

Record of Version changes

Version No	Changes	Date
1.01	Closure make "Tight seal" added& supplier identification / Lot No system changed at Fig-4	01.06.2018
1.02	Hydrotest pressure requirement changed to match with standard IS-1783 Part-1	01.11.2018
1.03	Helium leak test procedure added	01.04.2019

Specifications for TDI,Aniline, MTD, NB and OTD unwelded MS Drums – 19Kg

Part-1 : Technical :

A. Technical Specification :

M.S. unwelded Barrels Grade-A (Type-II) as per IS-1783(Part 1): 2014 including latest amendments.

1. Capacity of drum:
Minimum gross capacity of the drums measured with water at ambient temperature shall be 210 liter.
2. Dimensions of drum:
For TDI,Aniline & Nitrobenzene Drums, dimension & construction shall be as per Figure-1. For MTD & OTD Drums, dimension & construction shall be as per Figure-2.
3. Material of Construction for drum:
The body and ends of drum shall be made from cold rolled carbon steel sheets conforming to Grade CR1 or CR2 (old grades "O" or "D") of IS 513:2008. The nominal thickness of steel sheets for body & ends of drum shall be 1.0 mm & 1.2 mm, respectively.
4. Construction of drum:
 - a. The sheets shall be blanked & formed to shape. The blanks shall be free from cracks, rust, dents, pitting & any other defects.
 - b. Vendor may give alternate design of hoops like "W" bead instead of shown in Figure 1 & 2.
 - c. The vertical seam joint for the body of the drum shall be exactly in the center of the two closures provided on the top cover of the drum.
 - d. The body shall be continuously resistance welded as to provide airtight joint. The top & bottom ends shall be seamed to the body as shown in Figure 1 & 2. The seam shall have rolled 7 layers of sheets with sealing compound forming core at the joint of body and end sheets. The sealing compound forming the core shall be flexible and chemically resistant to the product to be packed i.e. TDI, Aniline, MTD, NB and OTD as the case may be.
5. Closure for TDI, Aniline & NB drum: The drum shall be fitted with two screwed closures, one of 50 mm and the other of 20 mm diameter. Only "TRI-SURE" or "TITE SEAL" make closures shall be used. Closure of any other make shall not be acceptable to GNFC. The position of the closures shall be as shown in Figure-1. Closures should have EPDM Gasket.
6. Closure for MTD & OTD drum: The drums shall be fitted with two screwed closures, each of 50 mm size in diameter. Only "TRI-SURE" or "TITE SEAL" make closures shall be used. Closure of any other make shall not be acceptable to GNFC. The position of the closures shall be as shown in Figure-2. Closures should have EPDM (or PP if specifically asked by GNFC) Gasket.

7. Color of cap seals should be white, with GNFC logo in Light Orange Color (Shade No. 557 under Red & Orange Head as per IS 5:1994) as indicated in Figure-3. 10% extra cap seals shall be required without any extra cost for both closures.
8. Finish: The drum shall be in clean conditions, the inside being totally free from rust, water droplets, foreign matter and sheet burning and excessive oil.
9. Colour: Supplier shall use make of paint of GOODLASS NEROLAC/BERGER/ASIAN PAINTS only. The shades shall be as per the number specified in IS document for paint shades named below:
 - a. For TDI drum: TDI barrels should be painted with Cherry Red color. Color shade No. is RAL 3005. Colour shade sample will be given by GNFC to suppliers. The shade shall match exactly with the sample. Our TDI-II Dahej plant uses fully automatic drumming machine where glossy paint surface creates problem in function of the machine. Hence, supplier shall take necessary care to avoid such problem of painting quality.
 - b. For Aniline drum: Aniline barrels should be painted with Golden Yellow color having shade equivalent to Shade No. 0313 of Asian Paints.
 - c. For MTD drum: MTD barrels should be painted with Bottle Green color having shade equivalent to Shade No. 0205 of Asian Paints.
 - d. For Nitrobenzene (NB) drum: NB barrels should be painted with Golden Brown color having shade equivalent to Shade No. 0413 of Asian Paints.
 - e. For OTD drum: OTD barrels should be painted with Black color.
10. TDI, Aniline & NB barrels shall be painted with Stove Enamel Paint. Paint drying is to be done with oven, preferably conveyORIZED oven having precise temperature controls, at minimum temperature of 120 °C. The paint thickness should be 25 micron to 35 micron. The paint shall be as per IS-101.
11. MTD & OTD barrels shall be painted with Stove Enamel Paint. Paint drying is to be done with oven, preferably conveyORIZED oven having precise temperature controls, at minimum temperature of 150°C. As the MTD & OTD barrels are filled with material that is having a temperature of about 140°C, the quality of paint used must be able to resist this temperature. The paint thickness should be 25 micron to 35 micron. The paint shall be as per IS-101.
12. Tare Weight for drum: Tare weight of each drum (for all above mentioned category) should be minimum 19.0 kg (**No negative tolerance**) in painted condition irrespective of tolerances given for sheet thickness in IS-513: 2008.
13. Supplier shall obtain IMDG (UN No) certificate for each product from Indian Institute of Packaging (IIP). Supplier shall submit valid certificate for drum before start of the supply of drum to GNFC and screen print UN No on each drum as specified in the certificate. In case at the time of dispatch of barrels the balance validity of your UN certificate is less than 3 months, you will invariably submit us extension of the same UN certificate for further 6 months, before the validity of the original certificate gets expired.
14. The drums shall be supplied wrapped in corrugated brown paper sheet/HDPE bags.
15. GNFC will provide details like size & type of stickers of printing matter. Supplier has to provide and paste the stickers with adequate care and as per requirement of GNFC, on drum shell.

