

सेन्ट्रल इंस्टीट्यूट ऑफ पेट्रोकेमिकल्स

इंजीनियरिंग एण्ड टेक्नोलॉजी

(पूर्व में सेन्ट्रल इंस्टीट्यूट ऑफ प्लास्टिक्स इंजीनियरिंग एण्ड टेक्नोलॉजी)

प्रधान कार्यालय, पी.डी. आई सेल

रसायन एवं पेट्रो रसायन विभाग,

रसायन एवं उर्वरक मंत्रालय, भारत सरकार

टी. वी. के. औद्योगिक इस्टेट, मिडी, चेन्नई - 600 032

दूरभाष : 044-29813708 (Direct) / 044-22254780 (Extn-502)

ई-मेल : pdicipeti@gmail.com



CENTRAL INSTITUTE OF PETROCHEMICALS  
ENGINEERING & TECHNOLOGY

(Formerly Central Institute of Plastics Engineering & Technology)

Head Office, PDI Cell

Department of Chemicals & Petrochemicals

Ministry of Chemicals & Fertilizers, Govt. of India

TVK Industrial Estate, Guindy, Chennai - 600 032

Phone : +044-29813708 (Direct) / 044-22254780 (Extn-502)

Email : pdicipeti@gmail.com

|                                                       |                                                             |
|-------------------------------------------------------|-------------------------------------------------------------|
| Name of the Inspecting Official : E Naga Durga Prasad | W.O Centre: - Kochi                                         |
| Code No. : 1388                                       | Camp at : M/s.Nandi Polymers India Pvt. Ltd., Tirupati , AP |

**PRE DELIVERY INSPECTION REPORT**

|    |                                                        |                                                                                                                                                                                   |
|----|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 01 | Ref. No. : IB00423240501376                            | Dated : 24.07.2023                                                                                                                                                                |
| 02 | Name of the Indenter with detailed address             | The Executive Engineer, KWA, P.H.Division, Irinjalakuda-680121.                                                                                                                   |
| 03 | Supply order no & Date Extension if any                | (i) Letter No. KWA/PHC/TSR/D5/2893/2022<br>(ii) Agreement No.23/06/2023 T.Abdussamad,<br>(iii) Proceedings No.KWA/HO/SP-440/2017/TP1 dt.02.07.2020 of MD,KWA,<br>Jalabhavan, TVM. |
| 04 | Name of the consignee with detailed address            | The Executive Engineer, WSP Division, Palakkad, Kerala.                                                                                                                           |
| 05 | Name of the Contractor/Supplier                        | Sri T Abdussamad, Thammannasery house, Melmuri, Malapurram , Kerala                                                                                                               |
| 06 | Contractor/Supplier P.O No & Date                      | PQ- TA/FA/38/2023-24 Dt: 15/05/2023                                                                                                                                               |
| 07 | Name and address of the manufacturer / inspection site | M/s.Nandi Polymers India Pvt. Ltd., Sy. No. 841/2 , APIIC Industrial Estate,<br>Renigunta Road, Tirupati -517 506, Chittoor (Dist) , A.P                                          |
| 08 | Inspection call letter No & Date                       | NPIPL 02 dated 12/07/2023 and Dt: 23/07/2023                                                                                                                                      |
| 09 | PDI assignment No. & date                              | CIPET/HO/2023242801 dated 13.07.2023                                                                                                                                              |
| 10 | Duration of inspection                                 | Started on: 21.07.2023 Completed on: 24.07.2023                                                                                                                                   |
| 11 | Any Other Information                                  | BIS Licence No: CM/L-6600053107                                                                                                                                                   |

**DETAILS OF THE STORES**

| Sl No                                                              | Description of the Item      | Quantity as per order | Quantity inspected earlier (Cumulative) | Quantity offered for inspection               | Quantity Accepted                             | Quantity Rejected | Balance Quantity |
|--------------------------------------------------------------------|------------------------------|-----------------------|-----------------------------------------|-----------------------------------------------|-----------------------------------------------|-------------------|------------------|
| <b>PE Pipes as per IS: 4984:2016 with ISI Certification Marks.</b> |                              |                       |                                         |                                               |                                               |                   |                  |
| 01                                                                 | PE100 PN8<br>DN 110 SDR 17   | 9889 Mtrs             | NIL                                     | 6600<br>(200 Mtrs x 33 Coils)                 | 6600<br>(200 Mtrs x33 Coils)                  | NIL               | 3289Mtrs         |
| 02                                                                 | PE100 PN8<br>DN 125 SDR 17   | 3706 Mtrs             | NIL                                     | 3706 (12MtrsX308Nos)<br>& (10Mtrs x 1Nos.)    | 3706<br>(12MtrsX308Nos) &<br>(10Mtrs X 1Nos.) | NIL               | NIL              |
| 03                                                                 | PE100 PN10<br>DN 125 SDR13.6 | 1077 Mtrs             | NIL                                     | 1077 (12 Mtrs x89 Nos.)<br>& (9Mtrs x 1Nos)   | NIL                                           | 1077              | 1077             |
| 04                                                                 | PE100 PN8<br>DN 160 SDR 17   | 1352 Mtrs             | NIL                                     | 1352 (12Mtrs x112Nos)<br>& (8Mtrs x 1Nos)     | NIL                                           | 1352              | 1352             |
| 05                                                                 | PE100 PN8<br>DN 180 SDR 17   | 325 Mtrs              | NIL                                     | 325 (12 Mtrs x 27 Nos.)<br>& (1 Mtrs x 1 No.) | NIL                                           | 325               | 325              |

All accepted materials are stamped thus:

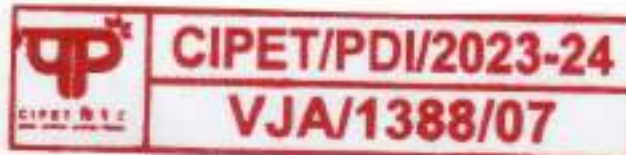
1. Certified that the items as detailed above have been inspected. The accepted items may be dispatched to the consignee. The Inspection Document No. : **IB00423240501376/ 1 to 5** dated 24.07.2023 are enclosed.

