



WRAS
APPROVED
PRODUCT



Venture for
Tomorrow

ECOCLEAR TANK

Eco-Friendly Water Tank



ECOCLEAR CO.,LTD.

www.ecocleartank.com

Eco-Friendly Water Tank

Quick and clear beyond time and thought

EcoClear Co., Ltd.'s technology and quality are the driving force of a beautiful future.

On the basis of the possibility of Infinite and the spirit of challenge,

EcoClear Co., Ltd leaps to become the best company

We sincerely appreciate your support for the growth of our company in the meantime

and we will do our best to provide customer satisfaction service.

All EcoClear members will work hard to provide excellent products and quality services. Thank you!

PROJECT REFERENCE



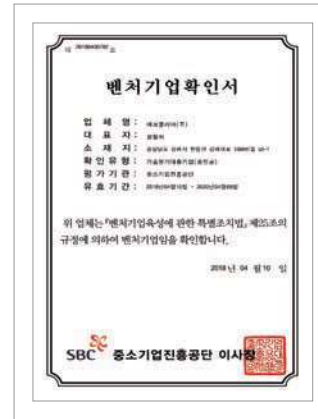
Certificates



● ISO 9001



● ISO 14001



● Venture Business Confirmation



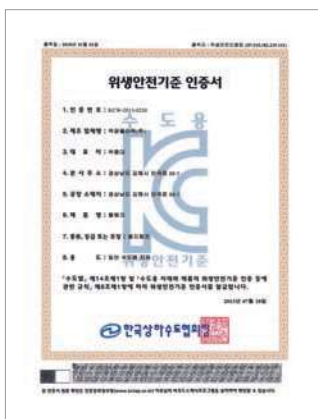
● Test Report (Stopper)



● Test Report (Anchor Bracket)



● WRAS(U.K)50°C



● KC



● Patent certificate (Silver nano)



● Patent certificate (Stay bolt structure)

MERIT OF GRP TANK

Merit of GRP TANK

- 1) Various Capacity Design Various size panels can use limited space for its best using way so can satisfy your needs.
- 2) Excellent Hygiene No corrosion from panels and prevent bacteria increasing by isolating outside light.
- 3) Water tightness The joints are sealed with special sealing tape especially developed for water tank.
- 4) Best Size Stability Sectional GRP water tank panels size are changeless from the outside condition so easy to assembly.
- 5) Intensity and Durability Glass fiber reinforced Panel is molded under condition of high temperature and pressure to maintain the best endurance. Since using stainless steel for inside structure and plated steel for outside, it shows best performance against erosion.
- 6) Heat insulation and Dewdrops Prevention The heat insulation panel with 3 layer structured improves heat insulation effect. Protects water from dewdrops and minimizes temperature variation of the stored water.
- 7) Easy to Assembly and Moving Sectional panels make construction time shorter, standardization panels make easier to moving, carrying in and transfer.

Advantage of GRP TANK

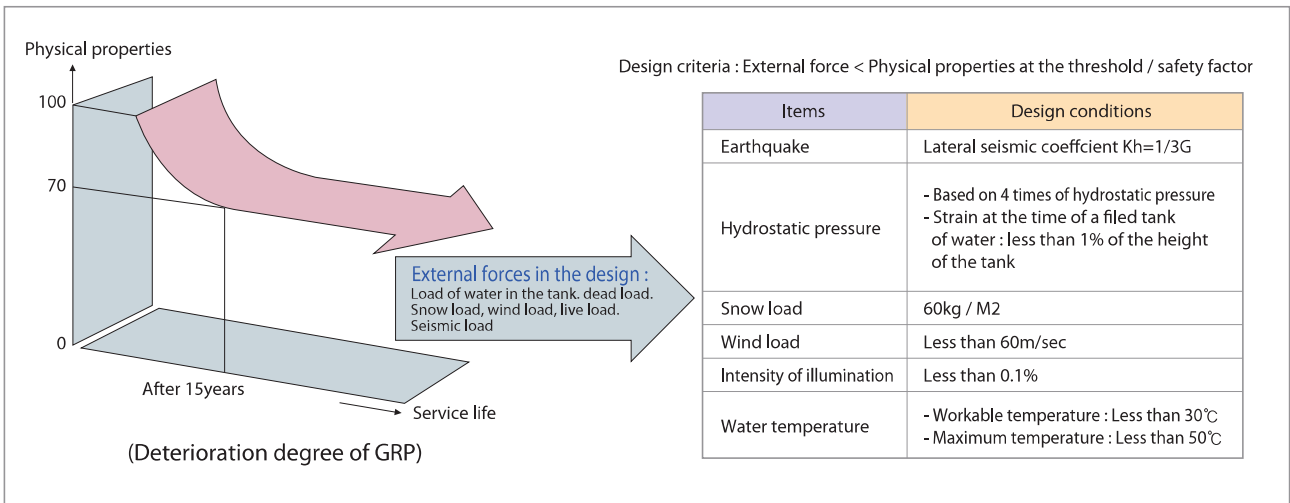
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- 2) Easy to Assembly and Moving Sectional panels make construction time shorter, standardization panels make easier to moving, carrying in and transfer.



