

## VANADIUM PENTOXIDE CATALYST TECHNICAL SPECIFICATIONS

### ARTICLE 1. SUBJECT OF WORK

**1.1.** Vanadium Pentoxide Catalyst will be purchased for the need of Bandirma Boron and Acid Works of Eti Mine Works General Management will be purchased.

**1.2.** Eti Mine Works General Management will be referred as the “**ENTITY**”, Bandirma Boron and Acid Works will be referred as the “**PLANT MANAGEMENT**”, the bidding firms will be referred to as the “**BIDDER**” and the successful bidder of the tender will be referred to as the “**CONTRACTOR**” hereinunder.

### ARTICLE 2. REQUIRED QUANTITY

50.000 liters of Vanadium Pentoxide catalyst will be purchased.

### ARTICLE 3. BID SCOPE AND REQUIRED CHARACTERISTICS

Catalyst will be used for 1<sup>st</sup>, 2<sup>nd</sup> & 3<sup>rd</sup> & 4<sup>th</sup> Bed.

Starting temperature for SO<sub>2</sub> turning to SO<sub>3</sub> : 360 °C (or a lower value) Operation

Temperature Range : 400-630 °C

Thermal Stability : Thermal stability must be protected up to 630°C in continuous operation.

Outer diameter : 11-13 mm

Inner diameter : 3-5 mm

Length : 10-20 mm

Bulk density : 0,4-0,6 kg/dm<sup>3</sup>

Vanadium Pentoxide (V<sub>2</sub>O<sub>5</sub>) : 6-8 %

Potassium Oxide (K<sub>2</sub>O) : 9-10.75 %

Sodium Oxide (Na<sub>2</sub>O) : 1-2 %

\* Catalyst will be saturated with SO<sub>2</sub> containing gas.

### ARTICLE 4. WORK ENVIRONMENT AND CONDITIONS

**4.1. Work Environment:** Purchased catalyst will be used for completion of the losses resulting from sieving at the existing catalysts at all beds of the converter unit. Currently, BASF O4-110 catalyst is used in the 1<sup>st</sup> bed of the converter, MECS XLP-110 catalyst is used in the 2<sup>nd</sup> bed, MECS XLP-110 catalyst is used in the 3<sup>rd</sup> bed and MECS XLP-110 catalyst is used in the 4<sup>th</sup> bed. As the catalyst to be purchased will be used in mixture with the existing catalyst, they must have the same chemical characteristics.

## **ARTICLE 5. WORK COMMENCEMENT DATE, DELIVERY TERM, DELIVERY PLACE AND CONDITIONS**

### **5.1. Work commencement date:**

**5.1.1. Inland:** The work commencement date is the contract signing date.

**5.1.2. Abroad:** The work commencement date is the contract signing date.

**5.2. Delivery period:** 150 (hundred and fifty) calendar days subsequent to work commencement date.

### **5.3. Delivery Place and Conditions**

**5.3.1. Inland:** Place of delivery will be Bandırma Boron and Acid Works with all costs related shipping and insurance being to the account of the Contractor.

**5.3.2. Abroad:** Delivery will be on CPT/CFR Istanbul basis.

## **ARTICLE 6. REQUIRED DOCUMENTS, INFORMATION AND SAMPLE**

Bidders will present a document presenting the chemical characteristics ( $V_2O_5$ ,  $K_2O$ ,  $Na_2O$ ) and the physical characteristics of the material specified in Article 3. It will be guaranteed in writing with the bid that the offered material is suitable for use in mixed form with the MECS and BASF type catalyst that are being used in the existing process. Document showing the production date, production place and service life of the catalyst and material safety datasheets of the material will be presented in English and Turkish to the Plant Management at the delivery phase of the material.

## **ARTICLE 7. BID AND PAYMENT CONDITIONS:**

### **7.1. Bid and Payment Conditions:**

**7.1.1. Inland:** Bids will be presented in TL/USD/EURO.

**7.1.2. Abroad:** Bids will be presented in USD/EURO.

**7.2. Partial Bids:** Bids shall be presented for the complete work in this tender.

**7.3. Advance Payment:** Advance payment will not be made for this work.

**7.4. Performance Guarantee:** Performance guarantee will not be required.

**7.5. Elements other than Price:** Elements other than price will not be taken into consideration in the bids.

## **ARTICLE 8. INSTALLATION, TEST, STARTUP AND PERFORMANCE TESTS**

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## **ARTICLE 9. ACCEPTANCE PROCESSES**

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## **ARTICLE 10. WARRANTY**

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## **ARTICLE 11. FINES**

**11.1. Inland:** In the event of failure in delivery of the goods in the specified period pursuant to the contract, the delay fines specified in the contract will be applied.

**11.2. Abroad:** In the event of failure in delivery of the goods in the specified period pursuant to the contract, the delay fines specified in the contract will be applied.

## **ARTICLE 12. OTHER ISSUES**

- **Packaging:** Catalysts will be packed in air-tight two hundred liter drums, in original packaging without being exposed to external factors (moisture etc) so as to maintain its condition for a long period of time.

## **ARTICLE 13. ARTICLES OF THE TECHNICAL SPECIFICATIONS**

This technical specification consists of 13 (thirteen) articles, including this article.

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