**Date : 20/6/2023**
**To : Registered Vendors**
**Number of Pages: Part 1 Invitation (9 pages)**
**& Part 2 Technical Documents (35 pages)**

# Invitation for Limited Tender # 7241 For Gas Pipeline Projects For Supplying Line Pipes

## Introduction:

**GASCO** as a well known pioneer company in the field of gas processing, transmission & distribution had been established as a subsidiary of the Egyptian Gas Holding Co. (EGAS) whom is responsible to handle natural gas industry companies affairs in the Egyptian Ministry of Petroleum, **GASCO's** mission focuses on the management, operation, maintenance, upgrading, development & modernization of the National Gas Grid as well as gas processing and recovery of components that could be used in domestic & industrial applications.

Though, GASCO is initiating a new projects gas pipeline project in terms of expanding energy efficiency investment in the Egyptian gas pipelines infrastructure

In this regard, GASCO invites **Line Pipes** Manufacturers & Trade Houses – **whom are already received the Publication Fax** – to show their co-operation in fulfilling Gasco requirements by participating and submitting their optimized quotations ***based on optimized delivery schedule and prices***, noting that the due date for submitting the technical offer envelope should be on **31/7/2023.**

**Meanwhile, if you are not interested in submitting an offer in this tender, please take the necessary action to submit your decline for this tender only to the following emails:**
sherin_nafe@gasco.com.eg ; ahmed_abdelaziz@gasco.com.eg ; karem_nayef@gasco.com.eg ; mohammad_shahin @gasco.com.eg ; Amr_faramawy@gasco.com.eg **, noting that non submission of the decline will negatively affect your position in Gasco's vendors list as well as your opportunity to be selected and invited in the upcoming tenders.**

**Please visit www.gasco.com.eg to review & download the following:**

**Part A: Invitation for participating in this tender.**
**Part B: Technical Documents** including the following:

1. **Technical Evaluation Documents**
2. **Approved Manufacturer Short Vendor List**
3. **Annex-A Bidder Information Form**
4. **Annex-B Clarifications/Deviations Sheet**
5. **Annex-C Material Requisitions**
6. **Annex-D Material Specifications**
7. **Annex-E Table of Confirmation**

# * Important Notes

1. Any technical offer submitted without the arrangement stated in the technical tender document will be totally disqualified with no further clarification.
2. Any technical papers submitted loose and not included inside the technical Binder file will be totally disregarded.
3. A copy of technical offer can be submitted on Flash Memory with the same arrangement.
4. The bidder must mention the main offer and only one alternative offer (if any), in case of more than one alternative offer, the main offer only will be considered.
5. Annex-A, Bidder Information Form (Native file is available as Microsoft word format) shall be digitally filled with verified technical contact emails, moreover any hand written form shall be disregarded. Any unclear, missing information is the bidder own responsibility.
6. Annex-B, Technical Clarification Sheet (Native file is available as Microsoft word format) shall be digitally filled, signed and stamped by manufacturer, moreover any hand written form or not signed and stamped by manufacturer shall be disregarded.
7. Table of confirmation (Native file is available as PDF format) shall be digitally filled with proper technical, moreover any hand written form will disqualify the whole technical offer.

# Instructions To Bidders

## 1-Introduction:

To facilitate bidding and bid evaluation, the hereinafter instructions are to be followed in preparing your proposal.

## 2-Acknowledgment:

Tender acknowledgment must be submitted within **Max. 3 days** from receiving publication fax, in which this acknowledgment must confirm your receipt of publication & your intention to quote within the launched deadline **or** either an official declination for not being able to quote.

## 3-Tender Documents:

A set of Tender documents are provided herein and will form the basis of any subsequent awarding form (Order/Contract):

- Invitation for tender "Publication Fax".
- Instructions to bidders.
- General terms & Conditions of purchase.
- Technical Documents including 7 parts

**4-Bid Closing Date:**

- Bid closing date will be on **31 of July, 2023 12 O'clock noon Cairo Local Time (any bid received beyond the specified deadline will not be considered).**

Your Quotation should be submitted in a form of **one** sealed envelope (technical envelope only) including **hard and soft copies from the bid**.

**The above envelope must bear Tender title and to indicate the words "Sealed Bid Don't Open", and to be submitted to the Purchaser at the following address:**
**GASCO'S Head Office**
**The Ring Road, El Teseen St., Fifth Settlement**
**New Cairo, Egypt**
**Fax no. (202) 2538 4651**
**Attention: Chairman Assistant For Materials & Inventory Control: Eng. Alaa Hassan**

**Important Note:**
GASCO will only notify technically accepted Bidders to submit their commercial bids & bid bonds in a specific date prior to commercial opening as any commercial bids presented without GASCO'S official request will not be considered.

**5-Prices:**

5.1 All prices should be submitted itemized (per line item) on **CFR Liner Out Damietta Seaport** INCOTERMS 2020"**, it is to be noted that lump sum value for the freight charges will not be accepted.**
5.2 Prices to be submitted in the currency of US Dollars/Euro based on the above stated incoterms.

**6-Quotation Validity:**

- Quotation should be valid for a period **of 90 days at least** from bid closing date.

**7-Delivery Period:**

- It is to be strictly noted that the quoted delivery period must be counted from **the purchase order receipt date**, although the payment will be affected through Letter of Credit.
- Specific delivery schedule will be determined after the technical evaluation phase termination and upon the invitation for commercial bids.

**8-Bid Identification:**

Presented bids should be clearly identified stating the tender number, deadline date and identification flag assigning the contents of each envelope as well as the Bidder name which should be indicated clearly on the envelope.

**9-Shipping Details:**

9.1. Vessels age should not exceed than 15 years as any extra insurance fees will occur due to shipping materials on vessel age exceed 15 years will be beard by your side **and in all cases shipping on vessel age exceed 30 years is not accepted.**

9.2. All shipping details for each consignment as well as number of consignments to be indicated clearly in your commercial envelope i.e. (net weight, gross weight, volume, no. of packages, shipping port, and packing type).

9.3 Trans-Shipment is not allowed.

9.4 Partial Shipment is allowed.

**10- Order Splitting:**

**GASCO** reserves the right to split tender among technically accepted bidders based on the lowest quoted prices.

**11- Evaluation Criteria:**

**A) Technical:**

The proposed Bids will be evaluated as technically qualified or not, based on compliance with tender documents specifications and conditions.

To be carried out only for technically accepted bidders, based on the following criteria:

- Prices on CFR Liner Out **Damietta Seaport**.
- Compliance with the identified delivery schedule in which evaluation criteria will be clearly identified upon the invitation for commercial bids
- Evaluation Exchange rate will be according to the Central Bank of Egypt (Sell / Exchange Rates) in commercial bids closing date.
- Compliance with Commercial terms & conditions stipulated herein.
- In case of any item price or freight charge which was not quoted by the bidder, highest offered price in the tender for this item/freight charge will be considered for evaluation purposes only.

**12- Cancellation of Tender:**

If the project is cancelled, significantly modified or postponed during bidding evaluation process, **Gasco** reserves the right to cancel the tender without bidders being entitled to any compensations.

**13- Language:**

-All quotations and any subsequent correspondences shall be in English language.

-It should be noted that in the event of any Purchase Order resulting from this "Invitation for Tender", all documents such as (Drawings, Data Sheets, Manufacturing Procedures, and Test Mill Certificates) shall also be in English language.

**14- Acceptance of Instructions:**

The submission of a quotation will be considered as a total acceptance by Bidders to these instructions without exceptions, unless the exceptions are clearly stated and quantified.

**15- General Instructions:**

1. Any Bid received by fax or after the mentioned due date will be considered unacceptable.
2. In case of discrepancy between unit price and total price, the unit price shall prevail.
3. Failure to comply with GASCO Terms & Conditions may result in considering the presented bid unacceptable.
4. Any deviations or exceptions to GASCO Terms & Conditions should be mentioned & highlighted in bold, otherwise it will be implied that all terms & conditions are accepted.
5. The bid shall include all the contact information of the manufacturer / trade house "fax number, telephone number, email address and cellular number" should there be any question of a technical nature that require immediate clarification.
6. The term "to be agreed" for terms of payment and/or quoted delivery is not acceptable.
7. Bids should include Country of Origin & Beneficiary Name, Address as well as complete Banking details

# General Conditions.

**1 – Definitions**:

In case of Contract/Order, the following terms shall be interpreted as indicated:

(a) The Contract/Order means the agreement entered into between the Purchaser and the Supplier, as recorded in the Contract/Order Form signed by the parties, including all attachments and appendices thereto and all documents incorporated by reference herein.

