

National Board Number: 238

Mfg. Representative: U. J. S. T. 's Date: 29/DEC/2020

Authorized Inspector: [Signature] Date: 29/DEC/2020

**FORM U-1A MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS**  
**(Alternative Form for Single Chamber, Completely Shop or Field Fabricated Vessels Only)**  
**As Required by the Provisions of the ASME Boiler and Pressure Vessels Code Rules, Section VIII, Division 1**

1. Manufactured and certified by Cryolur Asia Pacific Pvt Ltd No 1, GST Road Chennai-Madurai NH45 Kadamalaiputhur Village Perumberkandigai Post  
Maduranthagam Taluk, Tamilnadu 603310 India  
 (Name and address of Manufacturer)

2. Manufactured for Stock  
 (Name and address of Purchaser)

3. Location of installation Not known  
 (Name and address)

4. Type Vertical C240004 NA Refer Form U-4 238 2020  
 (Horizontal or vertical, tank) (Manufacturer's serial number) (CRN) (Drawing number) (National Board number) (Year built)

5. ASME Code, Section VIII, Division 1 2019 None Low Temperature-320°F (-196°C)  
 (Edition and Addenda, if applicable (date)) (Code Case numbers) (Special Service per UG 120(d))

6. Shell SA 240M Type 304 0.393 In.(10 mm) 0.0 In.(0.0 mm) 72.283 In.(1836 mm) 146.063 In.(3710mm)  
 (Material spec. number, grade) (Nominal thickness) (Corr. allow.) (Inner Diameter) (Length (overall))

| Body Flanges on Shells |      |    |    |            |             |          |              |          |            |                  |                      |                 |
|------------------------|------|----|----|------------|-------------|----------|--------------|----------|------------|------------------|----------------------|-----------------|
| No.                    | Type | ID | OD | Flange Thk | Min Hub Thk | Material | How Attached | Location | Bolting    |                  |                      |                 |
|                        |      |    |    |            |             |          |              |          | Num & Size | Bolting Material | Washer (OD, ID, thk) | Washer Material |
| -                      | -    | -  | -  | -          | -           | -        | -            | -        | -          | -                | -                    | -               |

7. Seams Type 1 dbl Butt Full 1.0 None None Refer Form U-4 Full 0.9.1.0 3  
 [Long. (welded, dbl., singl., lap, butt)] [R.T. (Spot or Full)] (Eff. %) (H.T. Temp.) (Time, hr) [Girth (Welded, dbl., singl., lap, butt)] [R.T. (spot or full)] [Eff %] (No. of courses)

8. Heads: (a) Material SA 240M Type 304 (b) Material SA 240M Type 304  
 (Spec. no., grade) (Spec. no., grade)

|     | Location (Top, Bottom, Ends) | Minimum Thickness | Corrosion Allowance | Crown Radius | Knuckle Radius | Elliptical Ratio | Conical Apex Angle | Hemispherical Radius | Flat Diameter | Side to Pressure (Convex or Concave) |
|-----|------------------------------|-------------------|---------------------|--------------|----------------|------------------|--------------------|----------------------|---------------|--------------------------------------|
| (a) | Top End                      | 0.393 In.(10 mm)  | 0.0 In.(0.0 mm)     | NA           | NA             | 2:1              | NA                 | NA                   | NA            | Concave                              |
| (b) | Bottom End                   | 0.393 In.(10 mm)  | 0.0 In.(0.0 mm)     | NA           | NA             | 2:1              | NA                 | NA                   | NA            | Concave                              |

| Body Flanges on Heads |          |      |    |    |            |             |          |              |            |                  |                      |                 |
|-----------------------|----------|------|----|----|------------|-------------|----------|--------------|------------|------------------|----------------------|-----------------|
|                       | Location | Type | ID | OD | Flange Thk | Min Hub Thk | Material | How Attached | Bolting    |                  |                      |                 |
|                       |          |      |    |    |            |             |          |              | Num & Size | Bolting Material | Washer (OD, ID, thk) | Washer Material |
| (a)                   | -        | -    | -  | -  | -          | -           | -        | -            | -          | -                | -                    | -               |
| (b)                   | -        | -    | -  | -  | -          | -           | -        | -            | -          | -                | -                    | -               |

9. MAWP 350psig (2.413Mpa) NA at max. temp. 120°F (50°C) NA  
 (Internal) (External) (Internal) (External)  
 Min. design metal temp. -320°F (-196°C) at 350psig (2.413Mpa) Hydro., pneu., or comb. test pressure Cold Stretching Pressure 580.151 Psig(4.000 MPa)  
 Proof test NA