16. Supplier shall carry out screen printing of cap seal as per Figure-3. Supplier shall screen print supplier name and batch number as per Figure-4. For example: if supplier name is AB Company and lot No is 001 then print shall be short name of company and lot number like "AC: 001" and for next lot number "AC: 002" then after continuously like this.

B. Inspection at Suppliers' works :

Barrels shall be tested in presence of GNFC inspector/GNFC appointed third party inspection agency prior to dispatch at supplier's works as per IS-1783(Part I) : 2014 for Grade – A, Type-2. Lot size shall be 200 barrels.

1. Visual Inspection :

- a. The drum shall be in clean conditions, the inside being totally free from rust, water droplets, foreign matter, dark sheet patches, sheet burning, excessive oil or any other manufacturing defect. If one rubs the surface with finger, no oil should stick to the finger. If they fail to meet these criteria, entire lot may be rejected.
- b. Quality of chime forming of top & bottom with the shell shall be uniform, smooth & continuous.

2. Leakage Test :

2.1. Pneumatic leak test – Fully immersed water bath tub method :

- a. Each drum (i.e. 100%) shall be tested at air pressure of 50 kPa (0.5Kgf/cm²_g) with the seams under water or covered with soap solution. The drum shall not show any sign of leakage or drop in test pressure when observed for at least 10 seconds. The test shall be carried out in dip tank with full immersion of drum in water and tank shall be adequately illuminated so that even minor leakage shall be noticed. Exact leakage location can be identified afterwards.
- b. If there is a minor leakage found during leakage test, it may be manually welded and the drum shall be retested for leakage test. If the leakage is found again, the drum shall be rejected. Welding repair at one point per barrel will be permitted during testing with a ceiling of 15% of the lot size.
- c. The air to be used for pneumatic testing shall be dry corresponding to (-20⁰ C) dew point minimum. The quality of the air shall be demonstrated during the inspection.

2.2. Helium Leak Test :

In lieu of above mentioned pneumatic leak test at 2.1, supplier may carry out 100% drum testing as per alternative methods described in clause No 9.1 (b) (Helium Leak Test- online / offline) of IS-1783(Part-1):2014, detailed as follows:

- a. Drums to be filled with Helium gas 2% of the drum volume i.e @ 4.2 litre and immediately to be closed by closure. Thereafter, drum to be moved to automatic helium leak detector machine having vacuum chamber and generates a vacuum of – 9 mBar at outside of the drum. Any leakage of Helium gas which comes out, shall be analysed by a Helium Leak Detector Unit in mass spectrometer.
- b. Hole size in sample calibration drum : Max 12 Micron
- c. Vacuum Pressure : - 9 ± 1 mBar
- d. Automatic helium leak detection machine shall be checked before start of actual drum testing by sample calibration drum with maximum hole size of 12 micron and shall be repeated after every 100 actual drum testing. Automatic

helium leak detection machine shall be calibrated in such a way that sample drum shall be rejected.