2. This inspection report is valid for 30 days, any dispute / discrepancies /claims may be brought to the notice of undersigned within 30 days from the date of issues of this report.

E Naga Durga Prasad, CODE No: 1388  
AUTHORISED SIGNATORY

Copy to:

- (1) The Executive Engineer, WSP Division, Palakkad, Kerala,
- (2) M/s Nandi Polymers Pvt. Ltd, Tirupati
- (3) CIPET, Kochi



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Name of the Inspecting Official : E Naga Durga Prasad

W.O Centre: Kochi

Code No.: 1388

Camp at: M/s.Nandi Polymers India Pvt. Ltd., Tirupati , AP

### INSPECTION DOCUMENT

DOC. NO: IB00423240501376/1

Dated: 24.07.2023

Issued to: M/s.Nandi Polymers India Pvt. Ltd

Manufacturer Inspection Call Letter No.: NPIPL 02 dated 12/07/2023, Dated: 23/07/2023

INSPECTION DOCUMENT AS PER IS NO. / QAP NO. : 4984-2016

#### PART A: PARTICULARS OF STORES OFFERED

- |                                       |                                                          |
|---------------------------------------|----------------------------------------------------------|
| a) Description of the items           | : HDPE Pipe                                              |
| b) Grade/Variety/Type/Size/Class etc. | : PE100 PN8 DN 110 SDR 17                                |
| c) Declared Value, if any             | : MFI: 0.33gm/10 min & DENSITY: 956.39 Kg/m <sup>3</sup> |
| d) Quantity                           | : 6600.00mtrs.(33pcx200m)                                |
| e) Any Other Information              | :Batch Number: 2023060400400C                            |

#### PART B: SUPPLEMENTARY INFORMATIONS

- a) Reference to sampling procedure : IS 4984-2016 (Random Sampling Method)

#### PART C: RESULTS OF TESTS WITNESSED & THE DOCUMENTS REVIEWED

| Sl.   | Clause               | Tests Witnessed                                  | Specified Requirements.                                                                                                                   | Result observed                          |
|-------|----------------------|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|
| 1     | 6                    | <b>Pipe Description</b>                          |                                                                                                                                           |                                          |
| 1.1   | 6.2                  | Colour                                           | Shall be Black with Blue Strips                                                                                                           | confirmed                                |
| 1.2   | 6.2.1                | Identification of Strips                         |                                                                                                                                           |                                          |
|       |                      | No. of longitudinal strips                       | Min. : 3                                                                                                                                  | 3                                        |
|       |                      | Strip Width (mm)                                 | Min. : 3                                                                                                                                  | 4.91                                     |
|       |                      | Strip Depth (mm)                                 | Max. : 0.2                                                                                                                                | 0.16                                     |
| 2     | 7                    | <b>Geometric Characteristics of Pipe</b>         |                                                                                                                                           | <b>Geometric Characteristics of Pipe</b> |
| 2.1   | 7.1                  | Visual Appearance                                | Internal & External surface of pipe shall be smooth, clean free from grooving & other defects.                                            | Satisfactory                             |
|       |                      | Out of square of pipe end (mm)                   | Max.: 3                                                                                                                                   | 1.82                                     |
| 2.2   | 7.2                  | Length(mtr)                                      | Min.200                                                                                                                                   | 200.06                                   |
| 2.3   | 7.4<br>(Table-3 & 4) | Dimensions                                       |                                                                                                                                           |                                          |
|       |                      | Mean Outside Diameter (d <sub>en</sub> ) (mm)    | Min. : 110.0<br>Max.: 110.7                                                                                                               | 110.03<br>110.60                         |
|       |                      | Out of Roundness (Ovality) (mm)                  | Max.: 2.2                                                                                                                                 | 1.76                                     |
|       |                      | Wall Thickness                                   | Min. : 6.50<br>Max.: 7.30                                                                                                                 | 6.74<br>7.16                             |
| 3     | 8                    | <b>Performance Requirements</b>                  |                                                                                                                                           |                                          |
| 3.1   | 8.1                  | Hydraulic characteristics                        |                                                                                                                                           |                                          |
| 3.1.1 | 8.1.1<br>(Table-5)   | Internal Pressure Creep Rupture Test of Pipe     |                                                                                                                                           |                                          |
|       |                      | Hydrostatic Resistance Test (at 80°C for 48hrs.) | The pipes under test shall show No signs of localized swelling, leakage or weeping & shall not burst during the prescribed test duration. | Confirmed                                |

DOCUMENT NO : **IB00423240501376/1**


| Sl. | Clause | Tests Witnessed                                      | Specified Requirements.                                                                      | Result obtained |
|-----|--------|------------------------------------------------------|----------------------------------------------------------------------------------------------|-----------------|
| 3.2 | 8.2    | Longitudinal Reversion Test                          | Shall not be greater than 3 %.                                                               | 1.40            |
| 3.3 | 8.3    | Carbon Black Content (%)                             | 2.5±0.5                                                                                      | 2.63            |
|     |        | Carbon Black Dispersion                              | The dispersion of carbon black shall be satisfactory.                                        | Satisfactory    |
| 3.4 | 8.4    | Melt Flow Rate (g/10min)<br>( at 190°C with 5kgLoad) | 0.15 to 1.10                                                                                 | 0.33            |
| 3.5 | 8.5    | Oxidation Induction Time (OIT) min.                  | Shall not be less than 20 min.                                                               | > 20            |
| 3.7 | 8.7    | Density (kg/m <sup>3</sup> )                         | 940 to 960                                                                                   | 956.39          |
| 3.9 | 8.9    | Elongation at Break (%)                              | ≥ 350                                                                                        | >350            |
|     |        | Yield Strength                                       | Min.15Mpa                                                                                    | >15Mpa          |
| 4   | 10     | Marking                                              | Mfg.Name, HDPE PIPES, PE100,PN8,<br>DN110,SDR17 IS:4984-2016,IS LOGO,<br>CML NO., BATCH NO., | Satisfactory    |