(b) The Contract/Order Price means the price payable to the Supplier under the Contract/Order for the full and proper performance of the related contractual obligations.

(c) The Goods means all of the equipment, machinery, and/or other materials which the Supplier is obligated to supply to the Purchaser under the Contract/Order.

(d) Services means site services such as: installation, commissioning & testing, startup, provision of technical assistance, training and all other such obligations of the Supplier which are covered under the Contract/Order

(e) The Purchaser means: The Egyptian Natural Gas Company (Gasco).

(f) The Supplier means the person, firm or company with whom the Contract/Order is placed.

## 2- Payment:

Payment will be through **100% cash against documents ( CAD) or 100% Letter of Credit (L/C) in the presence of 10% unconditional performance guarantee against presentation of the following documents:**

1) **3 originals of Commercial Invoice showing country of origin** (only one original to be stamped from chamber of commerce)
2) **1 original of Certificate of Origin** (to be stamped from chamber of commerce)
3) **3 originals of Itemized Packing List**
4) **1 original of Euro 1 Certificate** (for European community origin items only).
5) **1 copy of Release for shipment note**: endorsed from **GASCO** before shipping upon reviewing & approving original Mill Test Certificate "MTC"/ Certificate of conformity.
6) **3 originals of Bill of lading showing freight prepaid** (should include 21 days free of demurrage for full container load starting from receiving date at port of destination).

N.B - One set of shipping documents including 1 Original Of { B/L , Commercial Invoice, Euro 1 certificate, certificate of origin & Packing List} must be sent to Gasco directly by courier within 5 working days from B/L date, as any demurrages fees may occurred due to the delay of submitting these documents will be beard by the supplier. All other originals and copies shall be sent to a Gasco's bank within 10 days from B/L date.

7) TALLY SHEETS.

## 3 – Delay Penalty & Liquidated Damages:

-If the Supplier fails to deliver any or all of the Goods by the Date(s) of delivery within the period(s) specified in the Purchase Order, the Purchaser may without prejudice to all other remedies under the Purchase Order, deduct from the Purchase Order Price, as liquidated damages, a sum equivalent to the percentage specified below of the delivered price of the delayed Goods for each week or part thereof of delay until actual delivery, up to a maximum deduction of the percentage specified below.

- The liquidated damage shall be 1% per full week or part thereof of delay calculated on the delayed shipment only.
- The maximum amount of liquidated damage shall be 5%.

-After which, the purchaser will specify a predetermined amount of money that must be paid by the supplier as damages for failure to perform under a contract. The amount of the liquidated damages will be determined at the time of "Invitation for Commercial Bids" of the damages that would be caused by a breach.

-Once the maximum amount is reached, the purchaser may at his own decision terminate the contract/order and forfeit the performance guarantee without prior notification to the supplier. In the event the Purchaser terminates the Contract in whole or in part, the Purchaser may procure, upon such terms and in such manner as it deems appropriate, Goods similar to those undelivered or not performed,

and the Supplier shall be liable to the Purchaser for any additional costs for such similar Goods. However, the Supplier shall continue performance of the Contract to the extent not terminated.

## 4 – Banking Charges:

In case of order/contract all bank charges outside Egypt will be on supplier's account that is including L/C confirmation charges.

## 5–Performance Guarantee:

In case of order, Supplier will be obliged to submit a final letter of guarantee in the form of unconditional banking guarantee amounting to **10%** from the total order value issued by first class bank at Egypt and incase of Issuance of performance Bond from foreign bank should be confirmed from first class Egyptian Bank valid for either 12 months from materials commissioning or 18 months from last shipment date, whichever comes earlier.

## 6- Variation Order:

In case of order/contract **GASCO** will reserve the right to increase/decrease order quantity within **25%** from the purchased quantities with no changes in unit price within order execution period.

## 7 – Expediting:

The goods supplied under the order/contract, shall be subject to Expediting Process/ Inspection by the purchaser either by himself or by assigning a third party expeditor / inspector to confirm the compliance of the supplied materials to the technical specifications and that the manufacturing schedule is proceeding without any deviations. Purchaser's representatives shall be afforded free access during working hours to supplier's and sub-supplier's plants/mills for Expediting/Inspection purposes. As required by purchaser, supplier shall provide schedules, progress reports and un-priced copies of supplier's purchase orders/contracts to his sub-suppliers for purchaser's use in expediting process. Supplier shall notify purchaser in writing of any action or anticipated delays immediately upon discovery. Such notice shall include an estimated period of delay, causes, and corrective actions being taken.

## 8- Arbitration:

-If at any time there shall be any dispute or failure to agree between the parties in connection with the order/contract or breach thereof, this shall first be referred to the parties for an amicable settlement and in the event that such referral fails, it shall be referred to arbitration under the Rules of the Regional Center of International Commercial Arbitration in Cairo, A.R.E. according to the conciliation and arbitration of the Egyptian law no# 27 for the year 1994

-The arbitration shall be held in Cairo, A.R.E. The award of the arbitration shall be final and binding to all parties. The arbitration shall be conducted in English and/or Arabic Language.

## 9- Warranties:

9.1. The supplier shall guarantee and warrant that all the supplied materials shall be in strict conformity with the agreed upon technical specifications and free from workmanship defects and faulty design, for a period of either twelve (12) months from the relevant date of materials commissioning **or** 18 months from the last date of shipment, whichever comes earlier.
9.2. The supplier shall be responsible for replacing and delivering on CFR/CPT basis any defected materials during the warranty / guarantee period upon the purchaser's notification.
9.3. The warranty / guarantee period for the replaced materials, shall have a new guarantee period of twelve (12) months from the date of putting it into operation.

## 10- Force Majeure:

10.1. Neither party shall be deemed to be in default of its contractual obligations whilst performance thereof is prevented by Force Majeure and the time limits laid down in the Contract / order for the performance of such obligations shall accordingly be extended by a period equal to that during which a Force Majeure event is operated.
10.2. Force Majeure are events caused by neither of the parties which are unforeseeable at the time of signature of the Contract, uncontrollable and which render the further performance of the contractual obligations impracticable as for instance acts of God, acts of war, acts of government, blockage, revolution and the like provided that any such event is beyond the control of any of the parties invoking the Force Majeure events. On the occurrence and cessation of any of such contingencies the party suffering there from shall immediately give the other party notice in writing of the cause of delay and its cessation respectively. Such notice shall be confirmed by official evidence.