PHYSICAL PROPERTIES

Physical properties

Item	Unit	Physical Properties	Test Method
Gravity		1.80	-
Tensile Strength	MPa (Kgf/mm ²)	102.9(10.5)	60(6.12) ↑
Flexural Strength	MPa (Kgf/mm ²)	151	80(8.16) ↑
Flexural Modulus	MPa (Kgf/mm ²)	17,100	6,000(612.24) ↑
Absorption	%	0.06	1 ↓
Barcol Hardness	-	58	30 ↑
Glassfiber content	%	55	25 ↑
Thermal conductivity	-	2.0×10 ⁵	-
Distortion	-	2.0×10 ⁵	-

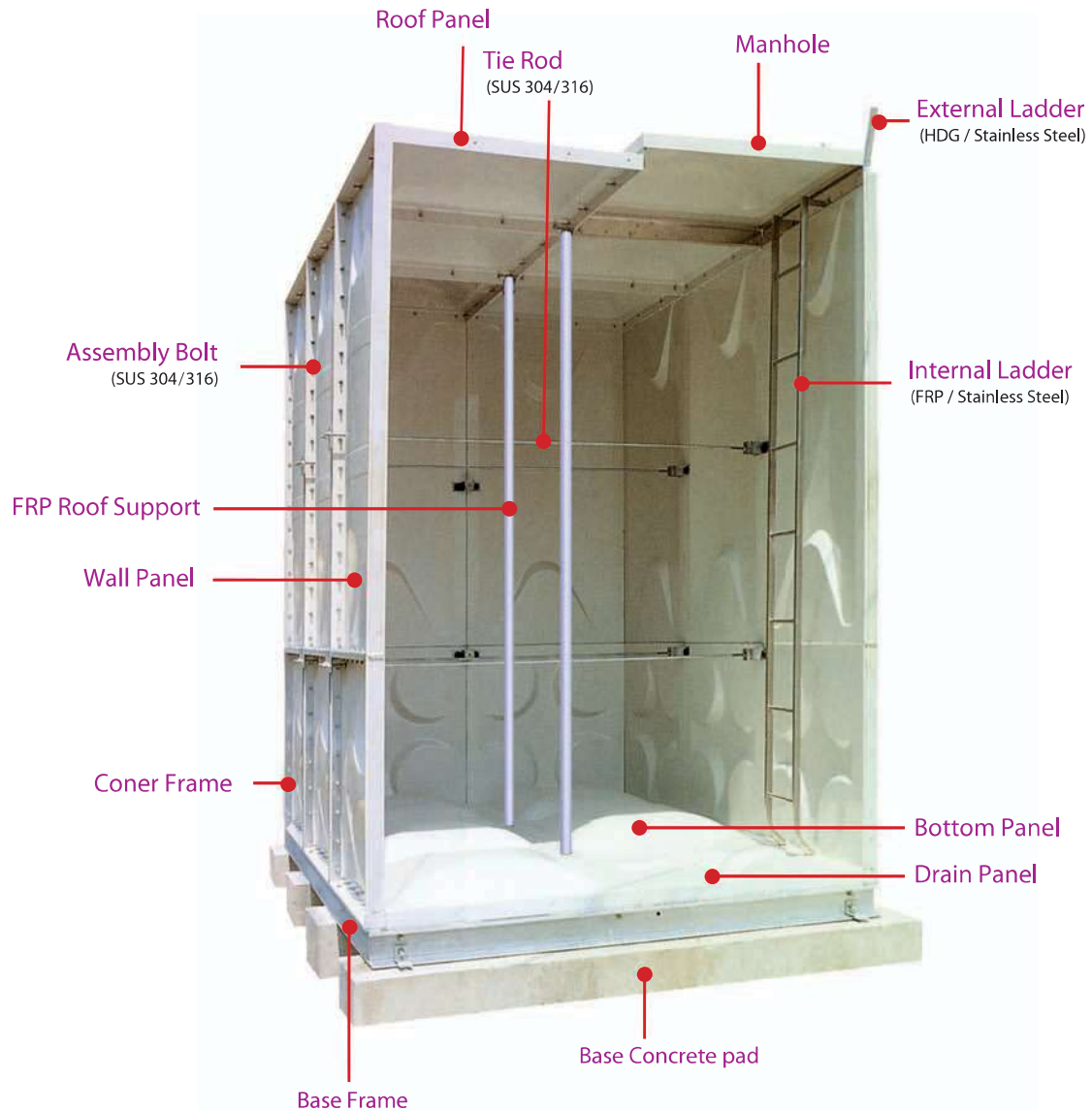


* Overseas quality certificates : Singapore (PSB), U.K (WRAS)



INTERNAL REINFORCEMENT SYSTEM

Internal Reinforcement System



Excellent strength, durability, water tightness, and appearance ; safe structure design

The panels are interconnected with stainless steel tie rods in the GRP water tank to guarantee the strength of water tank.



