1. APPLICABLE STANDARDS:

Unless otherwise agreed to between CRECO, INC. and purchaser, the design, fabrication, testing, and installation of CRECO, INC. storage tanks will meet or exceed the following industry standards:

A.S.T.M. D-3299-88 – Filament Wound Glass-Fiber-Reinforced Thermoset Resin Chemical-Resistant Tanks.

A.S.T.M. D-4097-88 – Contact Molded Glass-Fiber-Reinforced Thermoset Resin Chemical-Resistant Tanks.

Where applicable, provision from A.N.S.I./A.W.W.A. D120-84 – Thermoset Fiberglass Reinforced Plastic Tanks and A.S.M.E./A.N.S.I. RTP-1-1995 – Reinforced Thermoset Plastic Corrosion Resistant Equipment will be used.

Due to variations between the above specifications, many possibilities of design parameters are available. Design characteristics may be modified to suit. Consult with the factory for more specific details.

1.1 DESCRIPTION OF TERMS:

1.1.1 Definitions for most terms used within this standard are in accordance with A.S.T.M. D-883 Definitions of terms relating to plastics.

1.1.2 FILAMENT WOUND – The process in which the principle circumferential load bearing reinforcement is applied by continuous filament winding.

1.1.3 CONTACT MOLDED – A molding process that includes spray-up, hand lay-up, or a combination of those manufacturing processes.

1.1.4 HEAD – The end closure of cylindrical tanks (top or bottom).

1.2 TANK CLASSIFICATION – Tanks will be classified in the following manner:

Type I: Atmospheric pressure tanks vented directly to the atmosphere, designed for pressure no greater or lower than atmospheric.

Type II: Atmospheric pressure tanks vented directly into a fume conservation system, and designed to withstand the specified positive and negative pressure not to exceed 14 in. of water when all tie-down lugs are properly secured.

CLASS 1: (Premium) Tanks manufactured using a vinylester resin throughout.

CLASS 2: (Standard) Tanks manufactured using a vinylester resin in the corrosion barrier laminate and an isophthalic polyester resin the in structural laminate.

CLASS 3: (Economy) Tanks manufactured using an isophthalic polyester resin throughout.

CLASS 4: Tanks manufactured using a resin or resins other than vinyl ester and isophthalic polyester.

2. INFORMATION TO BE SUPPLIED BY CUSTOMER:

In order to properly design the storage tank for the service intended, the customer must supply the following information to CRECO, INC.:

1. Any customer generated specifications that must be used.
2. Capacity.
3. Tank model designation.
4. Diameter – if critical.
5. Material to be stored in tank.
6. Temperature conditions.
7. Loading conditions – (i.e., seismic, snow, wind or agitator loads, external pressures (i.e. tank in dike), etc.)
8. Fittings and attachments to be provided, and their description.
9. Height, width and weight limitations.
10. Flange gasket and bolt materials.
11. Whether outside surface is to be pigmented.
12. Whether U.V. absorber is required in exterior resin.
13. Whether fire-retardant resins are to be used and the required maximum flame spread.
14. Whether tank is to be insulated. (see Section 7).
15. Type of heating system. (if required) (see Section 8).
16. Any special test procedures to be followed. (ie., hydrostatic test, acetone sensitivity, pressure, vacuum, etc.).

2.1 AGITATION:

To properly design tanks for agitator service, the customer must supply the following information to CRECO, INC..

1. Weight of agitator with shaft and propeller.
2. Downward load when running.
3. Maximum torque. (in/lbs).
4. Maximum bending moment. (in/lbs).
5. If agitator is top or side entering.
6. Agitator mount style and dimensions.

3. MATERIALS:

3.1 RESIN – The resins used shall be a corrosion resistant vinylester or isophthalic polyester thermoset resin that has been determined by previous documented service to be acceptable for the particular service conditions.

3.1.1 The resin shall contain no pigments, colorants, or fillers unless specified by the customer.

3.1.2 Ultraviolet absorber may be added to exterior resin layer if specified by the customer.

3.1.3 3-5% Antimony Trioxide may be added to halogenated resin in the structural laminate only, to increase the ignition resistance of the resin.