**According to new custom procedures(ACID) ,The supplier must provide us with the attached table.**

### *ACID REQUEST FORM*

| | | | | |
|---|---|---|---|---|
| ***pre #*** | | | ***ACID #*** | |
| ***1-*** | ***Importer*** | | | |
| | **Company Name** | : | | |
| | **Arrival port** | : | | |
| ***2-*** | ***Exporter Information*** | | | |
| | **Name** | : | | |
| | **Registration Number** | : | | |
| | **Or Vat #** | | | |

| | | | | | |
|---|---|---|---|---|---|
| | **Exporter Country** | : | | | |
| | **Foreign exporter type**<br>***Trade mark Owner**<br>***Branch**<br>***Agent**<br>***Distributer**<br>***Manufacturer**<br>***other** | : | | | |
| | **Contact Information** | | | | |
| | **Name** | : | | | |
| | **ID** | : | | | |
| | **Phone #** | : | | | |
| | **Email:** | : | | | |
| ***3-*** | ***Shipment Intial Information*** | | | | |
| 1 MUST | **P O #** | : | | Date | : |
| | **Invoice #** | | | | |
| | **Invoice # 1 / Type ( Final / inatial )** | : | | Date | : |
| | Total / Cur | : | | | |
| | Total Package | : | | W. Net | |
| | **Invoice # 2 / Type** | : | | Date | : |
| | Total / Cur | : | | | |
| | Total Package | : | | W. Net | |
| | **Invoice # 3 / Type** | : | | Date | : |
| | Total / Cur | : | | | |
| | Total Package | : | | W. Net | |
| | **Port Of Loading** | : | | | |
| | **Port Of Discharging** | : | | | |

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# Linepipe
# Technical Tender Document
# For
# GAS PIPELINE PROJECT

**JUNE-2023**

# INDEX

1. Technical Evaluation Documents
2. Approved Manufacturer Short Vendor List
3. Annex-A Bidder Information Form
4. Annex-B Clarifications/Deviations Sheet
5. Annex-C Material Requisitions (See Attached)
6. Annex-D Material Specifications
7. Annex-E Table of Confirmation

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## Line Pipes Technical Evaluation Documents:

**The following documents must be introduced in BINDER FILE arranged in the following sequence with physical separators:**

1. **Bidder Technical offer.**
2. **Bidder Information Form (See Annex-A).**
3. **Clarifications/Deviations/Comments Sheet (as per Annex-B).**
4. **GASCO MRQ with Bidder & Manufacturer Stamp for each paper (See Annex-C).**
5. **GASCO Specification with bidder/Manufacturer stamp for each paper (See Annex-D).**
6. **GASCO Table of Confirmation (See Annex-E), Bidder must submit table of confirmation completely filled and signed/stamped from Bidder & Manufacturer**
7. **Manufacturer Authorization letter.**
8. **API 5L Monogram.**
9. **Confirmation of accreditation to ISO 9001, 14001 & 18001.**
10. **Reference lists for last 5 years for SAWL pipes showing client/owner, years of production, diameter, material grade, total pipe length in kilometer and value of order, any list submitted without the mentioned criteria (as shown table below will lead to whole technical offer rejection.**

| Ref. List for API 5L PSL2 SAWL | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| item | Year of Production | Prj. Name | Country | Customer | Pipe Dia. (inch) | Material Grade | W.T (inch) | Length (Km) |
| | | | | | | | | |
| | | | | | | | | |

11. **Evidence for experience of production line pipes in the last 3 years (relevant P.O's to be submitted) as the followings:**
    a. **at least 75 km of 42"**
12. **Plant Capabilities per each production line (including ranges for Pipe Grade, Diameter, Wall thickness, Length and Annual Production Capacity).**
13. **Orders in Hand.**
14. **Manufacturing Time Schedule & Delivery Time.**
15. **Process Flow Chart.**
16. **Mill Equipment List.**
17. **Steel Mill supplying List including country of origin.**
18. **Preliminary Inspection Test Plan (ITP).**
19. **Manufacturing Procedure Specification (MPS).**
20. **Manufacturer Quality Plan.**
21. **Evidence for Worldwide Approvals**
22. **Manufacturer Catalogs**

**NOTES:**

a. **Any technical offer submitted without the above arrangement will be totally disqualified with no further clarification.**

b. **Any papers submitted loose and not included inside the Binder file will be totally disregarded.**

c. **A copy can be submitted on CD or Flash Memory with the same arrangement.**

d. **The bidder must mention the main offer only, any alternative offer (if any) will be totally disregarded.**

e. **Annex-A, Bidder Information Form (Native file is available as Microsoft word format) shall be digitally filled with verified technical contact emails, moreover any hand written form shall be disregarded. Any unclear, missing information is the bidder own responsibility.**

f. **Annex-B, Technical Clarification Sheet (Native file is available as Microsoft word format) shall be digitally filled, signed and stamped by manufacturer, moreover any hand written form or not signed and stamped by manufacturer shall be disregarded.**

g. **Table of confirmation (Native file is available as PDF format) shall be digitally filled with proper technical, moreover any hand written form will disqualify the whole technical offer.**

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# Line Pipes Approved Manufacturers Short Vendor List

**Any offer outside this list with be automatically disqualified with no further clarification**

1. **IPIC (Egypt)**
2. **JFE (Japan)**
3. **Nippon Steel (Japan)**
4. **Mitsui & Co. Steel Ltd. (Japan)**
5. **Tenaris**
6. **ILVA (Italy)**
7. **Arabian Pipes CO. (KSA)**
8. **Salzgitter Mannesmann INT. (Germany)**
9. **Liberty Steel (UK)**
10. **Welspun (India)**
11. **Corinth (Greece)**
12. **ThyssenKruppMannex (Germany)**
13. **Interpipe (Ukrain)**
14. **Borsan Mannesman (Turkey)**
15. **Umran (Turkey)**
16. **Ferrostaal (Germany)**
17. **Ratnamani (India)**
18. **Global Pipe Company (KSA)**
19. **TMK (Russia)**
20. **Kumsoo (S. Korea)**
21. **EEW (Germany)**
22. **VYKSA Steel Works (Russia)**
23. **Baoshan Iron & Steel Co., Ltd (China)**
24. **Zhouyou BSS (QINHUANGDAO) Petropipe Co. (China)**
25. **Julong Steel Pipe Co. Ltd. China)**
26. **SEAH (S. Korea) / INOX (Italy)**
27. **Histeel (S. Korea)**
28. **HYUNDAI Steel (S. Korea)**
29. **Panyu Chu Kong Steel Pipe Co., Ltd. (China)**
30. **CHELPIPE (Russia)**
31. **JSC ZAGORSK (Russia)**
32. **Joint Stock Co. IZHORA (Russia)**
33. **MAN Industries (India)**

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# Annex-A

# Bidder Information Form

Annex-A, Bidder Information Form (Native file is available as Microsoft word format) shall be digitally filled with verified technical contact emails, moreover any hand written form shall be disregarded. Any unclear, missing information is the bidder own responsibility.

# Bidder Information Form

*[The Bidder shall fill in this Form in accordance with the instructions indicated below. No alterations to its format shall be permitted and no substitutions shall be accepted.]*

Date: *[insert date (as day, month and year) of Bid Submission*]
GASCO Tender No.: *[insert number of bidding process]*
BIDDER Tender No.: *[insert number of bidding process]*



| |
|---|
| Bidder's information Data: *[insert Bidder's legal name]*<br>Legal Name: *[insert Bidder's name]*<br>Country of origin: *[insert Bidder's origin]*<br>Address: *[insert Bidder's Address]*<br>Web site: *[insert Bidder's numbers]*<br>Email Address: *[insert Bidder's email address]*<br>Tel. no.:<br>Fax no.: |
| 2. Bidder's Authorized Representative Information<br>Name: *[insert Authorized Representative's name]*<br>Address: *[insert Authorized Representative's Address]*<br>Telephone: *[insert Authorized Representative's telephone numbers]*<br>Fax numbers: *[insert Authorized Representative's fax numbers]*<br>Email Address: *[insert Authorized Representative's email address]* |
| 3. Manufacturer's information<br>Legal Name: *[insert manufacturer name]*<br>Country of origin: *[insert manufacturer origin]*<br>Address: *[insert manufacturer Address]*<br>Web site: *[insert manufacturer numbers]*<br>Email Address: *[insert manufacturer email address]* |

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# Annex-B

# Clarifications/Deviations Sheet

# G A S C O

| Clarifications/Deviations Sheet | Bidder Ref. no. | GASCO PRJ. no. | MRQ. no. | SPECS. no. | C/D Rev. | Date | Page no. |
|---|---|---|---|---|---|---|---|
| | | | | | | / / | of |

| Sr. no. | Specs. Item no. | GASCO Requirements | Bidder Clarifications/Deviations | GASCO Reply | Remarks |
|---|---|---|---|---|---|
| | | | | | |

**Annex-B, Technical Clarification Sheet (Native file is available as Microsoft word format) shall be digitally filled, signed and stamped by manufacturer, moreover any hand written form or not signed and stamped by manufacturer shall be disregarded.**

| **Bidder Sign. & Stamp:** | **GASCO Sign. & Stamp:** |
|---|---|
| | |

1- Bidder shall complete GASCO clarifications/deviations sheet incorporating all deviations and submit along with the tender. All deviations shall be supported with proper reasoning for GASCO review / approval.
2- In case of no deviations on GASCO specification and Material Requisition, the Vendor shall write “No Deviation” on the clarifications/deviations sheet and shall be duly stamped, signed and submitted along with the tender documents.
3- Without the submission of properly completed “Clarifications/Deviations sheet” along with the offer, the Bidder's offer shall be considered as incomplete offer and to be subjected to rejection at the sole discretion GASCO.
4- Deviations listed elsewhere in the proposal (i.e., other than the Deviation sheet) considered as invalid and shall be disregarded.
5- No deviations to the specified requisition/specification shall be considered after order placement.