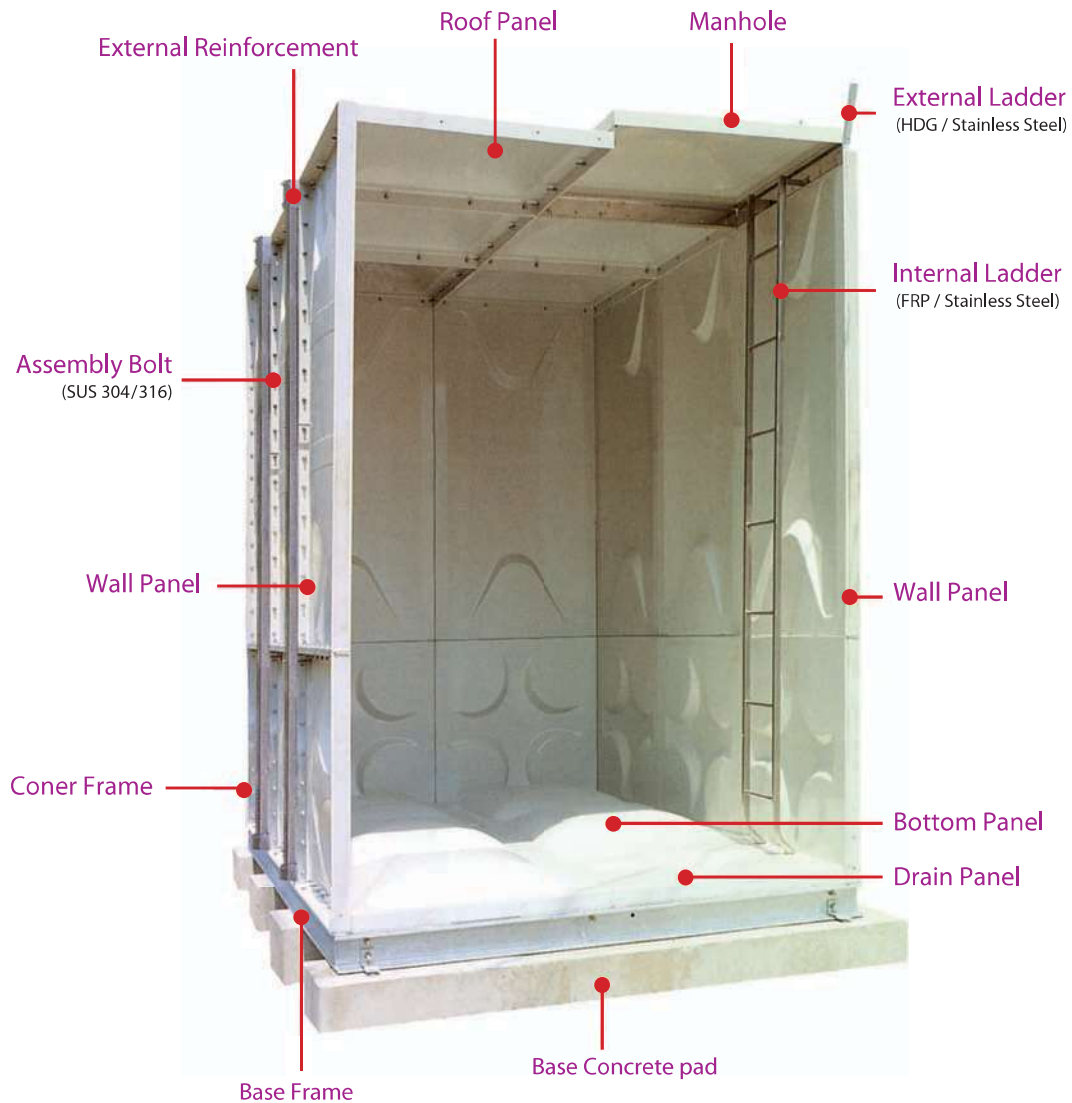
▲ Internal section and structure



▲ 3MH ↑

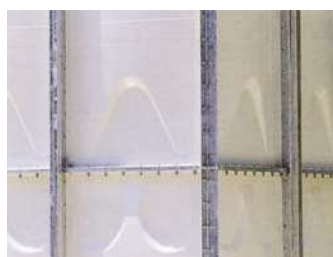
EXTERNAL REINFORCEMENT SYSTEM

External Reinforcement System



Highly durable and sanitary ;
easy maintenance

The joint of the side panel is supported with an external reinforcement frame, the upper part, fixed with angles and round-bar stays, and the lower part. Connected and fixed with brackets using bolts(the height of the tank is 3m or less



▲ External section and structure



▲3MH↓

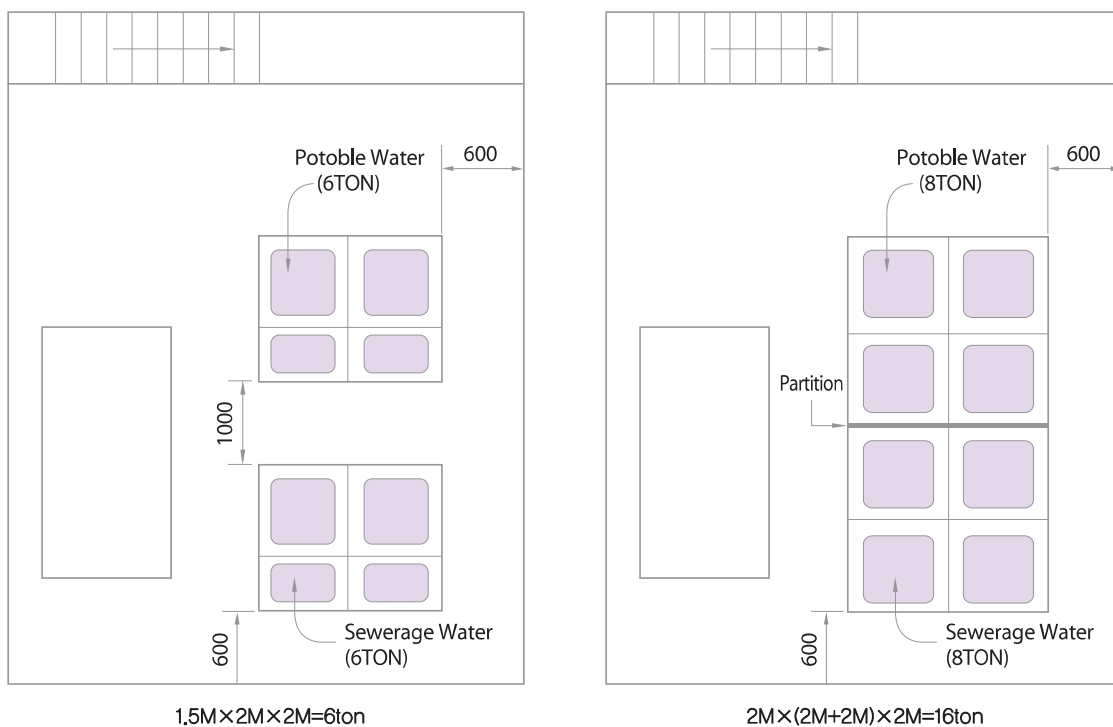
PARTITION TYPE WATER TANK

It is possible to eliminate unusable space, and utilize the maximum space by installing a partition type tank. It is good for economical and effective maintenance.