10. Nozzles, inspection, and safety valve openings:

| Purpose<br>(Inlet, Outlet, Drain etc)    | No. | Diameter<br>or Size (In.) | Type | Material |        | Nominal Thickness<br>(In.) |       | Reinforcement Material | Attachment Details |        | Location (Insp.<br>Open.) |
|------------------------------------------|-----|---------------------------|------|----------|--------|----------------------------|-------|------------------------|--------------------|--------|---------------------------|
|                                          |     |                           |      | Nozzle   | Flange | Nom.                       | Corr. |                        | Nozzle             | Flange |                           |
| See attached Form U-4 for Nozzle Details |     |                           |      |          |        |                            |       |                        |                    |        |                           |
| -                                        | -   | -                         | -    | -        | -      | -                          | -     | -                      | -                  | -      | -                         |

11. Supports: Skirt No Lugs NA Legs NA Other Refer Form U-4 Attached Refer Form U-4 Remarks (4)  
 (Yes or no) (Number) (Number) (Describe) (Where and how)

12. Remarks: Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report: NA

(Name of part, item number, Manufacturer's name and identifying stamp)

This Vessel has been constructed using Cold-Stretching Process in accordance with Mandatory Appendix 44, Hence 'CS' marked on Code Name plate.

National Board Number: 238

Mfg. Representative: U. J. P. O. Date: 29/DEC/2020Authorized Inspector: Sureshkumar Date: 29/DEC/2020

## FORM U-1A

Manufactured by Cryolor Asia Pacific Pvt Ltd No 1, GST Road Chennai-Madurai NH45 Kadamalaiputhur Village Perumberkandigai PostMaduranthagam Taluk, Tamilnadu 603310 IndiaManufacturer's Serial No C240004 CRN N.A National Board No. 238

We certify that the statements made in this report are correct and that all details of design, material, construction, and workmanship of this vessel

conform to the ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. "U" Certificate of Authorization Number

43,832

expires September 28, 2021

Date 29/DEC/2020 Co. nameCryolor Asia Pacific Pvt Ltd

Signed

U. J. P. O.

(Manufacturer)

(Representative)

## CERTIFICATE OF SHOP/FIELD INSPECTION

Vessel constructed by Cryolor Asia Pacific Pvt Ltd at address specified in SI. No. 1

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and employed by

TÜV SÜD Industrie Service GmbH of Westendstrasse 199, 80686 Munich, Germanyhave inspected the component described in this Manufacturer's Data Report on 22-Dec-2020, and state that, to the best of

my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME BOILER AND PRESSURE VESSEL CODE,

Section VIII, Division 1. By signing this certificate neither the Inspector nor his/her employer makes any warranty, expressed or implied, concerning the

pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his/her employer shall be liable in any manner

for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date: 29/DEC/2020

Signed

Sureshkumar SozhanSureshkumar

Commissions

NB15133 AI

(Authorized Inspector)

(National Board Authorized Inspector Commission number)

10/16  
8

National Board Number : 238

Mfg. Representative: U. J. S. D. Date: 29/DEC/2020Authorized Inspector: Suresh Kumar Date: 29/DEC/2020

**FORM U-4 MANUFACTURER'S DATA REPORT SUPPLEMENTARY SHEET**  
**As Required by the Provisions of the ASME Boiler and Pressure Vessel Code Rules, Section VIII, Division 1**

1. Manufactured and certified by Cryolor Asia Pacific Pvt Ltd No 1, GST Road Chennai-Madurai NH45 Kadamalaiputhur Village Perumberkandigai Post Maduranthagam Taluk, Tamilnadu 603310 India  
 (Name and address of Manufacturer)

2. Manufactured for Stock  
 (Name and address of Purchaser)

3. Location of installation Not known  
 (Name and address)

4. Type : Vertical Pressure Vessel C240004  
 (Horizontal, vertical, or sphere) (Tank separator, heat exch., etc.) (Manufacturer's serial number)  
N.A. HC003644 Rev.AB 238 2020  
 (CRN) (Drawing number) (National Board Number) (Year built)

**Data Report** **Remarks**  
**(Item Number)**

| [Girth (Welded, Dbl, Single, Lap., Butt)] | [R.T. (Spot or Full)] | [Eff.(%)] |
|-------------------------------------------|-----------------------|-----------|
| Shell to Shell Type-1 Double Butt         | Full                  | 1.0       |
| Shell to Head Type-2 Single Butt          | Full                  | 0.9       |