## REVIEW OF DOCUMENTS (IF ANY)

| Sl. | Clause             | Test Parameters                                    | Report No. & Date              | Report Issued By     | Review & Remark |
|-----|--------------------|----------------------------------------------------|--------------------------------|----------------------|-----------------|
| 1   | 8.1.1<br>(Table-5) | Internal Pressure Creep Rupture Test of Pipe.      | 002217 & Dt<br>17/08/2022      | CIPET,<br>Vijayawada | Reviewed        |
| 1.1 |                    | Hydrostatic Resistance Test (at 27°C for 100hrs.)  |                                |                      |                 |
| 1.2 |                    | Hydrostatic Resistance Test (at 80°C for 165hrs.)  |                                |                      |                 |
| 1.3 |                    | Hydrostatic Resistance Test (at 80°C for 1000hrs.) |                                |                      |                 |
| 2   | 8.1.2<br>(Table-5) | Internal Pressure Creep Rupture Test of Joints.    | 002217 & Dt<br>17/08/2022      | CIPET,<br>Vijayawada | Reviewed        |
| 2.1 |                    | Hydrostatic Resistance Test (at 80°C for 48hrs.)   |                                |                      |                 |
| 3   | 8.6                | Overall Migration (mg/ltr)                         |                                |                      |                 |
| 4   | 8.8                | Tensile Strength for Butt-fusion                   |                                |                      |                 |
| 5   | 8.10               | Slow Crack Growth Rate 80°C for 500 hrs.           |                                |                      |                 |
| 6   | ---                | MFR, Density & OIT                                 | RMTC No.367<br>Dtd: 22.06.2023 | S.S<br>PLASTICS/367  | Reviewed<br>OK  |

## PART - D: REMARKS

- This Inspection document shall not be reproduced except in full without the written approval of the PDI Cell at CIPET Head Office, Chennai.
- These witness results relate exclusively to the work ordered or the object (s) or the lot inspected.
- Lab. Environmental Condition during the witness of tests: Temperature : 27±2°C & Relative Humidity : 65±5%
- Calibration statuses of equipment/instruments are verified.

  
E. Naga Durja Prasad, CODE No. 1388  
AUTHORISED SIGNATORY

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Name of the Inspecting Official : E.Naga Durga Prasad

W.O Centre: Kochi

Code No.: 1388

Camp at : M/s.Nandi Polymers India Pvt. Ltd., Tirupati , AP

### INSPECTION DOCUMENT

DOC. NO: **IB00423240501376/2**

Dated: 24.07.2023

Issued to: M/s.Nandi Polymers India Pvt. Ltd

Manufacturer Inspection Call Letter No.: NPIPL 02 dated 12/07/2023, dated: 23/07/2023

INSPECTION DOCUMENT AS PER IS NO. / QAP NO. : 4984-2016

#### PART A: PARTICULARS OF STORES OFFERED

- |                                       |                                                          |
|---------------------------------------|----------------------------------------------------------|
| f) Description of the items           | : HDPE Pipe                                              |
| g) Grade/Variety/Type/Size/Class etc. | : PE100 PN8 DN 125 SDR 17                                |
| h) Declared Value, if any             | : MFI: 0.27gm/10 min & DENSITY: 957.78 Kg/m <sup>3</sup> |
| i) Quantity                           | : 3706.00mtrs(308pcx12m +1pc x 10m)                      |
| j) Any Other Information              | : BatchNumber:2023082300300B                             |

#### PART B: SUPPLEMENTARY INFORMATIONS

- b) Reference to sampling procedure : IS 4984-2016 (Random Sampling Method)

#### PART C: RESULTS OF TESTS WITNESSED & THE DOCUMENTS REVIEWED

| Sl.   | Clause               | Tests Witnessed                                  | Specified Requirements.                                                                                                                   | Result observed                   |
|-------|----------------------|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| 1     | 6                    | Pipe Description                                 |                                                                                                                                           |                                   |
| 1.1   | 6.2                  | Colour                                           | Shall be Black with Blue Strips                                                                                                           | confirmed                         |
| 1.2   | 6.2.1                | Identification of Strips                         |                                                                                                                                           |                                   |
|       |                      | No. of longitudinal strips                       | Min. : 3                                                                                                                                  | 3                                 |
|       |                      | Strip Width (mm)                                 | Min. : 3                                                                                                                                  | 4.23                              |
|       |                      | Strip Depth (mm)                                 | Max. : 0.2                                                                                                                                | 0.16                              |
| 2     | 7                    | Geometric Characteristics of Pipe                |                                                                                                                                           | Geometric Characteristics of Pipe |
| 2.1   | 7.1                  | Visual Appearance                                | Internal & External surface of pipe shall be smooth, clean free from grooving & other defects.                                            | Satisfactory                      |
|       |                      | Out of square of pipe end (mm)                   | Max.: 3                                                                                                                                   | 1.76                              |
| 2.2   | 7.2                  | Length(mtr)                                      | Min.12                                                                                                                                    | >12                               |
| 2.3   | 7.4<br>(Table-3 & 4) | Dimensions                                       |                                                                                                                                           |                                   |
|       |                      | Mean Outside Diameter ( $d_m$ ) (mm)             | Min. : 125.0<br>Max.: 125.8                                                                                                               | 125.02<br>125.65                  |
|       |                      | Out of Roundness (Ovality) (mm)                  | Max.: 2.5                                                                                                                                 | 1.71                              |
|       |                      | Wall Thickness                                   | Min. : 7.40<br>Max.: 8.30                                                                                                                 | 7.65<br>8.16                      |
| 3     | 8                    | Performance Requirements                         |                                                                                                                                           |                                   |
| 3.1   | 8.1                  | Hydraulic characteristics                        |                                                                                                                                           |                                   |
| 3.1.1 | 8.1.1<br>(Table-5)   | Internal Pressure Creep Rupture Test of Pipe.    |                                                                                                                                           |                                   |
|       |                      | Hydrostatic Resistance Test (at 80°C for 48hrs.) | The pipes under test shall show No signs of localized swelling, leakage or weeping & shall not burst during the prescribed test duration. | Confirmed                         |