Utilizing maximum capacity	In the basement or other confined areas, it is possible to eliminate unusable space and utilize the maximum space, by installing a partition type tank.
Various use	If partition type tanks are installed, one section can be used for drinking water and the other section for service water (fire fighting etc).
Easy Maintenance	It is convenient for maintenance, because two tanks can be installed as one unit.
Cost effectiveness	The cost and installation of 1 partition tank is cheaper than 2 separate tanks.

Example for Installation and using

If tanks for two different use are needed in a confined area or boiler room, a 16 ton partition type tank can be installed to use half for drinking water and half for portable water. If separate tanks are installed, however, you have to install two tanks with a maximum of 6 tons, because you need to have 1 meter distance between tanks for maintenance and operating space.

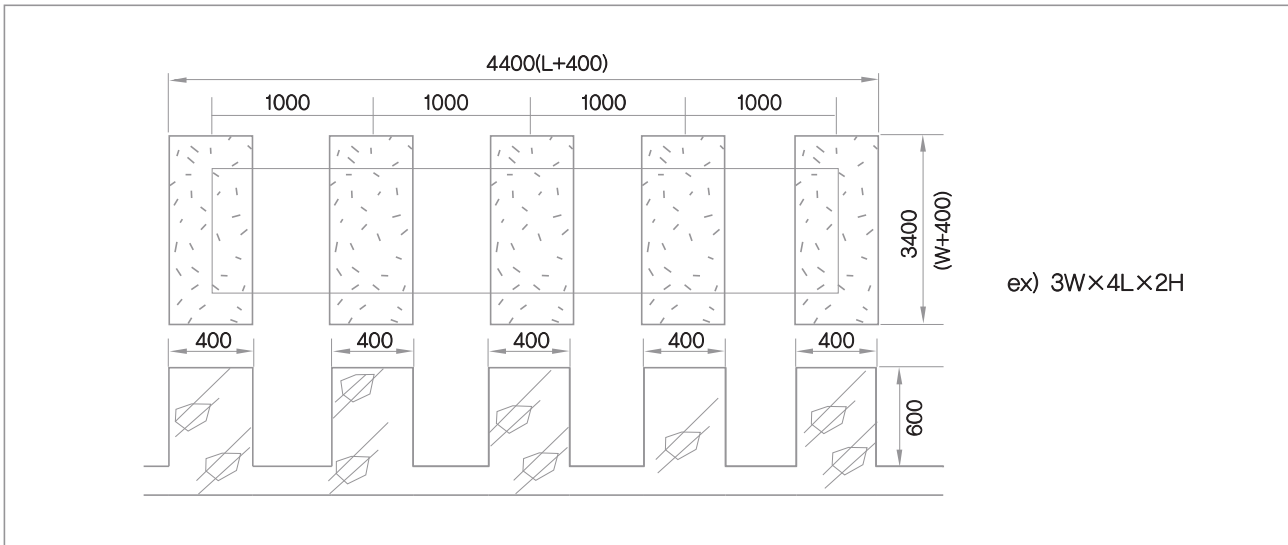


PREPARATION FOR INSTALLATION

Base Concrete Installation Standards

Width : 300~400mm / Outer Dimension : Width, Length +400mm / Space : less than 1m

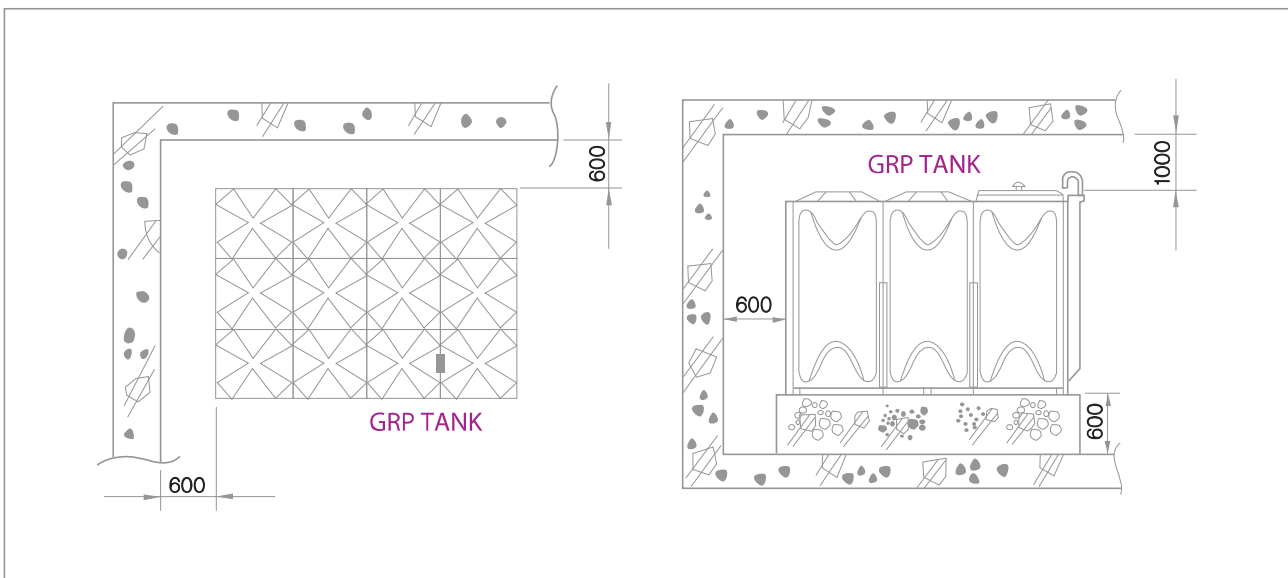
Height : over 600mm (Base frame included) / Horizontal Degree : less than 1/500 (Surface has to be horizon flat)



GRP Water Tank Installation Space

For maintenance and repairs, it is recommended to leave at least 600mm and 1,000mm extra space from wall and ceiling.