- e. If there is leakage rate less than sample drum leak rate, such drums are passed by the machine and declared as acceptable drums.

3. Drop Test :

- a. One drum from lot of 200 drums offered for inspection shall be subjected to drop test. Fill the barrel to 98 percent of its gross capacity with water at ambient temperature and close it properly. Suspend the barrel with diagonal in the vertical position and raise it to a height so that the lowest point on the drum is 1.80 m clear off the horizontal striking test surface. The striking surface shall be horizontally plain concrete floor or steel plate at least 40 mm thick. The drum shall be dropped in such a way that it strikes the floor at the bottom rim, at its junction with the side seam. The same drum shall be dropped so that it strikes the floor at the top rim at its junction with the side seam.
- b. The drum shall be examined for any leakage of water after the test. Any leakage of water shall indicate failure of the drum in the test.

4. Hydraulic Pressure Test:

One fresh drum from lot of 200 drum offered for inspection shall be subjected to a gradually applied hydraulic pressure of 200 kPa (2.0 Kgf/cm²_g). The pressure shall be maintained for at least 5 minutes and any leakage of water or drop in the pressure shall indicate failure of the drum in the test.

5. If the sample drum fails either in drop test or hydraulic pressure test, two more drums from the lot of 200 drums, offered for inspection, shall be taken for the test. These two drums shall be subjected to the test in which drum failed in initial testing. If any drum out of these two drums fails in repeat test, complete lot shall be rejected.
6. Following test shall be carried out for paint of Barrel as per IS 101 -1964 (latest amendment) :
 - a. Scratch Hardness
 - b. Stripping Test
 - c. Thickness of paint to be applied on the Barrel shall be minimum 25 microns uniformly with maximum permissible limit of 30 microns.
 - d. Paint shade shall match with sample shade given by GNFC.
7. Printing matter stickers to be checked for proper pasting.
8. Third party Inspection agency shall fill all the inspection data as per inspection report format attached herewith.

C. Inspection of drums at GNFC site :

In addition to the inspection carried out by Third Party Inspection (TPI) agency/ GNFC at Vendor's works, inspection of barrels will be carried out on receipt of material at GNFC site. Site inspection and acceptance/ rejection norms are as follows:

1. Review / verification of Third Party Inspection(TPI) / GNFC inspection report to be carried out.

2. 10% barrels, of the lot received at site against each chalan, will be selected at random by GNFC for inspection.
3. Visual inspection will be carried out in these 10% sampled barrels.
 - a. If no defectis observed, complete lot will be ACCEPTED.
 - b. If defects are observed in less than 10% barrels, of sampled barrels (i.e. 2 barrels in 20 sampled barrels of lot of 200 barrels), complete lot will be ACCEPTED barring defective barrels.
 - c. If defects are observed in more than 10% barrels, of sampled barrels, complete lot will be given for SEGREGATION.
 - d. After segregation by the vendor, again inspection will be carried out for 10% sampled barrels. Here lot size will be considered as number of barrels offered for inspection after removing defective barrels.
 - e. If defects are observed in less than 10% barrels, of sampled barrels, complete lot will be ACCEPTED barring defective barrels.
 - f. If defects are observed in more than 10% barrels, of sampled barrels, again complete lot will be given for segregation and above procedure will be repeated.
 - g. Maximum 3 segregations will be allowed. After third segregation, if defects are observed in more than 10% sampled barrels, complete lot shall be REJECTED.
4. After each segregation, re-inspection is to be carried out by GNFC. Charges of Rs 2000 will be deducted towards charges of re-inspection as follows.

Usage Decision Code	Description	Inspection Charges (Rs)
AR1I (Re-Inspection)	Lot is accepted after First Re-inspection	2000
AR2I (Re-Re-Inspection)	Lot is accepted after second Re-inspection	4000
AR3I (Re-Re-Re-Inspection)	Lot is accepted after third Re-inspection	6000

Part-2: General / Commercial:

1. Vendor confirms that they have read and understood the GNFC requirements uploaded in present e-Tender. Vendor further confirms acceptance of the same in toto without any deviation and their offer is strictly as per specifications, dimensions.
2. Vendor confirms that all testing including drop test, hydro test carried out as per GNFC specification will be at no extra cost to GNFC. No salvage charge towards salvage of drums during hydro test and drop test will be payable by GNFC.
3. Vendor confirms that the charges towards art work will not be payable extra by GNFC.
4. Vendor confirms that vendor will affix stickers on drum shell and carry out screen printing on cap seal and supplier's logo & lot No. as per art work specified by GNFC at free of cost to GNFC. Specifications of the stickers are as under :
 - a) GUM 25 MICRON GUMMING
 - b) STICKER SILICON + PLASTIC SHEET 85 TO, 90 GSM (+/- 5)
 - c) STICKER MATERIAL NT PLASTIC SHEET.
 - d) GUM LIFE 1000 DAYS
 - e) WATER PROFF PRINTING INK

f) SIZE 420 X 230 MM

5. Vendor confirms to supply 10 % extra Cap seals along with the first lot of TDI barrel each month. However, for barrels meant for other products, Cap seals shall be supplied along with the barrels only.
6. Vendor confirms that if they fail to supply Cap seals along with the first lot of supply of material for particular month, they will be liable for penalty at the rate of Rs.1.50 per Cap seal.
7. Vendor confirms that they will keep 200 nos. of barrels ready for dispatch at any time. Vendor further confirms that in case they fail to maintain above mentioned reserve quantity and if GNFC is required to source the Barrels from open market, though the vendor's plants are under shutdown for less than a month, due to their failure in meeting with GNFC's requirement, the vendor agrees to reimburse extra cost incurred by GNFC in procuring such material from other sources
8. To ensure that no transit damage to the barrels occurs, vendor confirms that the trucks which will be used for transportation of the empty barrels to GNFC site will be free from sharp objects.
9. Vendor assures that utmost care, as listed under, will be taken by them while dispatching the barrels to minimize possibility of transit damage to the barrels.
 - a. Both the bungs will be properly tightened up.
 - b. Good quality HDPE bags shall be used for packing barrels on returnable basis.
 - c. While putting HDPE bags on to the barrels, the bottom of the bag will come on the top of the barrel. In other words, barrel will not be put inside the HDPE bag but HDPE bag will be put on the barrel.
 - d. Duly loaded truck with barrels will be covered with a good quality Tarpaulin.
10. In case of paint getting peeled off during transit despite taking above precautions, vendor confirms to arrange to repaint it at GNFC site at no extra cost.
11. Vendor confirms that whenever asked for, valid original calibration certificate of pressure gauges, coating thickness gauges, Temperature Gauges and weighing machines shall be shown to GNFC deputed inspector. In case of replacement of any of these gauges and other meters if any, new certificate shall be produced. In case of a master pressure gauge being used then proper co-relation of the pressure gauge used with the master gauge shall be furnished
12. Vendor confirms that they are having all the testing facilities to carry out the tests required for testing of barrels.
13. Vendor confirms that their manufacturing facility is approved by IS authority for GRADE-A facility.
14. Supplier shall obtain & submit UN certificate obtained from IIP for each product without any cost to GNFC.
15. Vendor shall supply drums manufactured from IS-513:2008 Grade – CR1 / CR2 sheets of SAIL / ESSAR STEEL / JSW / TATA STEEL / POSCO Maharashtra / Bhusan Steel/Indian Steel Corporation make only. Vendor shall take prior approval for using any other maker of steel sheets.
16. Vendor confirms that the rate quoted in the Price Bid is worked out based on Essar declared price of CRC - IS 513 Gr. O at the rate specified in Price bid.

17. Vendor confirms that Essar declared price means price being quoted by Essar to GNFC on monthly basis for CRC - IS 513 Gr. O in Rupees/MT, Ex-works basis exclusive of blanking charges, all taxes and freight.
18. Vendor confirms that Essar declared price of previous month for CRC-IS 513 Gr. O shall be applicable for the rate of Barrel for the next month. Thus the Essar declared price of March 2019 for CRC-IS 513 Gr. O shall be applicable for the rate of Barrel for the month of April 2019 and so on.
19. Price Variation Formula : Vendor confirms acceptance of the following formula for monthly price fixation :