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Page No. 2 of 2

Dated: 24.07.2023

DOCUMENT NO: IB00423240501376/2

| Sl. | Clause | Tests Witnessed                                      | Specified Requirements                                                                       | Result obtained |
|-----|--------|------------------------------------------------------|----------------------------------------------------------------------------------------------|-----------------|
| 3.2 | 8.2    | Longitudinal Reversion Test                          | Shall not be greater than 3 %.                                                               | 1.53            |
| 3.3 | 8.3    | Carbon Black Content (%)                             | 2.5±0.5                                                                                      | 2.71            |
|     |        | Carbon Black Dispersion                              | The dispersion of carbon black shall be satisfactory.                                        | Satisfactory    |
| 3.4 | 8.4    | Melt Flow Rate (g/10min)<br>( at 190°C with 5kgLoad) | 0.15 to 1.10                                                                                 | 0.274           |
| 3.5 | 8.5    | Oxidation Induction Time (OIT) min.                  | Shall not be less than 20 min.                                                               | > 20            |
| 3.7 | 8.7    | Density (kg/m <sup>3</sup> )                         | 940 to 960                                                                                   | 957.78          |
| 3.9 | 8.9    | Elongation at Break (%)                              | ≥ 350                                                                                        | >350            |
|     |        | Yield Strength                                       | Min.15Mpa                                                                                    | >15Mpa          |
| 4   | 10     | Marking                                              | Mfg.Name, HDPE PIPES, PE100,PN8,<br>DN110,SDR17 IS:4984-2016,IS LOGO,<br>CML NO., BATCH NO., | Satisfactory    |

REVIEW OF DOCUMENTS (IF ANY)

| Sl. | Clause             | Test Parameters                                    | Report No. & Date             | Report issued By     | Review & Remark |  |  |  |
|-----|--------------------|----------------------------------------------------|-------------------------------|----------------------|-----------------|--|--|--|
| 1   | 8.1.1<br>(Table-5) | Internal Pressure Creep Rupture Test of Pipe.      | 002217 & Dt<br>17/08/2022     | CIPET,<br>Vijayawada | Reviewed        |  |  |  |
| 1.1 |                    | Hydrostatic Resistance Test (at 27°C for 100hrs.)  |                               |                      |                 |  |  |  |
| 1.2 |                    | Hydrostatic Resistance Test (at 80°C for 165hrs.)  |                               |                      |                 |  |  |  |
| 1.3 |                    | Hydrostatic Resistance Test (at 80°C for 1000hrs.) |                               |                      |                 |  |  |  |
| 2   | 8.1.2<br>(Table-5) | Internal Pressure Creep Rupture Test of Joints.    | 002217 & Dt<br>17/08/2022     | CIPET,<br>Vijayawada | Reviewed        |  |  |  |
| 2.1 |                    | Hydrostatic Resistance Test (at 80°C for 48hrs.)   |                               |                      |                 |  |  |  |
| 3   | 8.6                | Overall Migration (mg/ltr)                         |                               |                      |                 |  |  |  |
| 4   | 8.8                | Tensile Strength for Butt-fusion                   |                               |                      |                 |  |  |  |
| 5   | 8.10               | Slow Crack Growth Rate 80°C for 500 hrs.           |                               |                      |                 |  |  |  |
| 6   | ---                | MFR, Density & OIT                                 | RMTC No.367<br>Dt: 22.06.2023 | S.S PLASTICS/367     | Reviewed<br>OK  |  |  |  |

PART - D: REMARKS

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2. These witness results relate exclusively to the work ordered or the object (s) or the lot inspected.
3. Lab. Environmental Condition during the witness of tests: Temperature : 27±2°C & Relative Humidity : 65±5%
4. Calibration statuses of equipment/instruments are verified.

E Naga Durga Prasad, CODE No: 1388  
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Head Office, PDI Cell

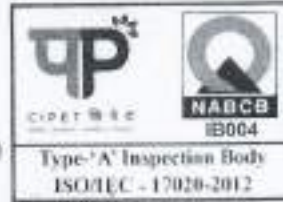
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Name of the Inspecting Official : E Naga Durga Prasad

W.O Centre: Kochi

Code No.: 1388

Camp at : M/s.Nandi Polymers India Pvt. Ltd., Tirupati , AP

### INSPECTION DOCUMENT

Dated:24.07.2023

DOC. NO-IB00423240501376/3

Issued to: M/s.Nandi Polymers India Pvt. Ltd

Manufacturer Inspection Call Letter No. NPIPL 02 dated 12/07/2023, dated:23/07/2023