● Example : $3W \times 4L \times 2H$

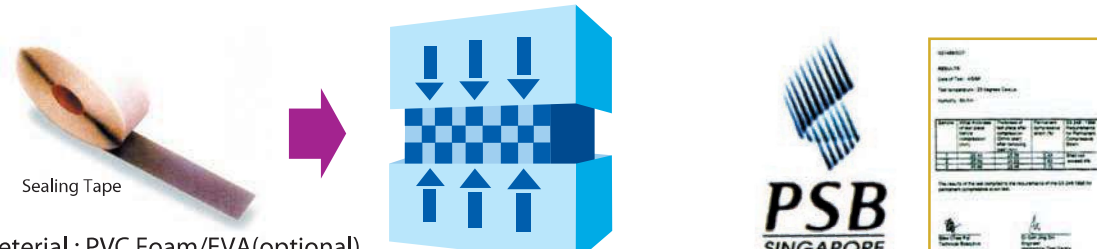


WATER TIGHTNESS

Water Tightness

※ Material : PVC Foam PSB Test Report for sealing tape

The joints are sealed with a special sealing tape especially developed for GRP TANK with long experience and technology on GRP products. It maintains soft itself and adhesives even at low temperature. The combined flange thickness at the panel joints is sufficient to meet any stress imposed. This self sealing feature eliminates the possibility of separation and hence prevents leakage of the tank.



Sealing Tape

※ Material : PVC Foam/EVA(optional)
Standard: 50mm
Corner : 120mm

96% thickness restored initial 24 hours after compressing with sealing tapes

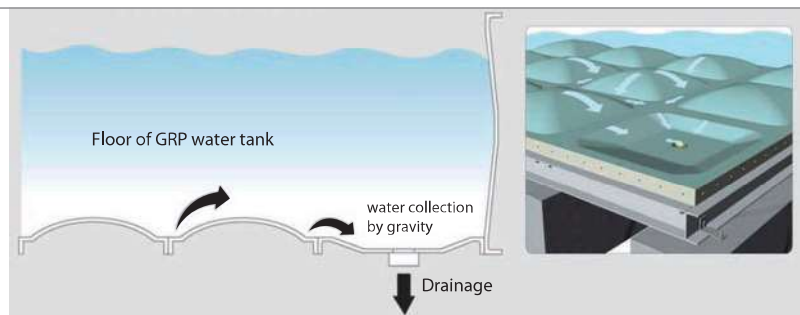
PSB SINGAPORE

PSB Test Report for sealing tape

Complete Drainage

The convex bottom panels with concave drained panel system make sure complete and fast drainage.

It's very useful to take a maintenance inside of water tank.



Free capacity design

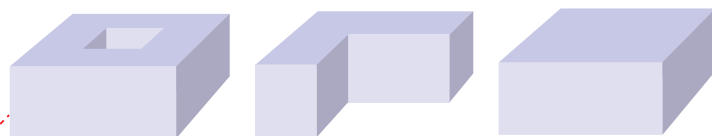
Using panels of various sizes, the Eco-Friendly Water Tank utilizes horizontal and vertical space at the maximum and those are suitable for an underground reserve tank of large capacity. It operates a corner-type system.

Large capacity type



(corner : real example of □-type tank)

Cube-type tank, corner-type tank (□, ⊞, ⊞ -type tank)