$$NP = P + (X - Y)/45.75$$
 Where,
 NP = New Basic price of the barrel,
 P = Previous basic price of the barrel.
 X = Essar declared price (New)
 Y = Essar earlier declared price on the basis of which P was worked out
 45.75 is Yield in numbers of barrels per MT of CRC sheet
20. Vendor confirms that they agree for rate contract on Firm and Fixed price basis except for price variation as mentioned in above clause
21. Vendor confirms that they have noted that though their offer and subsequent price variation is based on CR1 (O) grade steel, GNFC shall accept barrels in CR2 (D) grade also but without any cost implication.
22. Vendor confirms to furnish batch wise test certificate for plates/sheet along with supply.
23. Quantity: The quantity of all types of barrels / drums proposed to be purchased is worked out on the basis of present production planning for the period of contract mentioned above and expected sale in barrels packing. GNFC, at its option, may increase order quantity up to 25% during contract period at the same terms and conditions for additional requirement. Vendor confirms acceptance of the same without any financial obligation on either side.
24. GNFC would like to split the total requirement between more than one vendor and hence actual contract quantity per vendor will be less than the total quantity projected in Technical Bid/Price Bid. The distribution of the quantity would be governed by the rates quoted by various bidders. The lowest bidder will get the largest chunk up to 40% of total requirement at GNFC management discretion with his past record and capacity. **The distribution of quantity will be at GNFC's sole discretion.** Vendor confirms acceptance of the same.
25. Vendor confirms that if any filled Barrel is found leaking from metal / joint place, same shall be replaced with three Barrels or GNFC can recover for the same at the rate of 3 Barrels against each leaked Barrel.
26. Vendor confirms that GNFC reserve their right to stop lifting of Barrels under rate contract, in case of finding leakage from filled barrels.
27. Vendor confirms that if GNFC opts to appoint third party inspection agency for carrying out pre-dispatch inspection of barrels, they will offer barrels in lots of 200 nos. per inspection without any extra cost. However, inspection charges of third party inspection agency will be paid by GNFC directly to the inspection agency.
28. **Vendor further confirms that inspection by GNFC officials at GNFC site will be final and binding.**

29. If pre-dispatch inspection by the third party is decided by GNFC, inspection schedule will be prepared in advance. GNFC will not like rescheduling of the inspection. However, at least three days advance notice shall be given to GNFC by vendor in case rescheduling of the inspection is required to be done. Maximum two rescheduling per month will be allowed. If the rescheduling is requested for more than two per month, then in that case penalty @ Rs.3000/- per every rescheduling shall be applicable. If rescheduling notice is less than three days time then in that case also Rs.3000/- shall be levied as a penalty. Similarly, if the numbers of barrels offered for inspection is less than 190 barrels, GNFC shall charge Rs.3000/- penalty. However, on specific request from GNFC, if lesser quantity is offered for inspection, such penalty will not be levied.
30. Vendor confirms that in case they fail to supply required quantity of barrels as per schedule given by GNFC and GNFC is required to source such shortfall in the quantity from other source, GNFC is at liberty to recover extra cost, if any, from them.
31. Vendor confirms that they will offer normally a lot size of 200 Barrel for inspection
32. Vendor confirms that they will furnish dispatch documents as under :
- a. **To Finance department**
 - i) Statement of Invoices.
 - ii) Original Tax Invoice.
 - iii) freight debit note
 - b. **To Purchase department**
 - i) Copy of statement of invoices.
 - ii) Copy of batch wise test certificate for plate / sheet.
 - iii) Copy of delivery challan/ packing list. iv) Inspection Release Note
 - c. **To Store department**
 - i) Duplicate copy of Tax Invoice.
 - ii) Copy of batch wise test certificate for plate/ sheet.
 - iii) Original delivery challan/ packing list.
 - iv) Internal test certificate for barrels.
 - v) Inspection release note of our inspector
33. Monthly allocation and co-ordination:- Vendor confirms that in case they are getting the contract for supply of drums, GNFC will intimate monthly allocation of barrels in the last week of the previous month and based on this allocation, they will plan production schedule at their end.
34. PERFORMANCE ASSESSMENT :- Vendor confirms that they have noted that GNFC would like to monitor their performance vis-à-vis the following criteria :
- a. Rate of leaked barrel after filling.
 - b. Rate of rejection at shop floor during inspection.
 - c. Record of adherence to the inspection schedule.
 - d. Timely supply of Cap seals.
 - e. Record of adherence to the monthly supply schedule.

If their performance on any of the above account is found wanting by GNFC, GNFC reserve its right to terminate the contract prematurely without any obligations/liabilities.