INSPECTION DOCUMENT AS PER IS NO. / QAP NO. : 4994:2016

#### PART A: PARTICULARS OF STORES OFFERED

- |                                       |                                                          |
|---------------------------------------|----------------------------------------------------------|
| k) Description of the items           | : HDPE Pipe                                              |
| l) Grade/Variety/Type/Size/Class etc. | : PE100 PN10 DN 125 SDR 13.6                             |
| m) Declared Value, if any             | : MFI: 0.32gm/10 min & DENSITY: 957.06 Kg/m <sup>3</sup> |
| n) Quantity                           | : 1077mtrs(89pcx12m +1pc x 9m)                           |
| o) Any Other Information              | : BatchNumber:2023062300400                              |

#### INFORMATIONS

- c) Reference to sampling procedure : IS 4994-2016 (Random Sampling Method)

#### PART C: RESULTS OF TESTS WITNESSED & THE DOCUMENTS REVIEWED

| Sl.   | Clause               | Tests Witnessed                                  | Specified Requirements.                                                                                                                   | Result observed                          |
|-------|----------------------|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|
| 1     | 6                    | <b>Pipe Description</b>                          |                                                                                                                                           |                                          |
| 1.1   | 6.2                  | Colour                                           | Shall be Black with Blue Strips                                                                                                           | confirmed                                |
| 1.2   | 6.2.1                | Identification of Strips                         |                                                                                                                                           |                                          |
|       |                      | No. of longitudinal strips                       | Min. : 3                                                                                                                                  | 3                                        |
|       |                      | Strip Width (mm)                                 | Min. : 3                                                                                                                                  | 4.86                                     |
|       |                      | Strip Depth (mm)                                 | Max. : 0.2                                                                                                                                | 0.16                                     |
| 2     | 7                    | <b>Geometric Characteristics of Pipe</b>         |                                                                                                                                           | <b>Geometric Characteristics of Pipe</b> |
| 2.1   | 7.1                  | Visual Appearance                                | Internal & External surface of pipe shall be smooth, clean free from grooving & other defects.                                            | Satisfactory                             |
|       |                      | Out of square of pipe end (mm)                   | Max.: 3                                                                                                                                   | 1.62                                     |
| 2.2   | 7.2                  | Length(mtr)                                      | Min.12                                                                                                                                    | >12                                      |
| 2.3   | 7.4<br>(Table-3 & 4) | Dimensions                                       |                                                                                                                                           |                                          |
|       |                      | Mean Outside Diameter (d <sub>mn</sub> ) (mm)    | Min. : 125.0<br>Max.: 125.8                                                                                                               | 125.02<br>125.60                         |
|       |                      | Out of Roundness (Ovality) (mm)                  | Max.: 2.5                                                                                                                                 | 1.86                                     |
|       |                      | Wall Thickness                                   | Min. : 9.2<br>Max.:10.3                                                                                                                   | 9.41<br>9.92                             |
| 3     | 8                    | <b>Performance Requirements</b>                  |                                                                                                                                           |                                          |
| 3.1   | 8.1                  | Hydraulic characteristics                        |                                                                                                                                           |                                          |
| 3.1.1 | 8.1.1<br>(Table-5)   | Internal Pressure Creep Rupture Test of Pipe.    |                                                                                                                                           |                                          |
|       |                      | Hydrostatic Resistance Test (at 80°C for 48hrs.) | The pipes under test shall show No signs of localized swelling, leakage or weeping & shall not burst during the prescribed test duration. | Confirmed                                |



DOCUMENT NO: IB00423240501376/3

| Sl. | Clause | Tests Witnessed                                      | Specified Requirements.                                                                         | Result obtained |
|-----|--------|------------------------------------------------------|-------------------------------------------------------------------------------------------------|-----------------|
| 3.2 | 8.2    | Longitudinal Reversion Test                          | Shall not be greater than 3 %.                                                                  | 1.16            |
| 3.3 | 8.3    | Carbon Black Content (%)                             | 2.5±0.5                                                                                         | 2.70            |
|     |        | Carbon Black Dispersion                              | The dispersion of carbon black shall be satisfactory.                                           | Satisfactory    |
| 3.4 | 8.4    | Melt Flow Rate (g/10min)<br>( at 190°C with 5kgLoad) | 0.15 to 1.10                                                                                    | 0.32            |
| 3.5 | 8.5    | Oxidation Induction Time (OIT) min.                  | Shall not be less than 20 min.                                                                  | > 20            |
| 3.7 | 8.7    | Density (kg/m <sup>3</sup> )                         | 940 to 960                                                                                      | 957.06          |
| 3.9 | 8.9    | Elongation at Break (%)                              | ≥ 350                                                                                           | <350            |
|     |        | Yield Strength                                       | Min.15Mpa                                                                                       | <15Mpa          |
| 4   | 10     | Marking                                              | Mfg.Name, HDPE PIPES, PE100,PN10,<br>DN125,SDR13.6 IS:4984-2016,IS<br>LOGO, CML NO., BATCH NO., | Satisfactory    |

REVIEW OF DOCUMENTS (IF ANY)

| Sl. | Clause             | Test Parameters                                    | Report No. & Date              | Report Issued By     | Review & Remark |
|-----|--------------------|----------------------------------------------------|--------------------------------|----------------------|-----------------|
| 1   |                    | Internal Pressure Creep Rupture Test of Pipe.      |                                |                      |                 |
| 1.1 | 8.1.1<br>(Table-5) | Hydrostatic Resistance Test (at 27°C for 100hrs.)  | 002217 & Dt<br>17/08/2022      | CIPET,<br>Vijayawada | Reviewed        |
| 1.2 |                    | Hydrostatic Resistance Test (at 80°C for 165hrs.)  |                                |                      |                 |
| 1.3 |                    | Hydrostatic Resistance Test (at 80°C for 1000hrs.) |                                |                      |                 |
| 2   | 8.1.2              | Internal Pressure Creep Rupture Test of Joints.    |                                |                      |                 |
| 2.1 | (Table-5)          | Hydrostatic Resistance Test (at 80°C for 48hrs.)   | 002217 & Dt<br>17/08/2022      | CIPET,<br>Vijayawada | Reviewed        |
| 3   | 8.6                | Overall Migration (mg/ltr)                         |                                |                      |                 |
| 4   | 8.8                | Tensile Strength for Butt-fusion                   |                                |                      |                 |
| 5   | 8.10               | Slow Crack Growth Rate 80°C for 500 hrs.           |                                |                      |                 |
| 6   | ---                | MFR, Density & OIT                                 | RMTC No.367<br>Dtd: 22.06.2023 | S.S PLASTICS/367     | Reviewed<br>OK  |