Possible height to install tank : 1.0M ~ 5.0M in height

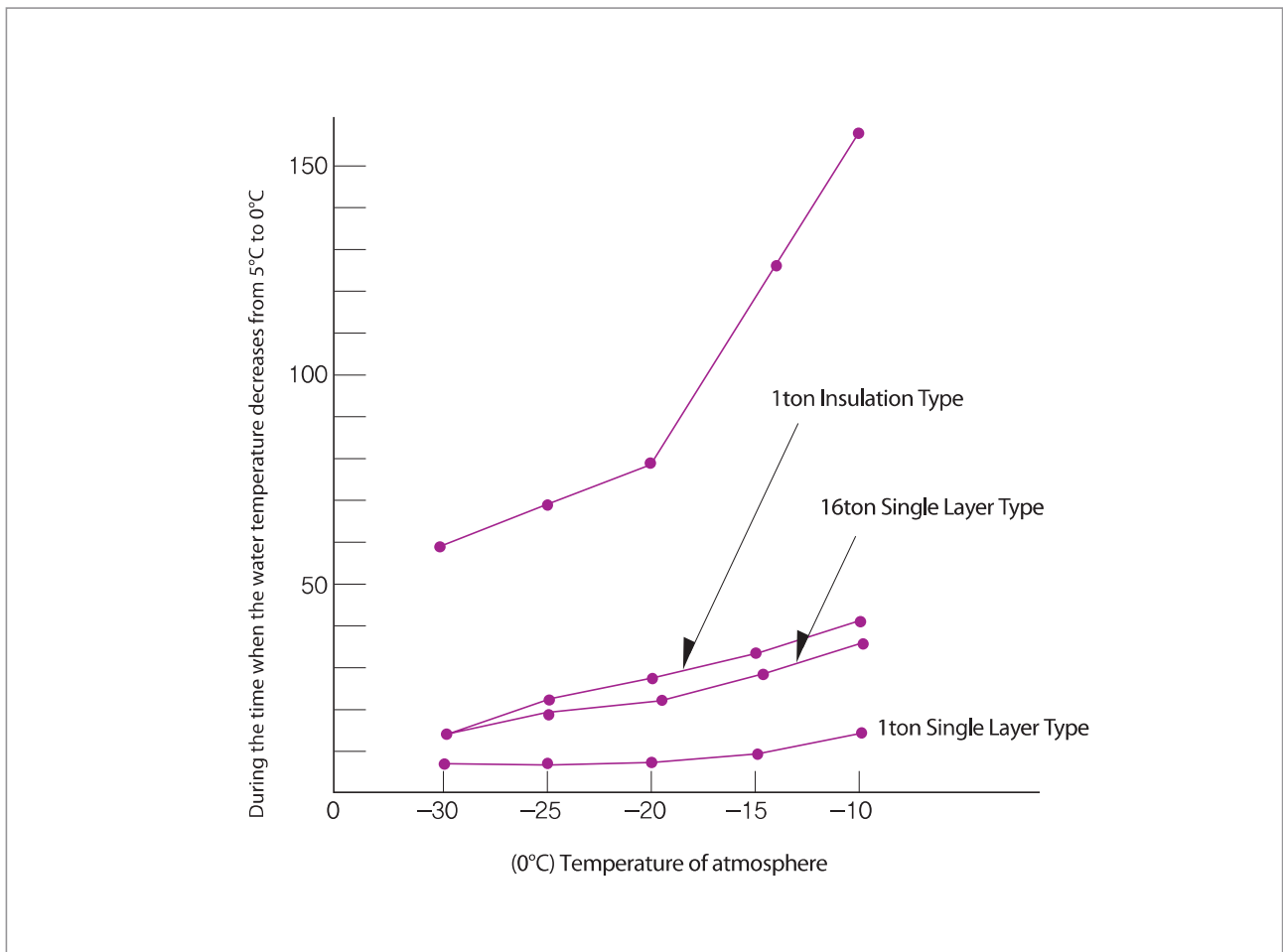
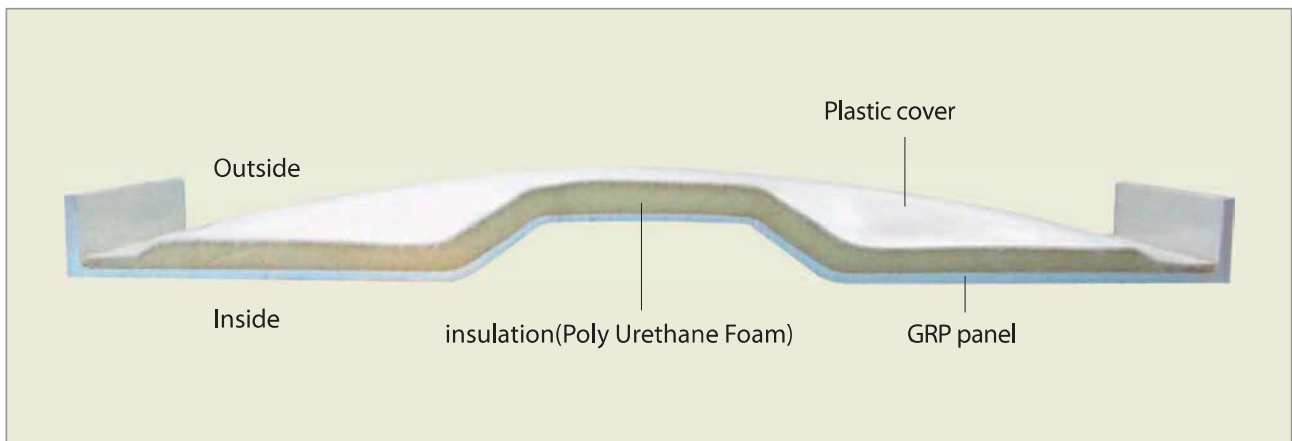
Possible capacity to install tank : 1Ton ~ 5,000 Tons
(The capacity exceeding 5,000 tons can be installed by separate design)

FEATURE OF INSULATED PANEL & ADVANTAGES

Insulation and Dew-Proofing

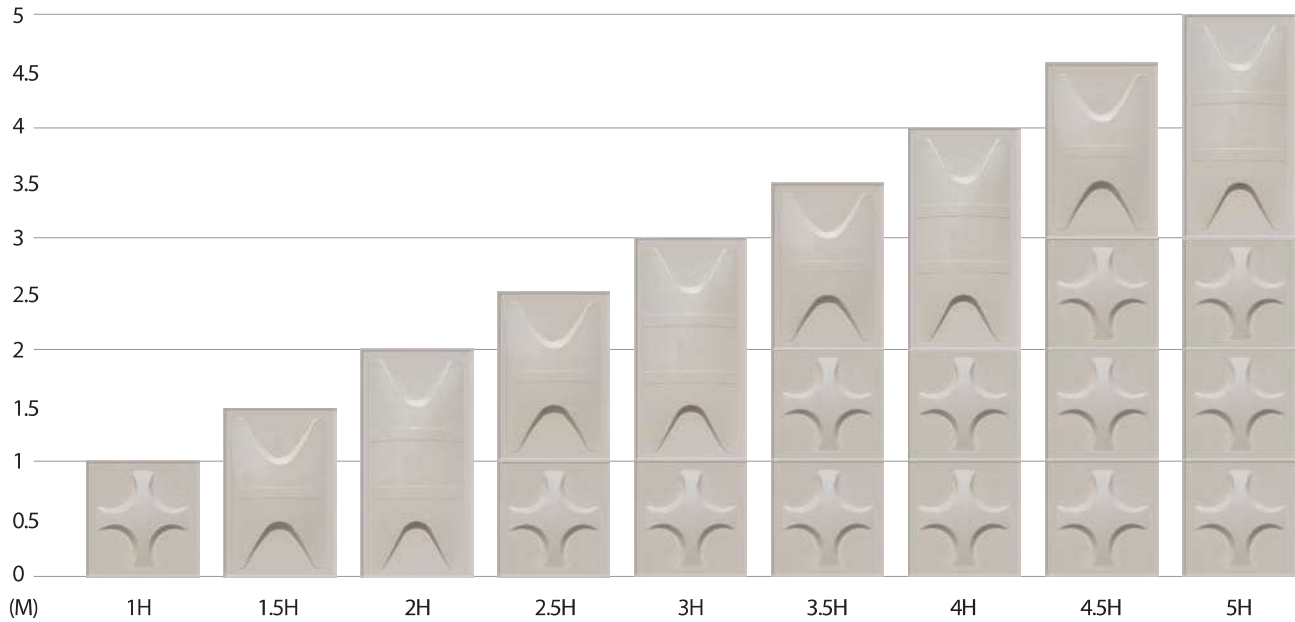
Insulation panel with its three-layer structure improves the insulation effect. Maximizes dew-proofing, and minimizes temperature variation of the stored water.