35. GNFC reserve their right to conclude parallel contract with other vendors. Vendor confirms acceptance of the part contract.
36. GNFC reserve their rights to cancel the contract without assigning any reason, whatsoever it may be without any financial implication on their side. Vendor confirms acceptance of the same.
37. Vendor confirms that GNFC reserve their right to reject any or all bids without assigning any reasons thereof or only to buy a part of the materials for which quotations are invited.
- 38.** Vendor confirms that in case they complete their annual contract allocation quantity prior to the completion of validity of the contract, they will continue to supply the barrels at the same terms and conditions up to expiry of the contract period, if GNFC desires so.

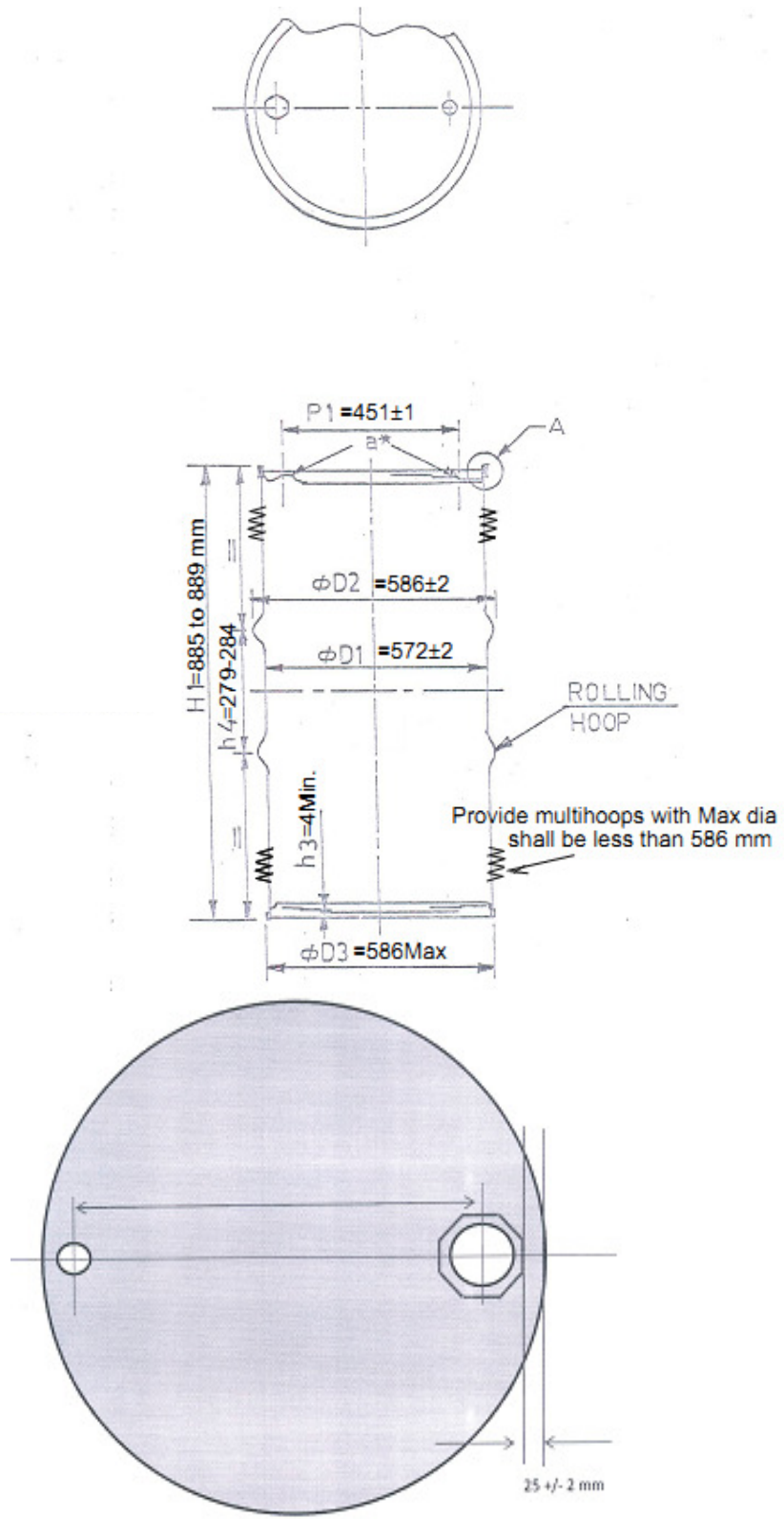


Fig 1 : Unwelded MS Drum for TDI, Aniline & Nitro Benzene (NB)