3.2 REINFORCEMENTS:

3.2.1 SURFACING VEIL – The inner surface reinforcement shall consist of either a synthetic fiber veil or a chemical resistant glass veil. The surfacing veil shall contain a coupling agent or binder that is compatible with the corrosion barrier resin. Veil thickness shall be 10 mil. minimum.

3.2.2 CHOPPED STRAND MAT OR GUN APPLIED CHOPPED STRANDS – shall be constructed from single-end type E-glass strands 1/2" minimum to 2" maximum length. The coupling agent or binder shall be compatible with the resin used.

3.2.3 CONTINUOUS ROVING – Filament winding requires a single-end type E-glass reinforcement with 250 yards/pound yield. The coupling agent or binder shall be compatible with the resin used.

3.2.4 WOVEN ROVING – Shall be minimum 18 ounces/square yard and compatible with the resin used.

4. LAMINATE CONSTRUCTION:

4.1 STRUCTURAL INNER TANK – The laminate comprising the structural tank (bottom head, sidewall, and top head) shall consist of three separate laminates. These are the inner surface and the interior layer which make up the corrosion barrier, and the structural layer, the exterior layer and the exterior surface.

4.1.1 INNER SURFACE – The inner surface exposed to the chemical environment shall be a resin rich layer .010 to .020 inch thick, reinforced with a surfacing veil. The glass content shall be 10% by weight maximum in this layer.

4.1.2 INTERIOR LAYER – The interior layer shall consist of a resin rich laminate reinforced with chopped strands. The glass content shall be 27% +/- 5% by weight. The combined thickness of the inner surface and the interior layer shall not be less than 0.100 inch.

4.1.3 STRUCTURAL LAYER:

4.1.3.1 FILAMENT WOUND STRUCTURAL LAYER – Subsequent reinforcement shall be continuous strand roving. Glass content of the filament wound structural layer shall be 60% to 70% by weight. The thickness of the filament wound portion of the tank shell will vary with tank height (tapered wall construction). If additional axial strength is required, the use of chopped strands or unidirectional glass strands interspersed between wind layers is acceptable.

4.1.3.2 CONTACT MOLDED STRUCTURAL LAYER – Subsequent reinforcement shall be comprised of alternating layers of chopped strands and such additional number of plies of woven roving to a thickness as required to meet the physical properties that are used for the design. Each successive ply or pass of reinforcement shall be well rolled prior to the application of additional reinforcement. All woven shall be overlapped 1". Laps in subsequent layers shall be staggered at least 3" from laps in the preceding layer. The final outer layer shall be chopped strands in all cases.

4.1.4 EXTERIOR LAYER – The exterior layer shall consist of a resin rich laminate reinforced with chopped strands. The glass content shall be 27% +/- 5% by weight. The thickness of the exterior layer will be 0.30 inch thick.

4.1.5 EXTERIOR SURFACE – The exterior surface shall be a resin rich layer 0.010 to 0.020 inch thick, reinforced with a surfacing veil. The glass content shall be 10% by weight maximum in this layer.

4.2 INTERSTITIAL SPACE – The tank shall have an interstitial space of 0.08 to 0.12 thick with biplanar flow to allow product to gravity flow to the leak detection.

4.3 STRUCTURAL OUTER TANK – The laminate comprising the structural outer tank (sidewall and bottom head) shall consist of three separate laminates. These are the inner surface and the interior layer which make up the corrosion barrier and the structural layer.

4.3.1 INNER SURFACE – The inner surface exposed to the chemical environment shall be a resin rich layer 0.010 to 0.020 inch thick, reinforced with a surfacing veil. The glass content shall be 10% by weight maximum in this layer.

4.3.2 INTERIOR LAYER – The interior layer shall consist of a resin rich laminate reinforced with chopped strands. The glass content shall be 27% +/- 5% by weight. The combined thickness of the inner surface and the interior layer shall not be less than 0.100 inch.

4.3.3 STRUCTURAL LAYER:

4.3.3.1 FILAMENT WOUND STRUCTURAL LAYER – Subsequent reinforcement shall be continuous strand roving. Glass content of the filament wound structural layer shall be 60% to 70% by weight. The thickness of the filament wound portion of the tank shell will vary with tank height (tapered wall construction). If additional axial strength is required, the use of chopped strands or unidirectional glass strands interspersed between wind layers is acceptable.