10. Nozzles, inspection and safety valve openings:

| Purpose<br>(Inlet, Outlet, Drain etc.) | Number | Diameter<br>or Size<br>(In.) | Type | Material      |        | Nominal<br>Thickness<br>(In.) |      | Reinforcement<br>Material | Attachment Details |        | Location<br>(Insp.<br>Open.) |
|----------------------------------------|--------|------------------------------|------|---------------|--------|-------------------------------|------|---------------------------|--------------------|--------|------------------------------|
|                                        |        |                              |      | Nozzle        | Flange | Nom                           | Corr |                           | Nozzle             | Flange |                              |
| Safety Line(T1)                        | 1      | OD 1.900                     | w.e  | SA 312M TP304 | -      | 0.145                         | 0    | -                         | Fig UW-16.1(c)     | -      | -                            |
| Top Filling Cum Trycock(T2)            | 1      | OD 1.900                     | w.e  | SA 312M TP304 | -      | 0.145                         | 0    | -                         | Fig UW-16.1(c)     | -      | -                            |
| High Level(Gas) (T4)                   | 1      | OD 0.840                     | w.e  | SA 312M TP304 | -      | 0.109                         | 0    | -                         | Fig UW-16.1(c)     | -      | -                            |
| Hydro Piping(T5)                       | 1      | OD 1.900                     | w.e  | SA 312M TP304 | -      | 0.145                         | 0    | -                         | Fig UW-16.1(c)     | -      | -                            |
| Gas Return-1(T6)                       | 1      | OD 1.900                     | w.e  | SA 312M TP304 | -      | 0.145                         | 0    | -                         | Fig UW-16.1(c)     | -      | -                            |
| Gas Return-2 (T7)                      | 1      | OD 1.900                     | w.e  | SA 312M TP304 | -      | 0.145                         | 0    | -                         | Fig UW-16.1(c)     | -      | -                            |
| Condenser Feeding(T8)                  | 1      | OD1.050                      | w.e  | SA 312M TP304 | -      | 0.113                         | 0    | -                         | Fig UW-16.1(c)     | -      | -                            |
| Condenser Return(T9)                   | 1      | OD1.050                      | w.e  | SA 312M TP304 | -      | 0.113                         | 0    | -                         | Fig UW-16.1(c)     | -      | -                            |
| Bottom Filling(B2)                     | 1      | OD 1.900                     | w.e  | SA 312M TP304 | -      | 0.145                         | 0    | -                         | Fig UW-16.1(c)     | -      | -                            |
| Liquid Withdrawal(B3)                  | 1      | OD 1.900                     | w.e  | SA 312M TP304 | -      | 0.145                         | 0    | -                         | Fig UW-16.1(c)     | -      | -                            |
| Low Level(Liquid)(B4)                  | 1      | OD 0.840                     | w.e  | SA 312M TP304 | -      | 0.109                         | 0    | -                         | Fig UW-16.1(c)     | -      | -                            |
| Hydro Piping(B5)                       | 1      | OD 1.900                     | w.e  | SA 312M TP304 | -      | 0.145                         | 0    | -                         | Fig UW-16.1(c)     | -      | -                            |
| Liquid Withdrawal(B10)                 | 1      | OD 1.900                     | w.e  | SA 312M TP304 | -      | 0.145                         | 0    | -                         | Fig UW-16.1(c)     | -      | -                            |

12. Remarks:

- Impact testing exempted for base metal and HAZ as per UHA-51(d)(1)(a) & Mandatory Appendix 44 clause 44-6.1(g)(1).  
Welding Procedure are Impact tested at -196°C for weld & HAZ as per UHA 51(e)(2)(a) & Mandatory Appendix 44 clause 44-6.1(g)(2)
- Vessel Model No.: RCIA14
- "For Non Corrosive Service" - No corrosion allowance considered in design. Hence no inspection opening provided.
- Two supports welded on the shell with main support plate on vessel OD at 45° between axis Y0-X0, Y1-X1 at 35.433 In. from top head to shell weld line. Three Leg welded with outer vessel shell bottom at location 10° from axis (Y1-X1), 45° from axis (Y0-X1), and 80° from axis (Y0-X0).
- Duplicate Code name plate provided on outer vessel with nameplate bracket at 3.110 In. from bottom tan line at axis X1.
- Liquid penetrant examination performed on all categories A, D welds & attachment welds after Cold Stretch of the vessel
- Pre-use testing of welding consumables performed as per UHA-51(f).
- Vessel is insulated and enclosed within outer vessel constructed of carbon steel material.
- Code Name plate tack welded on name plate support rod at a distance of 1.969 In. from nozzle no. T1 center line and 30° between axis (X0-Y1) on Top head.
- 'NA' Indicates as 'Not Applicable', 'OD'- Outside Diameter, 'w.e' – Weld End, 'ID' – Inside Diameter

Certificate of Authorization: Type U No. 43,832

Expires September 28, 2021

Date 29/DEC/2020 Name: Cryolor Asia Pacific Pvt Ltd  
 (Manufacturer)

Signed U. J. S. D.  
 (Representative)

Date 29/DEC/2020 Signed Suresh Kumar Sozhan  
 (Authorized Inspector)

Commissions NB15133 AI  
 (National Board Authorized Inspector Commission number)