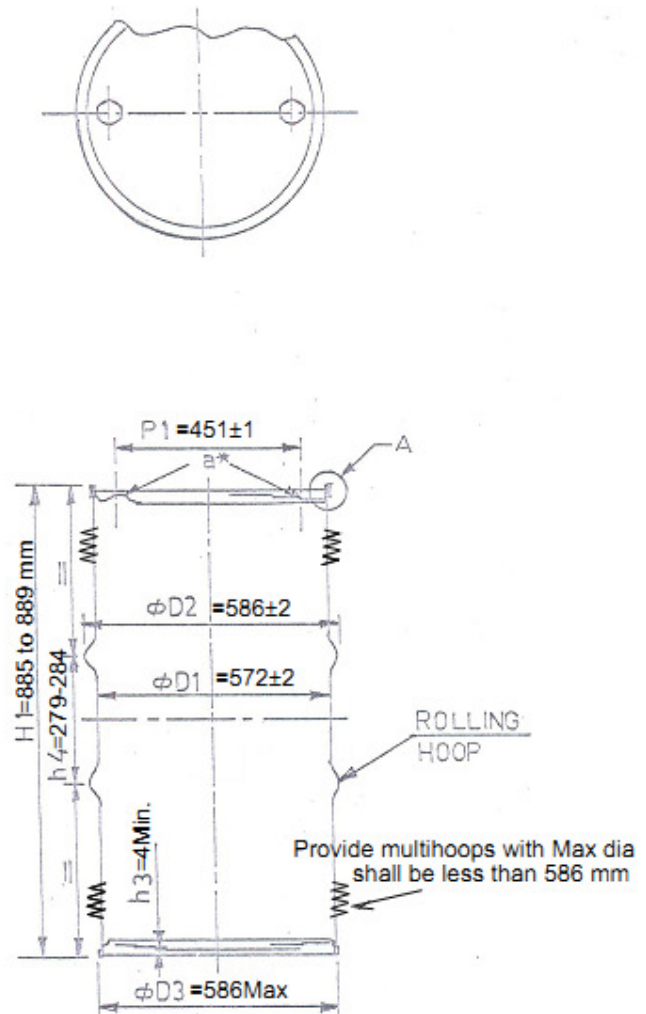


Fig 2 : Unwelded MS Drum for MTD & OTD

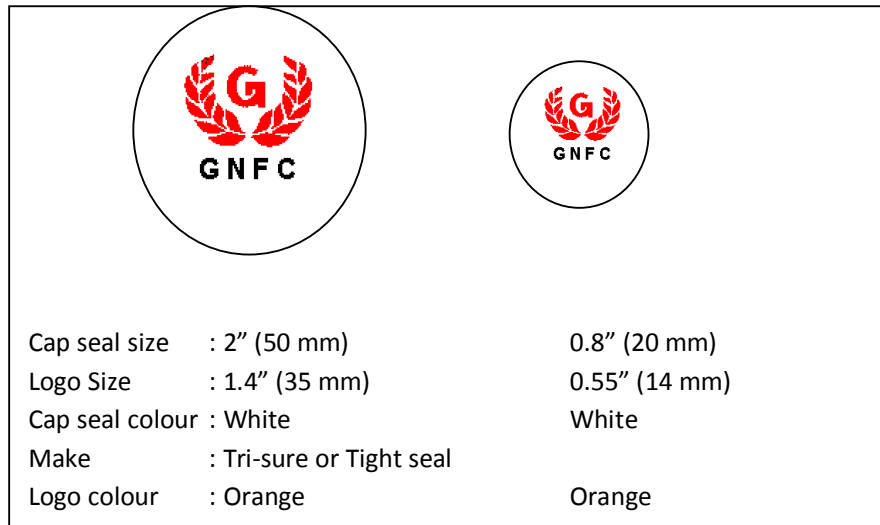


Fig 3 : Printing matter & detail of cap seal

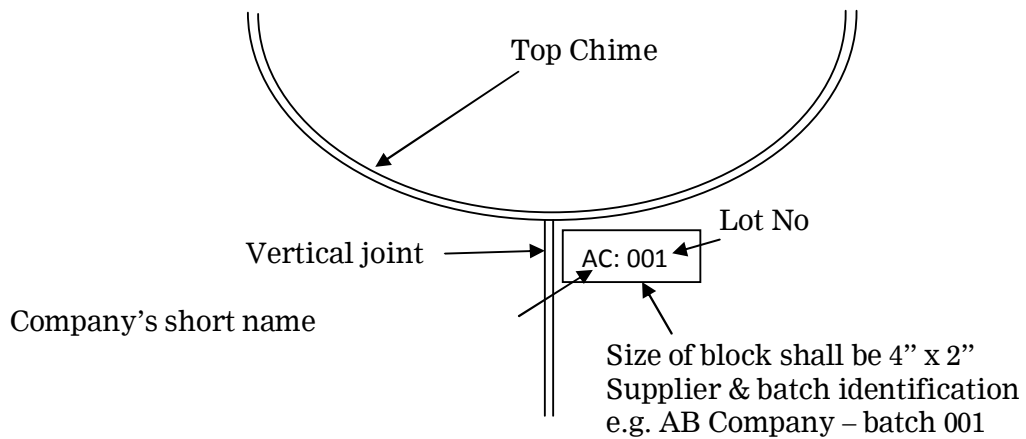


Fig 4: Supplier's Logo & Lot No Printing

INSPECTION REPORT OF MS BARRELS FOR TDI / ANILINE /MTD / NB / OTD

Report No	:		Date of Inspection	:	/	/	2018
Manufacturer	:		File No.	:			
Customer	:	M/s. Gujarat Narmada Valley Fertilizers & Chemicals Limited					
PO No.	:		PO Date	:			
PO Quantity	:	Nos.	Qty offered for inspection	:	Nos.	Lot No.	:

Parameters	Testing Criteria/ Specified Value	Sample Size		Accept (Nos.)	Reject (Nos.)	Readings/ Remarks
		(Spec)	(Actual)			

Physical/ Dimensional Inspection :

Visual Check	General & inside with light	100 %				
Weight	Minimum 19.0 kg (No Negative tolerance)	10%				
Overall Height	885 to 889 mm	10%				
Depth of top& bottom	20 ± 2 mm (TDI/MTD/Ani/NB)	10%				
	18 ± 2 mm(for OTD)					
Drum Diameter	572 ± 2 mm	10%				
Diameter at hoop	586 ± 2 mm	10%				
Hoop Distance	279 ~ 284	10%				
Bung Distance	451 ± 1 mm	10%				
Closure Size	50 mm & 20 mm	10%				
	50 mm & 50 mm (MTD/OTD)					
Vertical Seam Position	150 mm on either side of center	100 %				
Capacity	210 liter	1 No.				

Testing :

Leakage Test	Pneumatic	0.5Kgf/cm ² _g	100 %			
	Helium	-9±1mbar,Hole 12µ, 4.2 litre He				