4.3.3.2 CONTACT MOLDED STRUCTURAL LAYER – Subsequent reinforcement shall be comprised of alternating layers of chopped strands and such additional number of plies of woven roving to a thickness as required to meet the physical properties that are used for the design. Each successive ply or pass of reinforcement shall be well rolled prior to the application of additional reinforcement. All woven shall be overlapped 1". Laps in subsequent layers shall be staggered at least 3" from laps in the preceding layer. The final outer layer shall be chopped strands in all cases.

4.3.3.3 The outer surface shall be coated with a 10 mil. thick layer of resin for spill protection. This layer may contain ultraviolet absorbers, pigments, or fire retardant additives if specified by the customer.

4.3.3.4 Where air inhibited resin is exposed to air during cure, a full surface cure shall be obtained by coating the surface with a coat of resin containing 0.2% to 0.6% paraffin wax surfacing agent. (The acetone sensitivity test can be used to check surface cure, see Section 13.2, page 11).

4.4 JOINTS:

4.4.1 The cured resin surfaces of parts to be joined shall be ground to expose the glass fiber reinforcement. The ground area shall extend beyond the lay-up areas so that no reinforcement is applied to an unprepared surface. The surface shall be clean and dry before lay-up. The entire ground area shall be coated with paraffinated resin after joint overlay is made.

4.4.2 The gap between bell and spigot joints shall be filled with a resin pour to eliminate any air pockets between the two pieces to be joined.

4.4.3 Highly filled resin putty shall be spread over the crevices and irregular shapes between joined pieces, leaving a smooth surface for lay-up.

4.4.4 The width of the first layer of joint overlay shall be 6” minimum. Successive layers shall increase 2” width to form a smooth contour laminate that is centered on the joint +/- 1/2 inch.

4.5 FITTINGS AND ACCESSORIES

4.5.1 The surfaces of fittings and accessories exposed to product shall have the same corrosion barrier laminate as outlined in section 4.1.1 and 4.1.2.

4.5.2 The cut edges of all laminates exposed to the product shall be sealed with the corrosion barrier laminate as outlined in 4.1.1 and 4.1.2.

4.5.3 Where shape, thickness, or other restrictions preclude covering the edges with the laminate outlined in 4.1.1 and 4.1.2, the edges shall be coated with paraffinated resin.

4.5.4 NOZZLE AND MANWAY INSTALLATION – follow the requirements of ASTM D-3299 or D-4097 for minimum installation standards.

4.5.5 NOZZLE AND MAYWAY CUTOUT REINFORCEMENT – Where a tank sidewall or head is cut in an area bearing hydrostatic pressure, the cutout reinforcing laminate shall not be less than two times the nominal nozzle diameter. For nozzles less than 6” diameter, the reinforcement diameter shall be the nozzle size plus 6”.

4.5.5.1 CUTOUT REINFORCEMENT LAMINATE THICKNESS – The thickness of the cutout reinforcement laminate shall be determined using the following formula, but shall not be less than 1/4 inch.

$$Tr = 0.036 \times \gamma \times H \times D \times K / 2\,Sr$$

WHERE:

Tr = Cutout reinforcement laminate thickness (in inches)
γ = Specific gravity of product.
H = Height of liquid above nozzle.
D = Tank nominal inside diameter (in inches).
K = 1.0 for nozzles 6 inch diameter and larger.
K = (d/dr-d) for nozzles less than 6 inch diameter.
Sr = Allowable tensile stress (not to exceed 10% of reinforcement laminate tensile strength).
d = Nominal nozzle diameter (in inches).
dr = Cutout reinforcement diameter (greater of 2 times d or d+6) (in inches).

This thickness (Tr), may be applied to the outer or inner surfaces, or be divided between them.

4.6 LEAK DETECTION AND VENT DRIER:

4.6.1 Tank(s) shall be supplied with leak detection with visual alarm module. Tank connection shall be a 1" F.N.P.T. coupling. Customer is to supply 110 VAC power supply to the alarm module.