Section of insulated panel

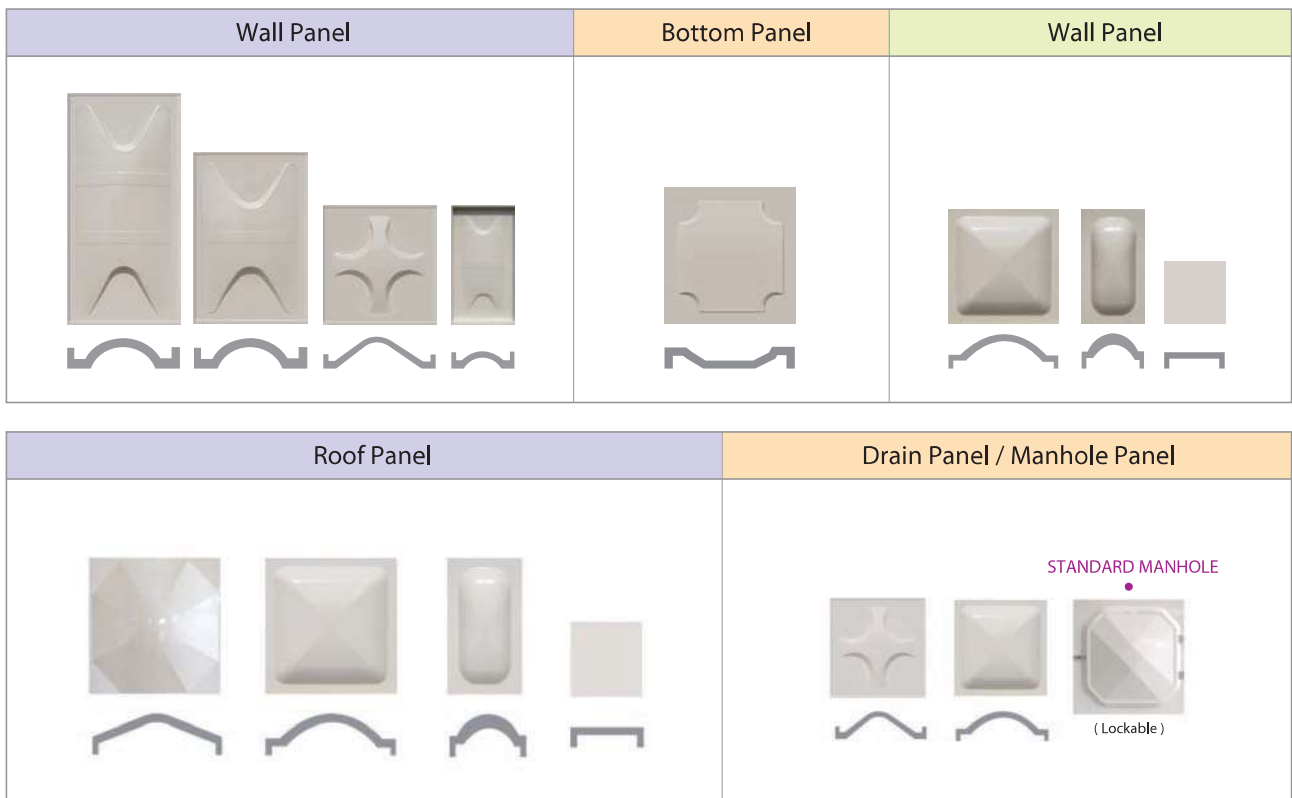


COMPOSITION OF GRP TANK PANELS

Side panel composition



Type and Shape



SECTIONAL GRP WATER TANK INSTALLATION PROCESSING

Installation process

GRP Water tank is easy to install by several type and size panel and it is Semi-permanent Water tank.



1. Bottom Panel Assembly



2. Wall Panel Assembly(1)



4. Wall Panel Assembly(3)



3. Wall Panel Assembly(2)



5. Roof Panel Assembly



GRP Water Tank

ECOCLEAR TANK COMPONENTS

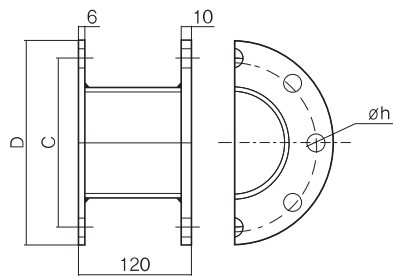
Steel Flange with Special PE coating

Introducing one of the most ideal Steel Flange with Special PE for water tank to prevent negative things such as Environmental hormone, Corrosion and Heavy metal release.

Flat Flange



65A ~ 300A

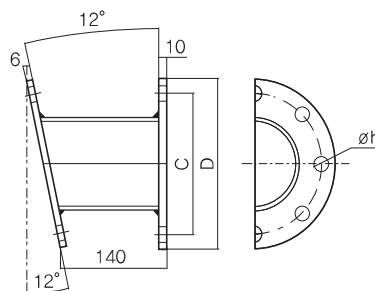


SIZE	C	D1	h	H
65A	140	175	19	4
80A	150	185	19	8
100A	175	210	19	8
125A	210	250	23	8
150A	240	280	23	8
200A	290	330	23	12
250A	355	400	25	12
300A	400	445	25	16

Slope Flange



65A ~ 125A



SIZE	C	D1	h	H
65A	140	175	19∅	4
80A	150	185	19∅	8
100A	175	210	19∅	8
125A	210	250	23∅	8

Advantages of ECO CLEAR TANK- Internal materials

- The state of the art facilities for PE coating
- Eco Friendly product
- WRAS approved Special PE
- Long life time(Durability)
 - Reinforced for anti corrosion, Adhesion by new technologies
 - Anti corrosion caused by Chlorine gas
 - Positive affection with a water tank life
 - Low managing cost
 - Keep clean water



