

SDSC SHAR seeks response to the following questionnaire for assimilating data which would be used for evaluating the capability of the bidder for executing the referred work. Hence, the bidder is requested to provide only genuine data and any discrepancy found at a later point of time may result in rejection of the bidder from purchase process. Furnishing of data cannot be construed as automatic qualification for participation in the tender. Questionnaire should be signed by a responsible and authorized person of the Company / Agency.

S. No	Description		Bidder Response		
1.	Name of the company	:			
2.	Type of the Company (Proprietary/Pvt. Ltd/Public Ltd/Joint Venture/Consortium)	:			
3.	If Company is Consortium please provide the signed copy Consortium Agreement document.	:			
4.	Registration number & certificate	:			
5.	Name & Address of the Office of the Chief Executive of the Company	:			
6.	Contact person for this tender with name & address and contact number	:			
7.	Locations of the Branches of Company (if any)	:			
8.	From which year the Company is in operation	:			
9.	Current Annual turn-over of the company	:			
10.	IT returns for the last 3 years	:			
11.	The Profit & Loss Account details for the last 3 years which is duly audited and Submitted as part of the Annual Report.	:			
	In Rs. Lakhs only		FY 2020-21	FY 2021-22	FY 2022-23
	Total assets (i)	:			

S. No	Description		Bidder Response		
	Current assets (ii)	:			
	Total liabilities (iii)	:			
	Current liabilities (iv)	:			
	Net Worth (i-iii)	:			
	Working capital (ii-iv)	:			
	Turnover ` in lakhs	:			
	Profit/Loss in Rs. lakhs	:			
12.	The major lines of business:	:			
13.	Details of availability of machinery and Testing equipment	:	Machine Type	Qty	No. of Persons familiar to work
14.	Manpower details (Technician, Supervisor, QA, Inspection)	:	Description	No. of Persons	Remarks
			Admin& Acct		
			Design & Analysis		
			Workmen (floor)		
			Supervisor		
15.	The major customers for whom similar works are provided (Enclose copies of the Purchase Orders)	:			
16.	Any customers feedback on the services which is in writing (Pl. enclose copies)	:			
17.	Shop floor area& Handling system availability				

Details of similar nature of work supplied to Government or any reputed organization during the last three years which were completed:

Sl. No	Full postal address of the client with Contact Person	Description of the work	Value of the work (Rs. in Lakhs)	Completion Time as per PO	Actual period of completion	Reasons for delay
1						
2						

Note: In order to consider as valid experience, all the experience has to be supported with the completion certificate and purchase order

Details of similar nature of work for Government or any reputed organization executed by the bidder:

Sl. No	Full postal address of the client with Contact Person	Description of the work	Value of the work (Rs. in Lakhs)

Note: copy of purchase orders shall be enclosed.

Signature of Authorized Person with Seal

ANNEXURE -VI**COMPLIANCE STATEMENT**

S. No.	DESCRIPTION	BIDDER'S COMPLIANCE (YES/NO)
1	The detailed scope of work and technical specifications is understood, and the price was quoted accordingly.	
2	All the general conditions of the contract are acceptable.	
3	In case, some general conditions of the contract are not acceptable, deviation statement is to be enclosed.	
4	All the required raw materials shall be procured from approved source through a mechanism of lowest technically suitable offer. Necessary documentary evidence shall be produced, whenever asked by the Department, for price revision/escalation.	
5	Necessary documentary evidence for arriving at the base landed cost of raw materials is submitted along with the bid.	
6	Compliance with QAP	
7	Vendor agrees for normalization of price and parallel processing of the contract	
8	Annexure-1: Schedule of Price is duly filled and attached in Price bid	
9	Delivery schedule is acceptable. If not, the deviation is brought-out in the deviation statement	
10	Terms of payment are acceptable. If not, the deviation is brought-out in the deviation statement	
11	Vendor evaluation format is enclosed along with proposal document is filled in and necessary supporting documents are enclosed	
12	Pre-Qualification criteria is met.	
13	The list of equipment/facilities available for processing Extruded Rubber sheets is annexed.	