4.6.2 Tank(s) shall be supplied with a vent drier to aid in eliminating moisture between the inner tank and the outer tank. Tank connection shall be a 2" F.N.P.T. coupling and FRP support bracket, when required, for customer supplied piping.

5. LAMINATE DESIGN PHYSICAL PROPERTIES:

CRECO, INC. standard laminate design physical properties meet or exceed ASTM D-3299, ASTM D-4097 and ASME RTP-1 standards.

6. DESIGN REQUIREMENTS:

6.1 SIDEWALL – The minimum required wall thickness of the cylindrical straight shell at any fluid level shall be determined by using the following formula, but shall not be less than 1/4".

$$t = .036 \times \gamma \times H \times D / 2 \times Sh$$

WHERE:

- t = Wall thickness in inches.
- γ = Product specific gravity.
- H = Fluid head in inches.
- D = Tank nominal diameter in inches.
- Sh = Allowable hoop stress in P.S.I. (see 6.1.1).

6.1.1 Allowable stress shall be determined using the following formula:

$$Sh = Et \times Z$$

WHERE:

- ET = Tensile Modulus of laminate in hoop direction.
- Z = Allowable strain (maximum allowable strain of the tank shall not exceed 0.001 inch/inch).

6.1.1.1 Allowable hoop stress (Sh) shall not exceed 1/10 of hoop tensile strength.

6.2 TOP HEAD – The minimum allowable head thickness shall be 1/4". The top head must be able to support a 250 pound load on a 16 square inch area without damage.

6.3 FLAT BOTTOM HEAD – Flat bottom heads shall be molded integrally with the straight shell portion of the tank, unless otherwise agreed upon. The perimeter of the tank bottom shall not have any variations from a flat plane that would prevent uniform contact with a properly prepared flat tank support pad when filled with liquid. The sidewall to bottom knuckle radius shall be not less than 1 1/2" for tanks less than 10' diameter and not less than 2 1/2" for tanks 10' diameter and above.

6.3.1 THICKNESS AND REINFORCEMENT – The minimum thickness for a fully supported flat bottom head shall be 1/4" and shall include no less than 1 layer of woven roving reinforcement. The minimum thickness of the sidewall to bottom knuckle radius shall be equal to the combined thickness of the sidewall and bottom. The reinforcement of the knuckle radius area shall not extend beyond the tangent line of the radius and flat bottom, and shall extend up the tank sidewall a minimum of 4" for tanks less than 4' diameter and 12" for tanks 4' diameter and above. The reinforcement will then taper into the sidewall for an additional length of 3" to 4".

6.4 ELEVATED DISHED BOTTOM HEAD – Elevated dished bottom heads may be either molded integrally with the straight shell portion of the tank or molded separately using a bell and spigot joint for attachment to shell. The dished bottom head shall have a radius of curvature that is equal to or less than the tank nominal inside diameter.

6.4.1 THICKNESS – The thickness of the elevated dished bottom head shall be determined using the following formula, but shall not be less than 1/4".

$$Tb = .885\ (.036 \times \gamma \times H \times R) / S$$

WHERE:

Tb = Thickness (in inches)
S = Allowable stress – (not to exceed 1/10 of laminate tensile strength) in pounds/square inch.
γ = Product specific gravity.
R = Inside radius of dished head (in inches).
H = Fluid head at deepest point (in inches).

6.5 SLOPE TANK BOTTOMS – Shall conform to section 6.3 with the exception that the slope bottom may be molded separately from the straight shell.

6.6 OPEN TOP TANKS – Open top tanks shall incorporate a stiffening ring or flange. Additional stiffening may be incorporated into the design depending upon the intended use. Customer must advise fabricator of any equipment such as agitation, pumps, etc. causing external forces.

6.7 Above ground horizontal, and rectangular tanks require special design considerations for each application and will not be considered in the design portion of this specification. However, all other portions of this specification apply to the above tank configurations.

6.8 JOINTS – Joints between sidewall sections, and for attachment of top heads or bottom heads shall conform to the width and thicknesses as specified in ASTM D-3299 or ASTM D-4097 as a minimum.