PART - D: REMARKS

- This inspection document shall not be reproduced except in full without the written approval of the PDI Cell at CIPET Head Office, Chennai.
- These witness results relate exclusively to the work ordered or the object (s) or the lot inspected.
- Lab. Environmental Condition during the witness of tests: Temperature : 27±2°C & Relative Humidity : 65±5%
- Calibration statuses of equipment/instruments are verified.

  
E Naga Durga Prasad, CODE No: 1388  
AUTHORISED SIGNATORY

सेन्ट्रल इंस्टीट्यूट ऑफ पेट्रोकेमिकल्स

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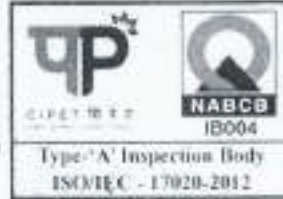
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Name of the Inspecting Official : E Naga Durga Prasad

W/O Centre: Kochi

Code No.: 1368

Camp at : M/s.Nandi Polymers India Pvt. Ltd., Tirupati , AP

### INSPECTION DOCUMENT

DOC. NO:IB00423240501376/4

Dated: 24.07.2023

Issued to: M/s.Nandi Polymers India Pvt. Ltd

Manufacturer Inspection Call Letter No. NPIPL 02 dated 12/07/2023, dated: 23/07/2023

INSPECTION DOCUMENT AS PER IS NO. / QAP NO. : 4984:2016

#### PART A: PARTICULARS OF STORES OFFERED

- |                                       |                                                        |
|---------------------------------------|--------------------------------------------------------|
| p) Description of the items:          | HDPE Pipe                                              |
| q) Grade/Variety/Type/Size/Class etc. | PE100 PN8 DN 160 SDR 17                                |
| r) Declared Value, if any             | MFI: 0.27gm/10 min & DENSITY: 952.96 Kg/m <sup>3</sup> |
| s) Quantity                           | 1352mtrs(112pcx12m +1pc x 8m)                          |
| t) Any Other Information              | Batch Number: 2023062300400B                           |

#### PART B: SUPPLEMENTARY INFORMATIONS

- d) Reference to sampling procedure IS 4984:2016 (Random Sampling Method)

#### PART C: RESULTS OF TESTS WITNESSED & THE DOCUMENTS REVIEWED

| Sl.       | Clause               | Tests Witnessed                                  | Specified Requirements.                                                                                                                   | Result observed                          |
|-----------|----------------------|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|
| 1         | 6                    | <b>Pipe Description</b>                          |                                                                                                                                           |                                          |
| 1.1       | 6.2                  | Colour                                           | Shall be Black with Blue Strips                                                                                                           | confirmed                                |
| 1.2       | 6.2.1                | Identification of Strips                         |                                                                                                                                           |                                          |
|           |                      | No. of longitudinal strips                       | Min. : 3                                                                                                                                  | 3                                        |
|           |                      | Strip Width (mm)                                 | Min. : 3                                                                                                                                  | 5.64                                     |
|           |                      | Strip Depth (mm)                                 | Max. : 0.2                                                                                                                                | 0.16                                     |
| 2         | 7                    | <b>Geometric Characteristics of Pipe</b>         |                                                                                                                                           | <b>Geometric Characteristics of Pipe</b> |
| 2.1       | 7.1                  | Visual Appearance                                | Internal & External surface of pipe shall be smooth, clean free from grooving & other defects.                                            | Satisfactory                             |
|           |                      | Out of square of pipe end (mm)                   | Max.: 4                                                                                                                                   | 1.96                                     |
| 2.2       | 7.2                  | Length(mtr)                                      | Min.12                                                                                                                                    | >12                                      |
| 2.3       | 7.4<br>(Table-3 & 4) | Dimensions                                       |                                                                                                                                           |                                          |
|           |                      | Mean Outside Diameter (d <sub>mn</sub> ) (mm)    | Min. : 160.0<br>Max.: 161.0                                                                                                               | 160.05<br>160.80                         |
|           |                      | Out of Roundness (Ovality) (mm)                  | Max.: 3.2                                                                                                                                 | 1.95                                     |
|           |                      | Wall Thickness                                   | Min. : 9.5<br>Max.: 10.6                                                                                                                  | 9.81<br>10.38                            |
| 3         | 8                    | <b>Performance Requirements</b>                  |                                                                                                                                           |                                          |
| 3.1       | 8.1                  | Hydraulic characteristics                        |                                                                                                                                           |                                          |
| 3.1.<br>1 | 8.1.1<br>(Table-5)   | Internal Pressure Creep Rupture Test of Pipe.    |                                                                                                                                           |                                          |
|           |                      | Hydrostatic Resistance Test (at 80°C for 48hrs.) | The pipes under test shall show No signs of localized swelling, leakage or weeping & shall not burst during the prescribed test duration. | Confirmed                                |



