SPECIFICTAION OF STAINLESS STEEL MILK CANS

1. STAINLESS STEEL MILK CANS (AISI 304 GRADE)

I. Functional Requirements:

Milk cans shall be used for collection and delivery of milk from Milk Producers Groups (MPGs) to Village Level Collection Centres (VLCs) and onward transportation to BMC Centres (BMCs) for immediate chilling of milk.

II. Design Requirements:

Dimensions:

Normal Capacity	:	40 Litres + 2%
Total height, mm (without lid)	:	591 $^{+}/_{-}$ 4
External dia at base, mm	:	346 $^{+}/_{-}$ 3
Internal dia of body, mm	:	340 $^{+}/_{-}$ 3
Internal dia at neck, mm	:	200 $^{+}/_{-}$ 0.5
Minimum hardness (Brinell hardness)	:	200 BH for body, 150 BH for bottom
Minimum weight, Kg (can plus lid)	:	8.2 [Can 7.2 Kg minimum + Lid 1Kg (approx)
Maximum weight, Kg (can plus lid)	:	8.5 Kg

III. Material of construction:

The can body, lid, handle and bottom ring shall be made from Stainless steel sheet/flat/rod conforming to AISI 304 grade and manufactured by material purchased from SAIL / Jindal or equivalent. The can body shall be fabricated from a sheet blank having minimum thickness of 1.2 mm. After fabrication, minimum thickness at the neck, body and bottom should be minimum 0.95, 1.00 and 1.10 mm respectively. Bottom ring flat shall have minimum thickness of 2.0 mm and the handle with 12 mm diameter rod. The lid shall be fabricated from two stainless steel (AISI 304) sheets of such thickness so that any portion of the cup and saucer is not less than 0.80 mm each and thickness of top of the lid comes to minimum 1.6 mm.

IV. Fabrication:

4.1 **Body**: Complete body shall be fabricated in two pieces. The bottom and top halves shall be deep drawn and spinned. The top and bottom pieces shall be welded circumferentially . All welding shall be done with argon arc process (TIG) and ground smooth. Top edge of the neck shall be folded.

4.2 **Handle**: Shall be made of SS, AISI 304 diameter rod of minimum 12 mm, designed to give good grip of the can, welded on the taper neck with 2 mm pad plates for each handle, adequately thick, to avoid any protrusions inside the Can.

4.3 **Bottom ring**: The bottom ring shall be secured to the body of the Can firmly so that even after repeated and years of usage it should not come out or get loosened. These shall be made from SS, AISI 304, and 2 mm thick sheet formed and rolled. The bottom ring shall be shrink-fitted with proper locking arrangement on the body. The bottom ring shall permit draining of water and detergent from bottom of the reversed can and there shall not be any cavity on the ring, which could lead to unhygienic conditions.

4.4 **Lid**: The lid shall be of SS, AISI 304. The conical skirt shall be provided with 3 nos. air equalising holes of 12 mm dia each. The lid shall have mushroom shape to drain off any water outside. The lid shall be provided with two nos. punched holes of 8 mm dia on the mushroom canopy near periphery of lid for locking/ sealing the Can. The cup and saucer

portions of the lid shall be welded to each other circumferentially, preferably by fusion welding process. In case fusion welding is not done, it shall be done by employing TIG process. There shall not be any deformation or unevenness and it should be ground smooth.

4.5 **Welding**: For fabrication of the Can only argon arc welding process shall be used. Being a thin sheet material parent material fusion welding technique may be applied and if required, AWS ER 308 L filler wire may be used for welding of ring, handle etc. All welding shall be done by argon purging (TIG).

4.6 **Finish**: All weld joints shall be free from porosity, blowholes, pinholes, undercut, lumps, cavities etc. and shall be sound in nature. All welded joints shall be finished smooth to minimum 150 grit to provide a sanitary finish to all the inner and outer surface of the weld joint. The Can surface including at the taper neck portion should be wrinkle free. There should not be any sharp corner. All such points shall have minimum 25 mm radius.

4.7 **Heat Treatment and Passivation**: The Can and Can lid shall be heat treated to relieve the stress developed during deep drawing and spinning. Thereafter complete surface shall be passivated with standard passivation solution to enhance corrosion resistance of the base material and welded surfaces.

The composition of the passivating bath shall be as follows:
0.50% concentrated Nitric acid (HNO_3)
0.50% sodium or potassium dichromate
99.0% water with not more than 5 ppm chloride

The Cans shall be filled with the solution and lid shall be immersed in a tank containing this solution. The solution shall be held in the Cans and lid at the temperature indicated for the following period:

25^{o}C	- 24 hours; or
35^{o}C	- 15 hours; or
50^{o}C	- 8 hours; or
65^{o}C	- 4 hours; or
80^{o}C	- 2.5 hours; or
Boiling temperature	- 1 hour.

4.8 The can and lid shall be guaranteed against any defect in material and fabrication for a period of at least one year. In case of any defect, the supplier shall repair/replace the can and lid.