6.9 FITTINGS:

The corrosion barrier of tank nozzles shall be equivalent to the inner corrosion barrier of the tank they are installed in. Construction shall be as follows:

6.9.1 FLANGED NOZZLES – Dimensions for flanged nozzles shall be per chart. The nozzle shall be of hand lay-up construction. Press molded flanges attached to pipe with adhesive are not acceptable, except for the inner flange on a double flange nozzle.

Flange Size	Flange Face O.D.	Bolt Circle	Bolt Hole Size	Flange Face Thickness *	Bolts
1”	4-1/4”	3-1/8”	5/8”	5/8”	4 - 1/2
1-1/2”	5”	3-7/8”	5/8”	5/8”	4 - 1/2
2”	6”	4-3/4”	3/4”	5/8”	4 - 5/8
2-1/2”	7”	5-1/2”	3/4”	5/8”	4 - 5/8
3”	7-1/2”	6”	3/4”	3/4”	4 - 5/8
4”	9”	7-1/2”	3/4”	7/8”	8 - 5/8
6”	11”	9-1/2”	7/8”	1”	8 - 3/4
8”	13-1/2”	11-3/4”	7/8”	1-1/8”	8 - 3/4
10”	16”	14-1/4”	1”	1-5/16”	12 - 7/8
12”	19”	17”	1”	1-5/8”	12 - 7/8

* 125 psi Design Pressure.

6.9.2 COUPLINGS, NIPPLES, PIPE STUBS – Shall be of filament wound or contact molded construction. Press molded fittings are not acceptable.

6.9.3 TOP AND SIDE MANWAYS – Shall be constructed using hand lay-up construction, and of the same materials as the tank they are installed in. Pre-fabricated press molded flat plate side manhole covers are not acceptable.

6.9.4 VENTS – Unless agreed upon in advance by CRECO, INC., all tanks shall be vented to prevent an internal pressure or vacuum. The vent must be of sufficient size to handle the flow displacement of all combined inlet or outlet nozzles. NOTE: Tanks are not designed for improper Air Loading.

6.9.5 HOLDDOWN LUGS – Holddown lugs or plates shall be installed on all tanks. The size and number of holddown lugs shall depend on the wind, seismic, and other loads the tank will be subjected to during normal operation.

6.9.6 LIFTING LUGS – Shall be installed on tanks over 200 pounds weight unless otherwise specified.

7. INSULATED TANKS:

7.1 SIDEWALL INSULATION – 2 pound density foam insulation shall be used on tank sidewalls. Either pre-fabricated foam board or sprayed-on insulation is acceptable.

7.2 TOP OR BOTTOM HEAD INSULATION – Must conform to 7.1.

7.3 INSULATION CASING – The protective exterior casing over insulation shall be either contact molded or filament wound. The minimum allowable thickness for insulation casing shall be 1/8". The insulation casing resin shall contain a pigment to protect insulation from ultra violet rays.

7.4 EXPANSION JOINT – To allow for differences in expansion between the tank and the insulation casing, one or more expansion joints must be installed in insulation casing. The expansion joint must allow free movement of tank and insulation casing and be sealed off from water infiltration. T-Molding or silicone caulk type expansion joints are not acceptable.

8. TANK HEATING:

8.1 ELECTRICAL RESISTANCE HEAT TRACING – Wrapped-on electric resistance heat tape or banding is not acceptable because of the very difficult accessibility in case of a failure.

8.2 HEAT PANELS – Heat panels shall be used where external electrical heat tracing is specified. Each heat panel system shall use a product temperature control thermostat and a panel overheat thermostat to protect tank and contents from possible damage.

8.3 STEAM COILS – Hairpin type steam coils are acceptable. Follow manufacturer's recommendations for materials and installation procedures.

8.4 OTHERS – Immersable electrical bayonet and plate type heat systems are acceptable. Follow manufacturer's recommendations for materials and installation procedures.