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# Annex-C
# Material Requisitions
# [See Attached]

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# Annex-D

# Material Specifications

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GASCO

الشركة المصرية لغازات الطبيعية

# GENERAL SPECIFICATION FOR LINE PIPES

| | | | |
|---|---|---|---|
| **General Specification For Line Pipes** | | | |
| **Specs. No. / MS / 001 Rev. 15** | | | |
| **Issue** | **Aug. 2019** | **No. of Sheets** | **17** |
| | | | |

# CONTENTS


| ITEM | | Page |
|---|---|---|
| 1. | Scope | 3 |
| 2. | Process of Manufacture | 3 |
| 3. | Chemical Properties and tests | 4 |
| 4. | Mechanical properties and tests | 4 |
| 5. | Hydrostatic Test | 5 |
| 6. | API Monogram | 5 |
| 7. | Pipe End Preparation | 6 |
| 8. | Lengths | 6 |
| 9. | Dimensions, Weights and Tolerances | 6 |
| 10. | Tests and Inspection | 8 |
| | Table (1) Acceptance criteria for laminar imperfection | 11 |
| 11. | Test Certificates | 16 |
| 12. | Third Party Inspection | 16 |
| 13. | Traceability | 16 |
| 14. | End Protectors | 17 |
| 15. | Marking | 17 |
| 16. | Painting of Bare Pipes | 17 |
| 17. | Delivery Tolerance | 17 |
| 18. | Important Notes | 17 |
| 19. | Figure 1 - Location of Charpy V-Notch Spec. | 18 |
| 20. | Table for line pipes specs conformity | 19 |

# GENERAL SPECIFICATION FOR LINE PIPES

## 1. SCOPE

This Specification covers the manufacture, test & inspection and supply of seamless and welded line pipe for construction of natural non-sour gas onshore transmission pipelines.

Line pipe shall be manufactured in accordance with PSL 2 of API 5L, 46th Edition and this Specification.

## 2.0 PROCESS OF MANUFACTURE

2.1 Pipes furnished to this specification shall be:

a) Seamless process

**or**

b) Electric resistance welding (ERW). ERW pipe shall be full body normalised in a moving bed furnace following seam welding. Where this is not possible, pipe which has the area of the seam weld and the heat affected zone double normalised will be considered. This normalising heat treatment shall be followed by a hardness test and metallography examination to ensure the grain structure is fully refined.

**or**

c) Automatic submerged arc welding (SAW). At least one pass shall be made on the inside and at least one pass on the outside.

2.2 The pipes shall be bare and shall be painted by mill coating according to item (16.0) of this specification.

2.3 Pipes furnished to this specification shall be made from fully killed steel using the open hearth, electric furnace or basic oxygen process in accordance with PSL 2 of API 5L, 46th edition.

2.4 One longitudinal seam weld is only accepted.

2.5 Pipes furnished to this specification shall be used for high pressure natural gas pipelines.

2.6 Seamless and electric welded (ERW) Pipes shall be non expanded pipe, and Submerged Arc Welded (SAW) pipe shall be cold expanded for a ratio not less than 0.3% and not more than 1.5% and in accordance with paragraph 8.9.2 of API 5L, 46th edition.

## 3.0 CHEMICAL PROPERTIES AND TESTS

3.1 The pipe material chemical properties for all Grades shall be in accordance with API 5L, 46th Edition table 5 for PSL 2.

3.2 The manufacturer shall furnish a report giving the heat analysis of each heat of steel used in the manufacture of pipe. The analysis shall conform to the requirements specified in Section 9.2.2 of API 5L, 46th Edition for PSL 2.

3.3 Moreover, the manufacture shall furnish a report for the result of the products analysis which shall be determined as stated in Section 9.2.2 and Table 5 for PSL 2, of API 5L, 46th Edition.

3.4 For carbon mass friction equal to or less than 0.12% of PSL2 product analysis, the carbon equivalent, $CE_{pcm}$ shall be according to the following equation and shall not exceed 0.25%.

$$CE_{pcm} = C + \frac{Si}{30} + \frac{Mn}{20} + \frac{Cu}{20} + \frac{Ni}{60} + \frac{Cr}{20} + \frac{Mo}{15} + \frac{V}{10} + 5B$$

Where symbols for chemical elements represent the mass fraction in percent (table 5 of API 5L, 46th edition)

For carbon mass friction greater than 0.12% of PSL2 product analysis, the carbon equivalent, $CE_{iiw}$ shall be according to the following equation and shall not exceed 0.42%.

$$C_{iiw} = C + \frac{MN}{6} + \frac{Cr + Mo + V}{5} + \frac{Ni + Cu}{15}$$

3.5 Two chemical samples are required from each analysis 3.2 and 3.3.

3.6 A record report of such analysis shall be furnished to the company for items 3.2 and 3.3.

## 4.0 MECHANICAL PROPERTIES AND TEST

4.1 The mechanical test specified herein shall be carried out according to PSL 2 of API 5L, 46th edition.

4.2 All tests shall be carried on material in its final supplied condition and test samples shall be taken from the same pipes as those used for chemical analysis.

4.3 Test samples and test methods shall comply with the requirements of paragraphs 10.2.3 & 10.2.4 of API 5L, 46th edition.
The pipe material tensile properties for PSL2 pipes shall be in accordance with the requirements of section 9.3.2, Table 7 of API 5L, 46th edition, for all grades.

## 5.0 HYDROSTATIC TEST

5.1 The test pressure for ERW and SAW pipes for all grades shall be that pressure which produces a fibre stress equivalent to the 90% of the specified minimum yield strength.

5.2 The hydro test pressure shall be calculated using the following formula :-

$$P = \frac{2000 \times S \times t}{O.D.}$$

P = hydrostatic test pressure, kPa

S = fibre stress, in MPa, equal to the stated percentages of the specified minimum yield strength

t = specified wall thickness. mm.

O.D. = minimum specified outside diameter mm.

5.3 The test be carried out using calibrated equipment recommended by API 5L and the duration shall be sufficiently long to allow adequate inspection but in no case shall the duration be less than ten (10) Second holding period.

5.4 The test media shall be fresh water suitably treated to prevent corrosion at a minimum temperature of + 7°C.

5.5 The test pressure and duration of each test shall be recorded on a chart.

## 6.0 API MONOGRAM AND MARKING

6.1 All identification markings shall be stencilled using a weatherproof paint on the outside surface of the pipe, as defined in API 5L, 46$^{th}$ edition for PSL 2, Section 11.

6.2 The identification markings used on the pipe shall be as follows:

a) Relevant company's order and item number
b) Name or mark of manufacturer
c) Pipe identification number
d) Process of manufacture
e) Outside diameter
f) Nominal wall thickness
g) Material grade
h) Heat treatment
i) Pipe length in metres

6.3 Marking on the pipe shall be made at one end at least and preferably at both ends.

6.4 The pipe shall be die stamped with a unique identification number on the weld bevel at each end of the pipe. In addition the weld seam of ERW pipe shall be marked on pipe weld end and bevel using suitable low stress stamps.

6.5 The pipe manufacturer shall have API Monogram.

## 7.0 PIPE END PREPARATION

7.1 The pipe ends shall be bevelled to an angle 30 degree with a tolerance of (+5, -0) degree measured from a line drawn perpendicular to the axis of the pipe. The surface finish shall be smooth and free from machining marks to allow for lamination visual inspection. All burrs shall be removed from the inside and outside of the pipe end.