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Page No. 2 of 2

Dated: 24.07.2023

DOCUMENT NO: IB00423240501376/4

| Sl. | Clause | Tests Witnessed                                      | Specified Requirements.                                                                      | Result obtained |
|-----|--------|------------------------------------------------------|----------------------------------------------------------------------------------------------|-----------------|
| 3.2 | 8.2    | Longitudinal Reversion Test                          | Shall not be greater than 3 %.                                                               | 1.40            |
| 3.3 | 8.3    | Carbon Black Content (%)                             | 2.5±0.5                                                                                      | 2.87            |
|     |        | Carbon Black Dispersion                              | The dispersion of carbon black shall be satisfactory.                                        | Satisfactory    |
| 3.4 | 8.4    | Melt Flow Rate (g/10min)<br>( at 190°C with 5kgLoad) | 0.15 to 1.10                                                                                 | 0.27            |
| 3.5 | 8.5    | Oxidation Induction Time (OIT) min.                  | Shall not be less than 20 min.                                                               | > 20            |
| 3.7 | 8.7    | Density (kg/m <sup>3</sup> )                         | 940 to 960                                                                                   | 952.96          |
| 3.9 | 8.9    | Elongation at Break (%)                              | ≥ 350                                                                                        | <350            |
|     |        | Yield Strength                                       | Min.15Mpa                                                                                    | <15Mpa          |
| 4   | 10     | Marking                                              | Mfg.Name, HDPE PIPES, PE100.PN8,<br>DN160,SDR17 IS:4984-2016.IS LOGO,<br>CML NO., BATCH NO., | Satisfactory    |

REVIEW OF DOCUMENTS (IF ANY)

| Sl. | Clause             | Test Parameters                                    | Report No. & Date              | Report Issued By     | Review & Remark |
|-----|--------------------|----------------------------------------------------|--------------------------------|----------------------|-----------------|
| 1   | 8.1.1<br>(Table-5) | Internal Pressure Creep Rupture Test of Pipe.      | 002217 & Dt<br>17/08/2022      | CIPET,<br>Vijayawada | Reviewed        |
| 1.1 |                    | Hydrostatic Resistance Test (at 27°C for 100hrs.)  |                                |                      |                 |
| 1.2 |                    | Hydrostatic Resistance Test (at 80°C for 165hrs.)  |                                |                      |                 |
| 1.3 |                    | Hydrostatic Resistance Test (at 80°C for 1000hrs.) |                                |                      |                 |
| 2   | 8.1.2<br>(Table-5) | Internal Pressure Creep Rupture Test of Joints.    | 002217 & Dt<br>17/08/2022      | CIPET,<br>Vijayawada | Reviewed        |
| 2.1 |                    | Hydrostatic Resistance Test (at 80°C for 48hrs.)   |                                |                      |                 |
| 3   | 8.6                | Overall Migration (mg/ltr)                         | 002217 & Dt<br>17/08/2022      | CIPET,<br>Vijayawada | Reviewed        |
| 4   | 8.8                | Tensile Strength for Butt-fusion                   |                                |                      |                 |
| 5   | 8.10               | Slow Crack Growth Rate 80°C for 500 hrs.           |                                |                      |                 |
| 6   | ---                | MFR, Density & OIT                                 | RMTc No.367<br>Dtd: 22.06.2023 | S.S PLASTICS/367     | Reviewed<br>OK  |

PART - D: REMARKS

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- These witness results relate exclusively to the work ordered or the object (s) or the lot inspected.
- Lab. Environmental Condition during the witness of tests: Temperature : 27±2°C & Relative Humidity : 65±5%
- Calibration statuses of equipment/instruments are verified.

E Naga Durga Prasad, CODE No: 1388  
AUTHORISED SIGNATORY

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Name of the Inspecting Official : E Naga Durga Prasad

W.O Centre: Kochi

Code No.: 1388

Camp at : M/s.Nandi Polymers India Pvt. Ltd., Tirupati , AP

### INSPECTION DOCUMENT

DOC. NO:IB00423240501376/5

Dated: 24.07.2023

Issued to: M/s.Nandi Polymers India Pvt. Ltd

Manufacturer Inspection Call Letter No. NPIPL 02 dated 12/07/2023, dated: 23/07/2023

INSPECTION DOCUMENT AS PER IS NO. / QAP NO. : 4984,2016

#### PART A: PARTICULARS OF STORES OFFERED

- |                                       |                                                          |
|---------------------------------------|----------------------------------------------------------|
| u) Description of the items           | : HDPE Pipe                                              |
| v) Grade/Variety/Type/Size/Class etc. | : PE100 PN8 DN 180 SDR 17                                |
| w) Declared Value, if any             | : MFI: 0.26gm/10 min & DENSITY: 950.95 Kg/m <sup>3</sup> |
| x) Quantity                           | : 325mtr(27pcx12m+1pcx1m)                                |
| y) Any Other Information              | : Batch Number:2023060200400C                            |
| z) PART B: SUPPLEMENTARY INFORMATIONS |                                                          |

- e) Reference to sampling procedure IS 4984:2016 (Random Sampling Method)