9. NAMEPLATE:

Tank nameplate shall be constructed of FRP materials and located approximately 5' up from tank bottom where possible. The nameplate shall include the following information:

1. Serial number.
2. Customer.
3. Customer purchase order number.
4. Tank model.
5. Tank capacity.
6. Design pressure.
7. Specific Gravity
8. Service temperature.
9. Product.
10. Corrosion barrier veil.
11. Corrosion barrier resin.
12. Structural layer resin.
13. Date of fabrication.
14. Tank tag (If Specified by Customer).

9.1 WARNING TAG – A warning to avoid pipe strain on FRP fittings, use flexible connections.

10. WORKMANSHIP AND LAMINATE QUALITY:

10.1 GENERAL APPEARANCE – Tank should be uniform in color. Joints and matting ground fittings shall not be whited out from overcatalization. On pigmented tanks color of matting on joints and fittings shall be matched as close as possible to the color of the tank exterior. There shall be no burrs or sharp edges on tank. No knots in filament winding. All cut or ground edges shall be coated with paraffinated resin.

10.2 INNER SURFACE – Shall be free of cracks, crazes and blisters.

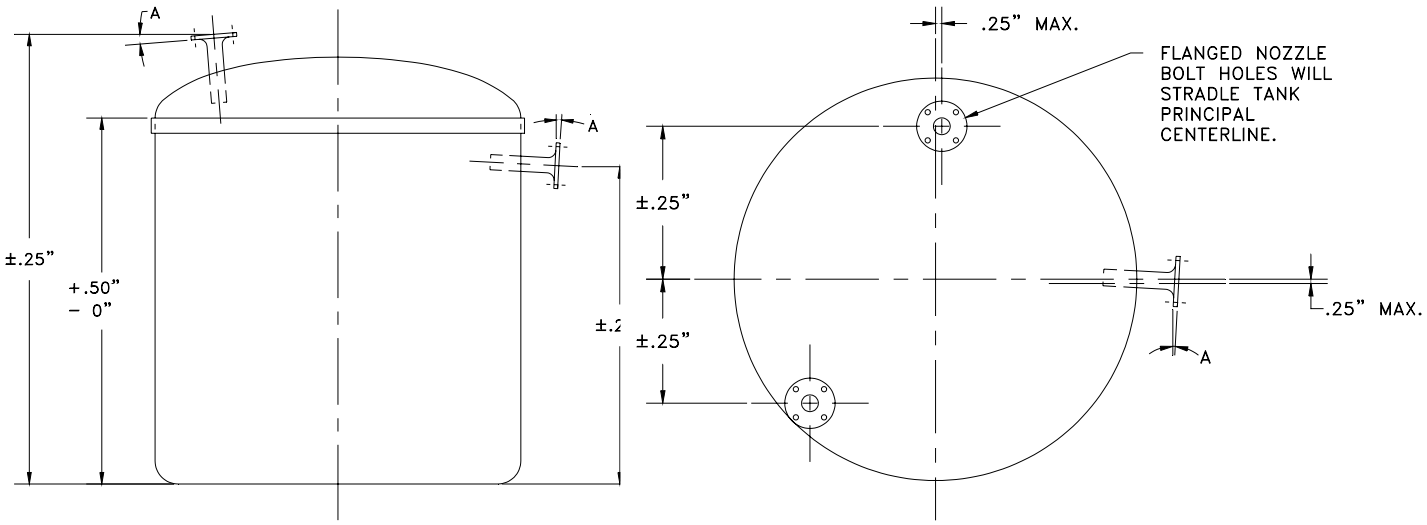
10.2.1 PITS – (Craters in the laminate surface) no more than 10 per square foot. Pits must be less than 1/8 inch diameter and 1/32 inch deep, and shall be coated with paraffinated resin to avoid exposure to product and possible contamination.

10.3 INTERIOR LAYER – Shall be free of dry glass, burned areas and foreign matter.

10.3.1 ENTRAPPED AIR – (Bubbles or voids in laminate) no more than 10 per square inch and less than 1/16 inch in diameter.

10.4 STRUTURAL LAMINATE – See table Section 14, page 11.

11. DIMENSIONS AND TOLERANCES:



A= 1° for Nozzles 1" to 8" and 1/2° for Nozzles 10" and Up.