7.2 The root face must be machined to 1/16 inch $\pm$ 1/32 inch.

7.3 Squareness Test

Test shall be made for the squareness of the pipe ends, at least three times during the shift. (8 hours working shift)
The gap at the measuring pipe end for one pipe shall not exceed 1/16 inch at any position when the pipe is rotated.

## 8.0 LENGTHS

The length of each pipe shall be from 11.0 to 13.0 metres. No pipe shall be less than 7 metre. Not more than 5% of the total number of pipes shall be from 7.0 to 11.0 metre. No jointers are accepted.

## 9.0 DIMENSIONS, MASS AND TOLERANCES.

Tolerances for diameters and masses shall be in accordance with the requirements of sections 9.11.2, 9.14 & table 10 of API 5L, 46$^{th}$ edition.
Wall thickness and out of roundness tolerances to be according to the followings:

### a. Wall Thickness

a.1. Random wall thickness measurements shall be taken over the full length of the pipe using an ultrasonic thickness-measuring device. A minimum of ten (10) readings spaced evenly over the length and around the circumferences of all pipe shall be taken.

a.2. At any location the tolerance of wall thickness shall be (-5%/+15%).

**b. Out of Roundness**

b.1. The inside diameter shall be measured over a distance of 200 mm. From each end using a calliper or other device capable of measuring accurately the minimum and maximum values.

b.2. Out of Roundness shall be equal to 0.01D (where D is the internal diameter), or 6 mm maximum for diameters up to and included 24" and 8 mm for diameter greater than 24", whichever is the lesser.

The values of these tolerances should be recorded in the test certificates, for verification.

**Out of Roundness Definition**

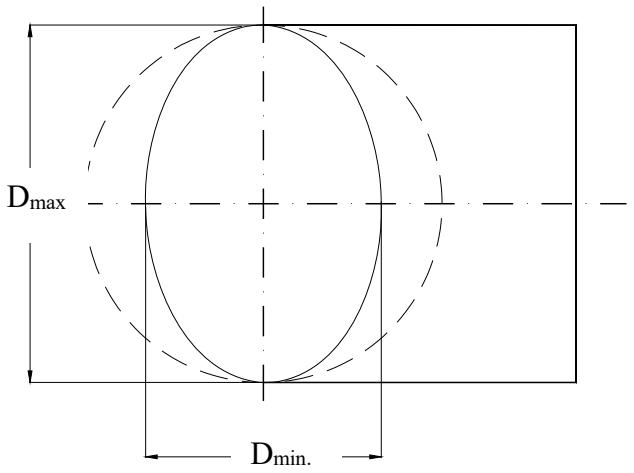
Out of Roundness is the generally obtained by the following calculation formula

$O.O.R = (D_{max.} - D_{min.})/D_{nom.} \times 100$

Where:

$D_{max.}$ = long axis of the section

$D_{min.}$ = short axis of the section



## 10.0 TESTS AND INSPECTION

Tests and inspection shall be carried out by the Manufacturer, generally in accordance with PSL 2 of API 5L, 46th edition and shall be as follows:

## 10.1 TESTS REQUIRED FOR SEAMLESS PIPES

a) Longitudinal tensile test for 6" and below.

b) Transverse tensile test for 8" and above.

c) Hydrostatic test according to item 5 of this specification.

d) Full length non destructive test shall be carried out according to and item 10.5 of this specs., and Annex K of API 5L, 46th edition for PSL2.

e) Check tolerances for pipe body, pipe ends, roundness, wall thickness, lengths and weights as stated in item 9.0 of this specification.

f) Squareness test as item 7.3 of this specification

g) Straightness test according to API 5L, 46th edition section 9.11.3.4.

h) Ultrasonic test for lamination at both ends of each pipe shall be performed on a 2 inch width (see table-1 Acceptance criteria for laminar imperfection).

i) Fracture toughness tests according to item 10.4 of this specs.

## 10.2 TESTS REQUIRED FOR ERW PIPES

a) Hardness test for double normalised pipes.

b) Metallography examination for double normalised pipes

c) Ultrasonic test for steel coil before forming pipes shall be carried out for 2 inch from coil edges (see table-1 Acceptance criteria for laminar imperfection).

d) Pipe body ultrasonic peripheral survey acc. to item 10.5.4 of this spec..

e) Longitudinal tensile test for 6" diameter and below.

f) Transverse tensile test for 8"and above.

g) Weld tensile test.

h) Flattening test.

i) Hydrostatic test according to item 5 of this specification.

j) Full length weld seam non destructive test shall be carried out by Ultrasonic examination, according to item 10.5 of this specification and Annex K of API 5L, 46th edition for PSL2 with acceptance criteria as per GASCO specification table-1.

k) Checking to tolerance for pipe body, pipe ends, roundness, wall thickness, lengths and weights as stated in item 9.0 of this specification.

l) Squareness test as item (7.3) of this specification.

m) Ultrasonic test for lamination at both ends of each pipe shall be performed on a 2 inch width (see table-1 Acceptance criteria for laminar imperfection).

n) Fracture toughness tests according to item 10.4 of this specification.

**Note:** (location of test samples of tensile tests and fracture toughness tests to be according to table 20 of API 5L, 46th edition).

o) Drop Weight Tear Tests shall be carried out for welded pipes of 20" diameter and larger, grade X52 and higher in accordance with section 9.9 of API 5L, 46th edition for PSL 2 pipes.

Two transverse specimens shall be taken from one length of pipe from each heat supplied in the order.

The specimen for Drop Weight Tear Test shall be tested at 0 degree centigrade with the acceptance limit of shear area ≥ 85% at least.

## 10.3 TESTS REQUIRED FOR SAW PIPES.

a) Ultrasonic test for steel plates before forming pipes shall be carried out for 2 inch from longitudinal plate edges (see table-1 Acceptance criteria for laminar imperfection).

b) Transverse tensile test.

c) Weld tensile test.

d) Weld guided bend test.

e) Hydrostatic test.

f) Full length weld seam non destructive test shall be carried out according to item 10.5 of this specification and Annex K of API 5L, 46th edition for PSL 2.

g) Pipe body/Plates ultrasonic peripheral survey acc. to item 10.5.4 of this spec.

g-a) At least 10% of plates shall be UT at pipe mills providing that all plates shall be 100% U.T at plates manufacturers.

h) Checking to tolerance for pipe body, pipe ends, roundness, wall thickness, lengths and weights as stated in item 9.0 of this specification.

i) Squareness test as per previous item 7.3 of this specification.

j) Ultrasonic test for lamination at both ends of each pipe shall be performed on a 2 inch width (see table-1 Acceptance criteria for laminar imperfection).

k) Fracture toughness tests according to item 10.4 of this specification.

**Note:** (location of test samples of tensile tests and fracture toughness tests to be according to table 20 of API 5L, 46th edition)

l) Drop Weight Tear Tests shall be carried out for welded pipes of 20" diameter and larger, grade X52 and higher in accordance with section 9.9 of API 5L, 46th edition for PSL 2 pipes.

Two transverse specimens shall be taken from one length of pipe from each heat supplied in the order.

The specimen for Drop Weight Tear Test shall be tested at 0 degree centigrade with the acceptance limit of shear area ≥ 85 % at least.

# Table (1) Acceptance criteria for laminar imperfection

| Service condition | Max. Individual Imperfection | | Min. imperfection size considered | | | Max. Population density [a] |
|---|---|---|---|---|---|---|
| | Area $Mm^2$ ($in^2$) | Length mm (in) | Area $mm^2$ ($in^2$) | Length mm (in) | Width mm (in) | |
| **Pipe body (or strip/plate body)** | | | | | | |
| Gas Pipeline | 100 (0.16) | Not specified | 30 (0.05) | 5 (0.2) | 5 (0.2) | 5 [per 500 mm (1.6 ft) x 500 mm (1.6 ft square)] [b] |
| **strip/plate areas adjacent to the weld seam [c]** | | | | | | |
| Gas Pipeline | 100 (0.16) | 20 (0.8) | --- | 10 (0.4) | --- | 3 [per 1,0 m (3.3 ft) length] |

**NOTE-1 Four plate bevel edges shall be free of lamination.**

NOTE-2 For the purpose of determining the extend of suspect area, adjacent suspect areas separated by less than the smaller of two minor axes of the areas shall be considered as one area.

a Number of imperfection smaller than and greater than the minimum imperfection size.

b For pipe with D < 168.3 mm (6.625 in) or strip/plate widths less than 500 mm (19.7 in), the maximum population density is referred to 0.25 $m^2$ (2.7 $ft^2$).

c The maximum imperfection area adjacent to the edge is the product of the maximum imperfection length, where length is the dimension parallel to the material edge and the transverse dimension. An imperfection is considered to be larger than the maximum imperfection size if either the length or transverse dimension is exceeded.