Hydrotest		2.0Kgf/cm ² _g for 5 minutes	1 No.			
Drop Test1.8 M height at Diagonal		Bottom Rim	1 No.			
		Top Rim(Same Drum)				

Paint Inspection :

Scratch Hardness Test		1 No.				
Stripping Test		1 No.				
Thickness		on Top (25~35 Microns)	10%			
		on Shell(25~35 Microns)	10%			
		on Bottom(25~35 Microns)	10%			
Barrel Colour			10%			
Printing Matter	GNFC Stickers		10%			

Miscellaneous Inspection :

Closure & Gaskets	Tri-Sure / Tight seal Make	100%				
-------------------	----------------------------	------	--	--	--	--

Document Verification :

	Document No	Equipment Sr No	Remark
Test Certificate of CRCA sheets			
Internal test certificate of supplier			
Pressure Gauge			
Temperature Gauge			
Weighing Scale			
Coating thickness Gauge			
IIP Certificate Valid Upto			
UN No as per IIP Certificate			

Overall Remarks :

Lot is ACCEPTED / REJECTED.

Final Accepted Qty _____ Nos

Inspection Identification mark : Barrels are marked on top surface of barrels → the small / big closure as And painted withpaint	TPI LOT NO. TPI Stamp Sign of Inspector	Supplier Lot No. Sign &Stamp of Supplier
	Dispatch Clearance: Based on the above inspection, M/s is advised to dispatch the accepted barrels (Nos.) to M/s GNFC under proper protection & care, along with this report and copies of relevant TCs	