12. HEAT CURE:

12.1 FOOD GRADE TANKS – Tanks should be heated on the interior to a temperature of 180º to 200º F. for (4) hours. A hot water wash is then used to remove styrene, grinding dust and foreign matter from interior surface of tank. After tank installation and before putting the tank into service, attention to the following procedures is important to help achieve FDA compliance.

(1) After tank installation, steam-treat or steep it with hot water for 8 – 16 hours at 160º - 180º F. This should remove all residual styrene from the interior surface.

(2) Wash the tank with detergent and rinse thoroughly.

(3) Check state or local requirements in addition to the above recommendations.

12.2 POST CURE – Chemical tanks exposed to specific harsh chemical environments should be heated on the interior to a temperature of 180º F. to 200º F. for (4)

hours to more completely cure the resin. See resin corrosion guide for specific chemical environments recommending a heat cure.

13. SURFACE CURE:

13.1 BARCOL HARDNESS TEST – All tanks should have barcol hardness readings taken and recorded on Quality Control report. Ten readings will be taken on the clean, resin rich surface of the tank. The (2) high and the (2) low readings will be eliminated. The average of the remaining readings will be reported as the Barcol hardness of the tank. (Barcol hardness reading of 90% or better of resin manufacturer's specified Barcol hardness for resin used is considered satisfactory).

13.2 ACETONE TEST – Tanks requiring acetone test to check for proper cure should be tested as follows: Rub a small amount of clean Acetone on the laminate surface until the Acetone evaporates. If the surface stays dry and hard, it is properly cured.
CAUTION: Remove all mold release or paraffin wax and all dust from surface.

14. VISUAL INSPECTION OF LAMINATE QUALITY:

DEFECT	**SURFACE INSPECTED**	
	CORROSION BARRIER	***STRUCTURAL LAMINATE***
Cracks	None	None
Crazing (fine surface cracks)	None	Maximum dimension 1/2", maximum density 5 per sq. ft., minimum 2" apart.
Blisters (rounded elevations of the laminate surface over bubbles)	None	Maximum 1/4" dia. x 1/8" high, maximum 1 per sq. ft., minimum 2" apart.
Wrinkles & solid blisters	Maximum deviation, 20% of wall thickness, but not exceeding 1/8".	Maximum deviation, 20% of wall thickness, but not exceeding 1/8".
Pits (craters in the laminate surface)	Maximum dimensions, 1/8" dia. x 1/32" deep. Maximum number, 10 per sq. ft.	Maximum dimensions, 1/8" dia. x 1/32" deep. Maximum number, 10 per sq. ft.
Surface porosity (pinholes or pores in the laminate)	None	None
Chips	None	Maximum dimension of break, 1/4" and thickness no greater than 20% of wall thickness, maximum density 1 per sq. ft.
Dry Spot (nonwetted	None	Maximum dimension, 2 sq. in.

reinforcement)		per sq. ft.
Entrapped air (bubbles or voids in laminate)	1/16” maximum dia., 10 per sq. in. maximum density, but none to a depth of 1/32”.	1/8” maximum dia., 4 per sq. in. maximum density. 1/16” maximum dia. 10 per sq. in. maximum density.
Exposed glass	None	None
Burned areas	None	None
Exposure of cut edges	None	None
Scratches	None	Maximum length 1”, maximum depth 0.010”.
Foreign matter	None	1/16” dia., maximum density 1 per sq. ft.

15. HYDROSTATIC TEST:

Tanks requiring Hydrostatic testing should be filled completely with water. All water spilled or splashed on tank and surrounding area should be dried off. Tank should then be left standing for several hours and checked for leaks.

16. GENERAL:

Specifications requiring independent laboratory tests shall be as outlined in ASTM D-3299 and ASTM D-4097.

17. FINAL INSPECTION:

Tanks shall be inspected for compliance with all applicable standards before being released for shipment. Detailed records of final inspection shall be kept in the job master file for future reference and certification of compliance with standard.

18. SHIPPING:

After final inspection, tanks are to be loaded on tank trailers or skids in such a manner as to prevent damage to flange faces and other fittings. Handling and installation instructions shall be provided to customer. Customer shall follow the instructions to insure proper handling and installation of tanks after delivery.