## 10.4 FRACTURE TOUGHNESS TEST AS FOLLOWS:-

10.4.1 Charpy V - notch impact test according to item 9.8 of API 5L, 46th Edition PSL 2 and ASTM A 370 at 0 degree centigrade (32 degree Fahrenheit).

10.4.2 The minimum absorbed energy acceptable for charpy V notch impact test requirements (joules) as follows:

| GRADE | SPECIMEN SIZE mm | LONGITUDINAL SPECIMEN | | TRANSVERSE SPECIMEN | |
|---|---|---|---|---|---|
| | | Min Average | Min Single | Minimum Average | Minimum Single |
| GRADE B | 10 x 10 x 55<br>10 x 6.7 x 55<br>10 x 5.0 x 55 | 61<br>48<br>41 | 46<br>36<br>31 | 36<br>28<br>24 | 27<br>21<br>18 |
| X - 52 | 10 x 10 x 55<br>10 x 6.7 x 55<br>10 x 5.0 x 55 | 61<br>48<br>41 | 46<br>36<br>31 | 36<br>28<br>24 | 27<br>21<br>18 |
| X - 60 | 10 x 10 x 55<br>10 x 6.7 x 55<br>10 x 5.0 x 55 | 70<br>55<br>46 | 53<br>41<br>36 | 41<br>32<br>27 | 31<br>24<br>21 |

Please note that absorbed energy and shear area for grade X56 & X65 must be as mentioned in GASCO specs for grade X60

10.4.3 **FOR SEAMLESS PIPES**

3 Charpy V - notch longitudinal or transverse specimens representing one test shall be taken from the base material.

10.4.4 **FOR ERW AND SAW PIPES**

3 Charpy V-Notch transverse specimen's representing one test shall be taken from the base material and at an angle of 90 degree from the weld line for welded pipes.

10.4.5 **ADDITIONALLY FOR ERW PIPES**

3 Charpy V - notch transverse specimens representing one test shall be taken from each of the following positions:

a) At fusion line.

b) At heat effected zone at 2mm to 5mm from the fusion line.

As shown in Figure 1 of this Specification.

10.4.6 **ADDITIONALLY FOR SAW PIPES**

3 Charpy V - notch transverse specimens representing one test shall be taken from each of the following positions:

a) At weld centre line.

b) At fusion line.

c) At heat effected zone at 2 mm to 5 mm from the fusion line.

As shown in Figure 1 of this Specification.

10.4.7 **FOR ALL SPECIMENS**

The notch shall be perpendicular to the pipe surface and according to ASTM-A 370, para. 20.

10.4.8 **Test procedure according to ASTM - A 370**

10.4.9 For all Test Specimens taken from the base material according to items 10.4.3 and 10.4.4 of this specification. The average shear value of the three specimens should not be less than 85% (according to API 5L, 46$^{th}$ edition for PSL 2).

10.4.10 For all Test Specimens taken from the weld seam line according to items 10.4.5, and 10.4.6 The average shear value of the three specimens will be recorded for information. The minimum acceptable impact test requirements (joules) shall be according to item 10.4.2.

**10.5 REQUIREMENTS FOR NON-DESTRUCTIVE TESTING**

10.5.1 **ULTRASONIC INSPECTION - CALIBRATION.**

Ultrasonic inspection shall be carried after rolling the plate to check for lamination defects, in accordance with table-1 Acceptance criteria for laminar imperfection Page-10).

The calibration standard shall be located in a test pipe prepared either:

a) From a length of pipe of the same nominal diameter, thickness and surface finish and similar acoustic properties as the pipe to be tested which is long enough, with the addition of extension pieces where necessary to be tested under dynamic conditions similar to those under which the production pipe will be tested

b) From a short length or segment of pipe otherwise satisfying the requirements of (a) above using static calibration.

It shall be demonstrated to the company that, when using static calibration, the calibration standard introduced into the pipe will be detected by the equipment under dynamic conditions similar to those under which the production pipe will be tested.

The calibration of the equipment shall be checked at the commencement of each working shift at intervals not longer than 8 hours, or disturbance of manufacture. If on checking during production testing the calibration requirements are not satisfied, if the sensitivity value is lowered by 2dB, pipe tested since the previous check shall be re-tested after the equipment has been re-calibrated.

### 10.5.2 CALIBRATION OF SHEAR WAVE PROBES - LONGITUDINAL INSPECTION USED AFTER FINAL PROCESSING OF THE PIPE

Reference standards shall be as specified in API 5L, with the following modifications for inspection of the weld zone:

The reference target shall consists of two parallel sided notches of dimensions showed in API 5L, 46$^{th}$ edition for PSL2 of the following zones.

a) Two notches (N5) of a depth equal to 5% of the pipe thickness for SAW pipes.

Or

b) Two notches (N10) of a depth equal to 10% of the pipe thickness for ERW pipes.

For each case the notches shall be cut in the longitudinal direction, one on the outer and one on the inner surface of the calibration pipe.

The notches shall not exceed 50 mm long, and shall be in line but displaced longitudinally to ensure that two separate and distinguishable signal responses are obtained.

**Note 1** Ultrasonic examination shall not be carried out immediately after welding as the couplant will cool the weld quickly resulting in a brittle or hardened surface.

**Note 2** For pipe diameters up to and including 20" dia. a corrected surface by a curved shoe shall be used between the probe and pipe curvature.

10.5.3 **WELD AND ADJACENT PARENT PLATE**

The inspection of the weld zone shall be carried out after completion of manufacture and hydrostatic pressure testing as follows:

a) Automatic inspection of the full weld length, the probe assembly shall be arranged so that the pipe wall zone is scanned along its full length and cross-section from both sides of the weld.

Imperfections shall be classified for manual ultrasonic examination of:

For SAW pipes:

1) The signal responses from either side of the weld simultaneously is equal to or greater than the N5 reference signal response, or

For ERW pipes:

2) if the signal response from either side of the weld is equal to or greater than that from the N10 reference standard.

Shear wave probes in the frequency range 4 MHz to 8 MHz shall be used and shall be continuously monitored to ensure that ultrasound coupling is maintained throughout the test.

The probe angle shall be in the range of 45° to 70°. A recorder chart shall be used to record the presence of any defect such that they can be located accurately along the pipe. A paint spray or other marking device shall also be used in conjunction with the recorder chart.

At the discretion of the company, an inspection report of the delivered pipe may be requested to ensure quality of valid indications.

10.5.4 **PIPE BODY - PERIPHERAL SURVEY**

The entire body of the pipe shall be examined for the presence of laminar imperfections according to the requirements of API 5L, 46$^{th}$ edition for PSL2, Imperfections disclosed by ultrasonic inspection shall be classed as unacceptable if they exceed the requirements indicated in (table-1 Acceptance criteria for laminar imperfection).

10.6 **Repair of Defects**

Injurious defects may be removed by grinding providing that wall thickness will not be less than the minimum wall thickness stated in our specification and the N.D.T. shall be carried out after grinding according to API 5L, 46$^{th}$ edition.

Defect in the weld after expansion or cold sizing on grads X-60 and higher

shall not be repaired but rejected.

10.6.1 For plate, skelp or seamless pipe:

The plate, skelp or seamless pipe shall not contain any repair welds according to API 5L, 46th edition for PSL 2 pipe.