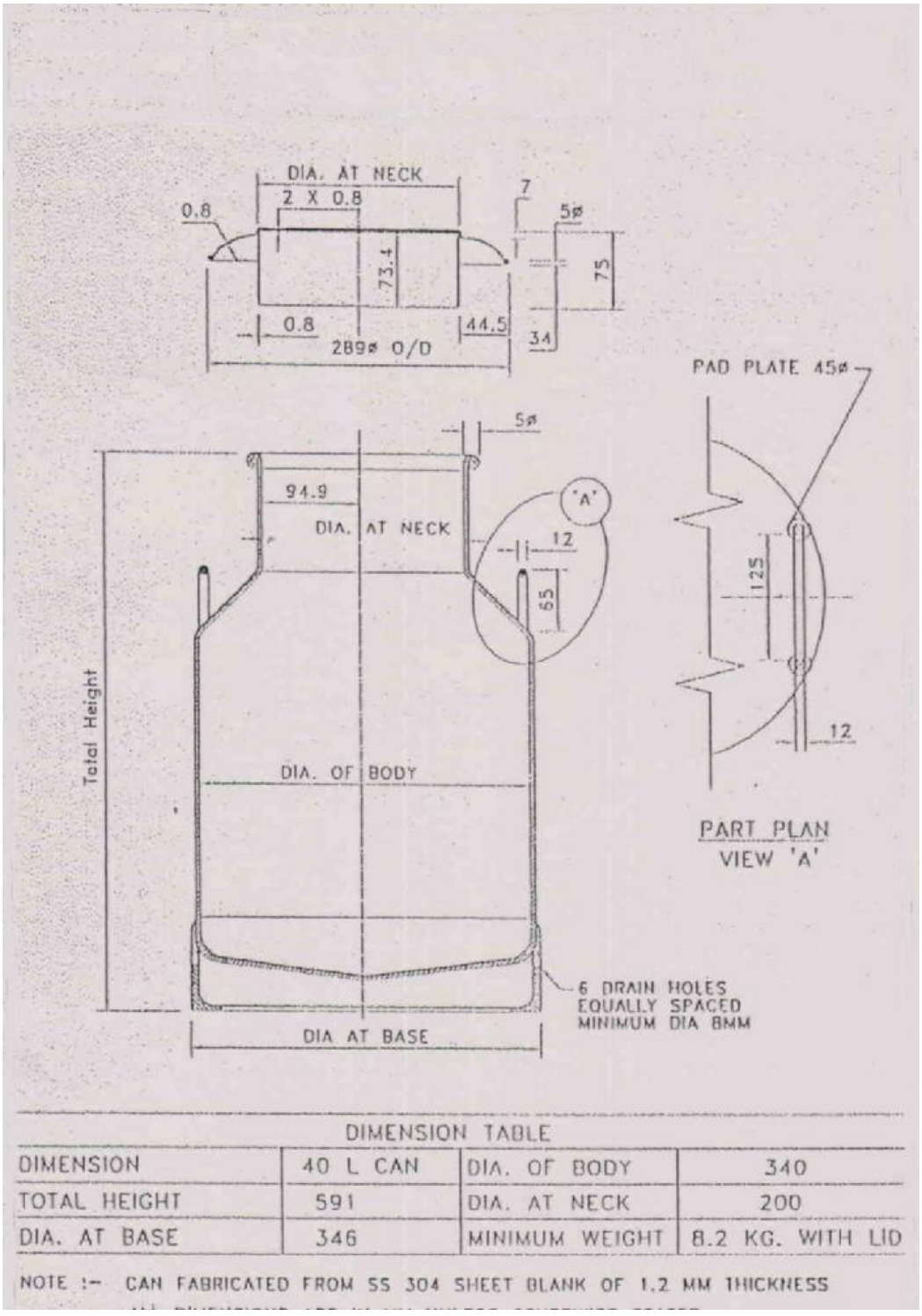
V. **Marking**: Each Can shall be marked legibly and permanently with at least following particulars:

5.1 Manufacturer's name or initial or trademark, if any.
5.2 The rated capacity of the Can in Litres.
5.3 Batch or code number and year of manufacture
5.4 Buyer's logo or identification mark.
5.5 Material of Construction: AISI 304 SS
5.6 Capacity mark on inside surface of the can

VI. **Test:** The following tests shall be carried out on the Cans by supplier:

6.1 Conformity of the material of construction to AISI 304 grade. The stainless steel sheets and rods used shall be of SAIL or Jindal make.
6.2 Dye Penetration test of all weld joints.
6.3 Surface finish check for 150 grit
6.4 Pressure test for leakage/bulging.
6.5 Drop test at rated capacity (Reference IS 1825-1983 clause 7.2 for Aluminium Cans for guidance and reference)

6.6 Hardness test.
6.7 Can weight with lid and capacity in litres.
6.8 Dimensions & thickness
6.9 The Supplier shall furnish a Test certificate confirming all the results of the tests conducted.



DIMENSION TABLE

DIMENSION	40 L CAN	DIA. OF BODY	340
TOTAL HEIGHT	591	DIA. AT NECK	200
DIA. AT BASE	346	MINIMUM WEIGHT	8.2 KG. WITH LID

NOTE :- CAN FABRICATED FROM SS 304 SHEET BLANK OF 1.2 MM THICKNESS