#### PART C: RESULTS OF TESTS WITNESSED & THE DOCUMENTS REVIEWED

| Sl.   | Clause               | Tests Witnessed                                  | Specified Requirements.                                                                                                                   | Result observed                   |
|-------|----------------------|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| 1     | 6                    | Pipe Description                                 |                                                                                                                                           |                                   |
| 1.1   | 6.2                  | Colour                                           | Shall be Black with Blue Strips                                                                                                           | confirmed                         |
| 1.2   | 6.2.1                | Identification of Strips                         |                                                                                                                                           |                                   |
|       |                      | No. of longitudinal strips                       | Min. : 3                                                                                                                                  | 3                                 |
|       |                      | Strip Width (mm)                                 | Min. : 3                                                                                                                                  | 4.26                              |
|       |                      | Strip Depth (mm)                                 | Max. : 0.2                                                                                                                                | 0.16                              |
| 2     | 7                    | Geometric Characteristics of Pipe                |                                                                                                                                           | Geometric Characteristics of Pipe |
| 2.1   | 7.1                  | Visual Appearance                                | Internal & External surface of pipe shall be smooth, clean free from grooving & other defects.                                            | Satisfactory                      |
|       |                      | Out of square of pipe end (mm)                   | Max.: 4                                                                                                                                   | 1.98                              |
| 2.2   | 7.2                  | Length(mtr)                                      | Min.12                                                                                                                                    | >12                               |
| 2.3   | 7.4<br>(Table-3 & 4) | Dimensions                                       |                                                                                                                                           |                                   |
|       |                      | Mean Outside Diameter ( $d_{em}$ ) (mm)          | Min. : 180.0<br>Max.: 181.1                                                                                                               | 180.02<br>180.80                  |
|       |                      | Out of Roundness (Ovality) (mm)                  | Max.: 3.6                                                                                                                                 | 1.79                              |
|       |                      | Wall Thickness                                   | Min. : 10.80<br>Max.: 11.80                                                                                                               | 10.81<br>11.36                    |
| 3     | 8                    | Performance Requirements                         |                                                                                                                                           |                                   |
| 3.1   | 8.1                  | Hydraulic characteristics                        |                                                                                                                                           |                                   |
| 3.1.1 | 8.1.1<br>(Table-5)   | Internal Pressure Creep Rupture Test of Pipe.    |                                                                                                                                           |                                   |
|       |                      | Hydrostatic Resistance Test (at 80°C for 48hrs.) | The pipes under test shall show No signs of localized swelling, leakage or weeping & shall not burst during the prescribed test duration. | Confirmed                         |

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Email : pdiipet@gmail.com

Page No. 2 of 2

Dated: 24.07.2023

DOCUMENT NO: IB00423240501376/5

| Sl. | Clause | Tests Witnessed                                      | Specified Requirements.                                                                      | Result obtained |
|-----|--------|------------------------------------------------------|----------------------------------------------------------------------------------------------|-----------------|
| 3.2 | 8.2    | Longitudinal Reversion Test                          | Shall not be greater than 3 %.                                                               | 1.15            |
| 3.3 | 8.3    | Carbon Black Content (%)                             | 2.5±0.5                                                                                      | 2.62            |
|     |        | Carbon Black Dispersion                              | The dispersion of carbon black shall be satisfactory.                                        | Satisfactory    |
| 3.4 | 8.4    | Melt Flow Rate (g/10min)<br>( at 190°C with 5kgLoad) | 0.15 to 1.10                                                                                 | 0.32            |
| 3.5 | 8.5    | Oxidation Induction Time (OIT) min.                  | Shall not be less than 20 min.                                                               | > 20            |
| 3.7 | 8.7    | Density (kg/m <sup>3</sup> )                         | 940 to 960                                                                                   | 950.95          |
| 3.9 | 8.9    | Elongation at Break (%)                              | ≥ 350                                                                                        | <350            |
|     |        | Yield Strength                                       | Min.15Mpa                                                                                    | <15Mpa          |
| 4   | 10     | Marking                                              | Mfg.Name, HDPE PIPES, PE100,PN8,<br>DN180,SDR17 IS.4984-2016,IS LOGO,<br>CML NO., BATCH NO., | Satisfactory    |

REVIEW OF DOCUMENTS (IF ANY):

| Sl. | Clause             | Test Parameters                                    | Report No. & Date             | Report Issued By     | Review & Remark |
|-----|--------------------|----------------------------------------------------|-------------------------------|----------------------|-----------------|
| 1   | 8.1.1<br>(Table-5) | Internal Pressure Creep Rupture Test of Pipe.      | 002217 & Dt<br>17/08/2022     | CIPET,<br>Vijayawada | Reviewed        |
| 1.1 |                    | Hydrostatic Resistance Test (at 27°C for 100hrs.)  |                               |                      |                 |
| 1.2 |                    | Hydrostatic Resistance Test (at 80°C for 165hrs.)  |                               |                      |                 |
| 1.3 |                    | Hydrostatic Resistance Test (at 80°C for 1000hrs.) |                               |                      |                 |
| 2   | 8.1.2<br>(Table-5) | Internal Pressure Creep Rupture Test of Joints.    | 002217 & Dt<br>17/08/2022     | CIPET,<br>Vijayawada | Reviewed        |
| 2.1 |                    | Hydrostatic Resistance Test (at 80°C for 48hrs.)   |                               |                      |                 |
| 3   | 8.6                | Overall Migration (mg/ltr)                         | 002217 & Dt<br>17/08/2022     | CIPET,<br>Vijayawada | Reviewed        |
| 4   | 8.8                | Tensile Strength for Butt-fusion                   |                               |                      |                 |
| 5   | 8.10               | Slow Crack Growth Rate 80°C for 500 hrs.           |                               |                      |                 |
| 6   | ---                | MFR, Density & OIT                                 | RMTC No.367<br>Dt: 22.06.2023 | S.S PLASTICS/367     | Reviewed<br>OK  |

PART - D: REMARKS

1. This inspection document shall not be reproduced except in full without the written approval of the PDI Cell at CIPET Head Office, Chennai.
2. These witness results relate exclusively to the work ordered or the object (s) or the lot inspected.
3. Lab. Environmental Condition during the witness of tests: Temperature : 27±2°C & Relative Humidity : 85±5%
4. Calibration statuses of equipment/instruments are verified.

E Naga Durga Prasad, CODE No: 1388  
AUTHORISED SIGNATORY