10.6.2 For ERW Pipes

Repair in weld seam and Repair welding on parent metal is not accepted.

10.6.3 For SAW Pipes

- Repair in weld seam is not acceptable within 200 mm. From bevel end.
- Repair to the weld seam shall be limited to three per pipe and shall be re-inspected in accordance to appendix C&D of API 5L, 46th edition for PSL 2 pipe.
- Welding repairs shall be carried out before hydrostatic test and cold expansion.
- Repair welding of pipe body is not accepted.
- Welding Repair procedure shall be submitted to principle inspector for approval.

10.7 The supplier shall notify the company, in writing, 30 days in advance of the commencement of the tests

## 11.0 TEST CERTIFICATES

Test certificates including all test and inspection stated in this specification shall be submitted for verification and shall be according to paragraph 10.1.3 of API 5L, 46th edition for PSL 2.

## 12.0 THIRD PARTY INSPECTION

The purchaser and/or the inspector representing the purchaser (third party) shall have unrestricted access, at all times, to all parts of the manufacturer's works, or sub-contractors works where the material is sub-contracted, that will concern the manufacture of the pipe ordered. The manufacturer shall afford the purchaser, and the inspector, all reasonable facilities to satisfy that the material is being manufactured in accordance with this Specification. All inspections shall be made at the place of manufacture prior to despatch, unless otherwise specified on the purchase order.

## 13.0 TRACEABILITY:

According to API 5L, 46th edition for PSL2, the manufacture shall establish and follow procedure for maintaining heat and lot identity of all pipes. The procedure shall provide means for tracing any length of pipe to the proper heat and a lot and to all applicable chemical and mechanical test results.

## 14.0 END PROTECTORS

All pipes shall be fitted with steel or plastic end covers (cup) to protect the root face and bevel against damage, and to prevent any foreign material from entering inside the pipes during handling in mill, shipment and on site.

## 15.0 MARKING

Marking shall be in accordance with API 5L, 46$^{th}$ edition for PSL 2 pipe, on each pipe. In addition the weld seam of ERW pipe shall be marked on the pipe weld end bevel, using suitable low stress stamps.

## 16.0 PAINTING OF BARE PIPES

External surfaces of all Pipes should be given a mill painting to prevent rust during shipment and storage yard and shall be of type which can lasts 6 months at least and can be easily removed by shot blasting ***no chemicals shall be applied*** so as not to affect the field outer coating ***(coating shall be applied within this period)***.

## 17.0 DELIVERY TOLERANCE

Delivery tolerance shall be + 0 % & - 0.5 % of the total length of each item.

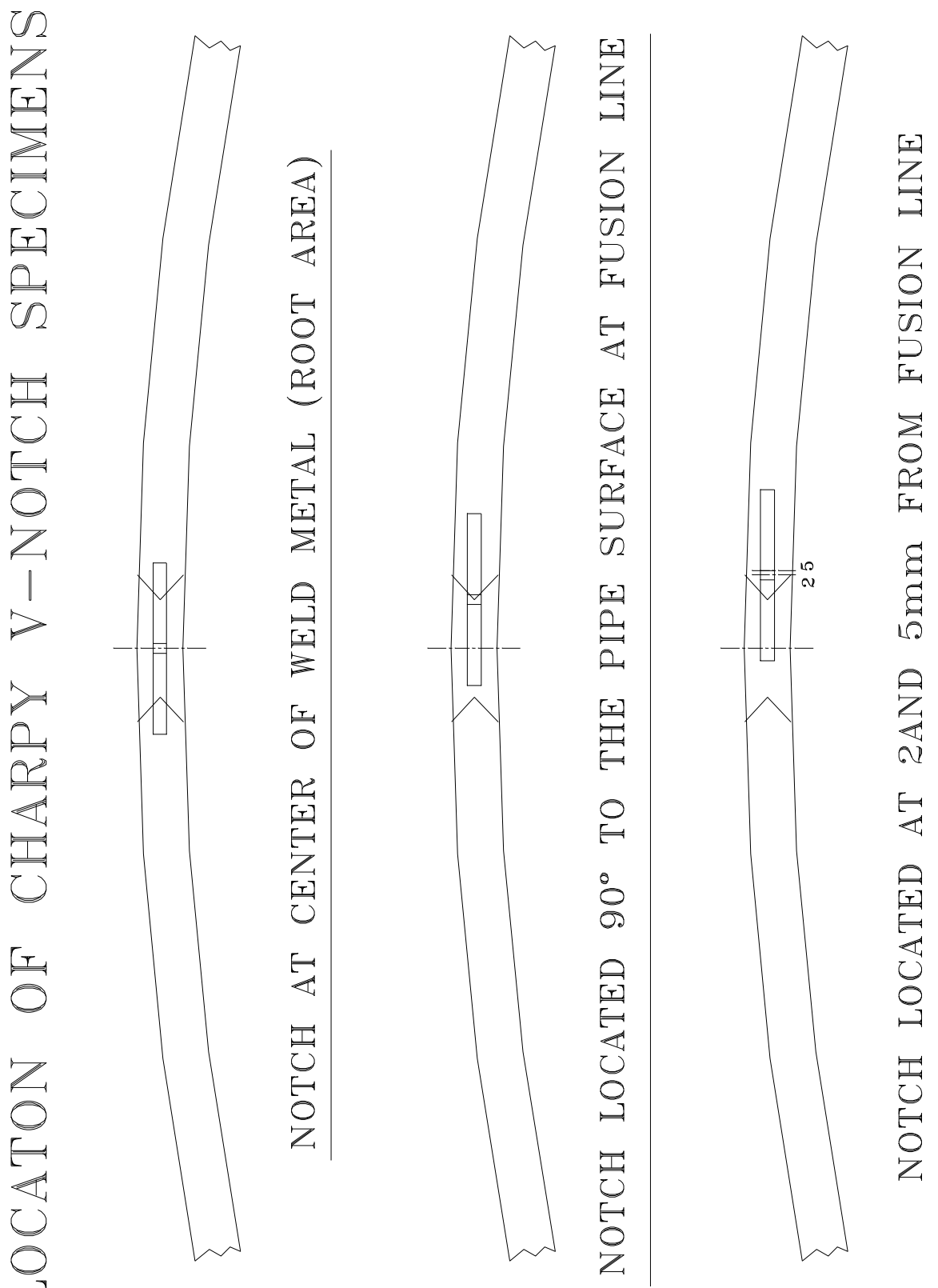
## 18.0 IMPORTANT NOTES

18.1 Any exception to this specification shall be clearly stated in the offer.

18.2 In case of offering with equivalent standards other than stated here in the specification, the manufacturer shall state the equivalents and submit with the offer the supported documents and standards that prove the equivalence for each item.

18.3 **The table of specifications attached here should be completely filled by the manufacturer and should be attached with the offer.**
**The offer shall be rejected if the table of specification is not fully completed.**

## FIGURE-1 LOCATION FOR CHARPY V-NOTCH SPECIMENS



Egyptian Natural Gas Co.
G A S C O
Gen. Dept. of Engineering Affairs

# Annex-E

# Table of Confirmation

# Table for Line Pipes Specifications Conformity

**INQUIRY NO.:**……
**QUOTATION NO:** ……
**MANUFACTURER NAME:** ……..
**ITEM NO.:**……...

| Item | SPECIFICATION | CONFIRMATION | | NOTES |
|---|---|---|---|---|
| | | YES | NO | |
| 1. | **DIMENSIONS :** | | | |
| 1.1 | Pipe diameter (inch)<br>Nominal<br>Outside | | | |
| 1.2 | Pipe wall thickness (inch) | | | |
| 2. | **PRODUCT SPECIFICATION LEVEL:**<br>To API 5 L, 46th edition, PSL 2 | | | |
| 3. | **PROCESS OF MANUFACTURE** | | | |
| 3.1. | ERW or SAW or Seamless (state the type). | | | |
| 3.2. | One longitudinal seam weld for ERW or SAW pipes. | | | |
| 3.3. | Bare with external anti rust coating | | | |
| 3.4. | Removing antirust coating by shot blasting only. | | | |
| 3.5. | Normalising for ERW acc. to item (2.1.b). | | | |
| 3.5.1 | ERW pipe shall be full body normalized in a moving bed furnace following seam welding | | | |
| 3.5.2 | The area of the seam weld and the heat affected zone single normalized. | | | |
| 3.5.2 | The area of the seam weld and the heat affected zone double normalized. | | | |
| 3.6 | Cold expanded for SAWL pipes. | | | |
| 4. | **MATERIAL AND CHEMICAL PROPERTIES** | | | |
| 4.1 | Material (API 5L PSL2) | | | |
| | Pipe delivery condition (N or M) | | | |
| 4.2 | Chemical analysis as per items (3) of this specification. | | | |
| 4.3 | Required reports as per items (3.2, 3.3, 3.6) of this specification. | | | |
| 4.4 | For carbon mass friction equal to or less than 0.12% of PSL2 product analysis Carbon equivalent Maximum 0.25%. | | | |
| 4.5 | For carbon mass friction greater than 0.12% of PSL2 product analysis Carbon equivalent Maximum 0.42%. | | | |
| 5. | **MECHANICAL PROPERTIES** | | | |
| 5.1 | Tensile strength Minimum: Max: PSI. | | | |
| 5.2 | Yield strength Minimum: Max: PSI. | | | |

## Table for Line Pipes Specifications Conformity (cont'd)

| Item | SPECIFICATION | CONFIRMATION | | NOTES |
|---|---|---|---|---|
| | | YES | NO | |
| 5.3 | Elongation % minimum in 2 inch gage length acc. to the table in item (4.3) of this specification. | | | |
| 5.4 | Hydrostatic test according to item (5.0) | | | |
| 5. | **API MONOGRAMMING AND MARKING** | | | |
| 5.1 | As per item (6.0 & 15) of this specification | | | |
| 6. | **ENDS PREPARATION** | | | |
| 6.1 | Angle of bevel 30 degree according to item (7.1) | | | |
| 6.2 | Tolerance of bevel (+5, -0 degrees). | | | |
| 6.3 | Root face must be machined to 1/16" ± 1/32". | | | |
| 7. | **LENGTHS OF PIPES** | | | |
| 7.1 | Acc. to item (8.0) | | | |
| 8. | **TEST OF SQUARENESS** | | | |
| 8.1 | As per item (7.3) of this specification. | | | |
| 9. | **TOLERANCE** | | | |
| 9.1 | Pipe body acc. to API 5L 46$^{th}$ Edition table 10, (PSL 2). | | | |
| 9.2 | Pipe ends acc. to item 7.0 of the specifications & table 10 of API 5L 46$^{th}$ Edition | | | |
| 9.3 | Weights acc. to API 5L 46$^{th}$ Edition item 9.14 & 10.2.9 | | | |
| 9.4 | Roundness acc. to item (9.b) of the specifications | | | |
| 9.5 | Wall thickness (+15% - 5%) and according to item (9.a) of this specs | | | |
| 10. | **TEST AND INSPECTION** | | | |
| 10.1 | According to item 10.1 for seamless pipe | | | |
| 10.2 | According to item 10.2 for ERW pipe | | | |
| 10.3 | According to item 10.3 for SAW pipe | | | |
| 10.4 | Acceptance criteria for laminar imperfection acc. To Table (1) of this specification. | | | |
| 10.5 | Fracture toughness, tests are acc. to item 10.4 of this specification. | | | |
| | Inspection according to 10.5 | | | |
| 10.7 | For ERW pipes: Peripheral survey by U.T. on pipe body according to item 10.5.4 of specs | | | |

## Table for Line Pipes Specifications Conformity (cont'd)

| | SPECIFICATION | CONFIRMATION | | NOTES |
|---|---|---|---|---|
| | | YES | NO | |
| 10.8 | For SAW pipes: at least 10% of plates shall be UT at pipe mills providing that all plates shall be 100% U.T at plates manufacturers according to item 10.3.g.a of specs. | | | |
| 10.9 | Repair of defects acc. to item 10.6 | | | |
| 11. | **TEST AND INSPECTION CERTIFICATES & THIRD PARTY** | | | |
| 11.1 | As per item (11.0) and (12.0) of this specification. | | | |
| 12. | **TRACEABILITY:** As per item 13.0 of this specification | | | |
| 13. | **MARKING:** As per item 15 of this specification | | | |
| 14. | **END PROTECTORS** | | | |
| 14.4 | Steel or plastic cover (cup). Acc. to item 14 | | | |
| 15. | **QUANTITY AND DELIVERY TOLERANCES** | | | |
| 15.1 | Quantity in (km). state the value. | | | |
| 15.2 | Maximum delivery (km) - state the value. | | | |
| 15.3 | Minimum delivery (km) - state the value. | | | |
| 16. | **STEEL PLATE/COIL**<br>**Suppliers and country of origin** | | | |

**IMPORTANT NOTE**:-

1- **The vendor must submit table of confirmation completely filled and signed with the offer otherwise the offer will be cancelled.**

2- **Any technical deviation to line pipe specs. must be stated clearly.**

3- **Production schedule must be submitted.**

Egyptian Natural Gas Co.
G A S C O
Gen. Dept. of Engineering Affairs

# Material Requisition

| Project name: | PL42_198 & PL42_228 GAS PIPELINE PROJECT |
|---|---|

| Material | Specs no. | Project no. |
|---|---|---|
| Line Pipes | MS 001 | PL42_198 & PL42_228 |
| | Specs. Rev. | Requisition no. |
| | 15 | 7241 |

## Material Requisition Status

| Rev. no. | Date | Revisions | Originator | Approval | | |
|---|---|---|---|---|---|---|
| 0 | 30/3/2023 | Issue for Tender | | E.F. | KH.B. | Y.M. |
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| GASCO | | | | | | |
|---|---|---|---|---|---|---|
| **Continuation Sheet** | | **REQN. no.** | **PRJ. no.** | **Rev.** | **Date** | |
| | | **7241** | **PL42_198 & PL42_228** | **0** | **30/3/2023** | |
| **Item** | **Description** | **Unit** | **QTY.** | **Unit Price** | **Total Price** | |
| 1 | 46" Pipe, API 5L X65M PSL2, W.Thk=0.875" ONE SEAM WELD (SAWL). | meter | 72 | | | |
| 2 | 42" Pipe, API 5L X70M PSL2, W.Thk=1.000" ONE SEAM WELD (SAWL). | meter | 3000 | | | |
| 3 | 42" Pipe, API 5L X65M PSL2, W.Thk=1.000" ONE SEAM WELD (SAWL). | meter | 15500 | | | |
| 4 | 42" Pipe, API 5L X65M PSL2, W.Thk=0.938" ONE SEAM WELD (SAWL). | meter | 3000 | | | |
| 5 | 42" Pipe, API 5L X65M PSL2, W.Thk=0.812" ONE SEAM WELD (SAWL). | meter | 4000 | | | |
| 6 | 42" Pipe, API 5L X65M PSL2, W.Thk=0.750" ONE SEAM WELD (SAWL). | meter | 11000 | | | |
| 7 | 42" Pipe, API 5L X65M PSL2, W.Thk=0.688" ONE SEAM WELD (SAWL). | meter | 191500 | | | |
| 8 | 42" Pipe, API 5L X65M PSL2, W.Thk=0.625" ONE SEAM WELD (SAWL). | meter | 34000 | | | |
| 9 | 36" Pipe, API 5L X65M PSL2, W.Thk=0.688" ONE SEAM WELD (SAWL). | meter | 200 | | | |
| 10 | 32" Pipe, API 5L X60M PSL2, W.Thk=0.688" ONE SEAM WELD (SAWL). | meter | 150 | | | |
| 11 | 24" Pipe, API 5L X56M PSL2, W.Thk=0.562" ONE SEAM WELD (SAWL). | meter | 150 | | | |

**Notes:**

1. **Preliminary manufacturing schedule to be submitted during technical bidding for guidance.**
2. **Final manufacturing schedule shall be submitted to GASCO after placing P.O for review and approval in order to priorities delivered batches for line pipes.**