ECOCLEAR TANK COMPONENTS

GRP PANEL, BASE FRAME AND ACCESSORIES



GRP PANEL
1000×1000
1000×1500
1000×2000



**EXTERNAL LADDER
EXTENSION JOINT**
(3.5M/4M/4.5M/5M)



ANCHOR BRACKET



EXTERNAL LADDER
(1.5M/2M/3M/3.5M)



**EXTERNAL
LADDER BRACKET**



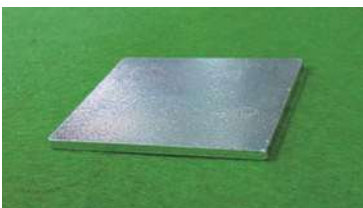
**EXTERNAL
FLANGE BAR**
(450/950/1200
1450/1950)



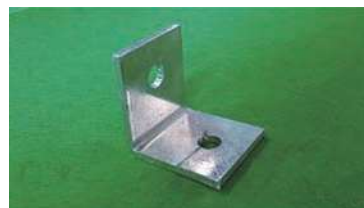
EXTERNAL FLAT BAR
(450 / 950)



C CHANNEL



LINER
(5070)



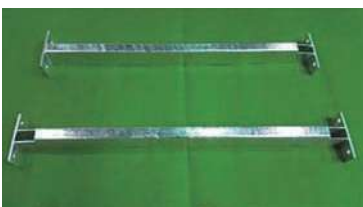
**BASE FRAME
BRACKET**
(7575z)



CROSS PLATE
(2 & 4 HOLES)



**BASE FRAME
BRACKET**
(240z)



SUB FRAME
(563/525/990/957
994/1026/1063)

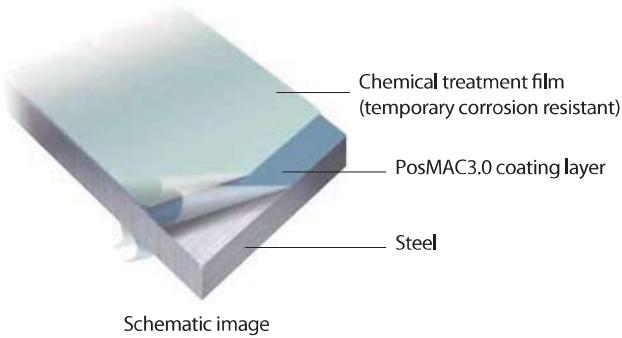


**BASE FRAME
(ANGLE)**

What is PosMAC® 3.0?

PosMAC3.0(POSCO Magnesium Aluminium alloy Coating product) is a ternary alloy coated steel(Zn- 3%Mg- 2.5%Al) with high corrosion resistance developed with POSCO's own technology. PosMAC® 3.0 is the registered trademark of POSCO.

Product configuration



Product characteristics

PosMAC3.0 is a corrosion resistant products that is 5 to 10 times stronger resistance than that of a normal hot-dip galvanized steel sheet(GI, GI(H)) with the same coating weight. PosMAC3.0 has an excellent cross-section corrosion resistance; normal thick plating products can be replaced with this product.

The same processing, assembly and painting process can be applied to PosMAC3.0 as one would apply to GI.

Product characteristics comparison

PosMAC3.0 is superior to GI in corrosion resistance on flat, machined, cross-section parts and is superior to galvalume in cross-section corrosion resistance.

Quality items		PosMAC3.0	GI	Galvalume
Hardness(Hv) of coating layer		110~130	60~80	80~100
Friction characteristics		◎	×	△
Corrosion resistance	Flat sheet	◎	△	◎
	Bending	◎	△	△
	Cup	◎	△	◎
	Cross-section	◎	△	×
Chemical resistance		◎	△	△
Weldability		◎	◎	◎

Corrosion resistance of PosMAC® 3.0

Weathering test on cross-section part (Korea conformity laboratories)

- Corrosion resistance in cross-section parts of PosMAC3.0, is superior to that of GI(H) and galvalume.
- PosMAC3.0 also gets red-rust in cross-section parts when initially exposed outdoors. However as the time goes by, the corrosion(red-rust) area of PosMAC3.0 tends to decrease through the formation of its distinctive oxide-based material(simonkollite).
- If the thickness of PosMAC3.0 is more than 1.6t, we recommend post-treatment(catalog 19p, 22p), because it is not fully covered by simonkollite after 1 year. And when the thickness of PosMAC3.0 is less than 1.6t and cross-section parts is clean without red-rust at initial construction, it is recommended to carry out post-treatment by the option of the customers.



Outdoor exposure test

Sample	Thickness	Coating weight (g/m ²)	Cross section image		
			After 6 months	After 1 year	After 2 years
PosMAC3.0	1.2	130			
	1.6	120			
	2.0	300			
Galvalume	1.6	120			
GI(H)	1.6	180			

Note Outdoor exposure test at seosan chemical industrial complex(Oct. '12 ~ Oct. '14, Korea conformity laboratories)

POSMAC

Comparison to galvanized(GI(H)) / Galvalume in corrosion resistance on flat surfaces(SST)

SST	GI(H)	Galvalume	PosMAC3.0	
	The coating weight on both sides	600g/m ²	100g/m ²	200g/m ²
480Hr				
720Hr				
1440Hr				
2400Hr				

PosMAC3.0 shows 5 to 10 times the corrosion resistance compared to galvanized steel sheet on flat surfaces.

In addition, PosMAC3.0 shows equal or greater corrosion resistance than Galvalume on flat surfaces.

Test method :
Salt Spray Test (SST),
[ISO 9227, JIS Z2371, ASTM B117] 5%NaCl, 35°C

Comparison to galvanized(GI(H)) / Galvalume in corrosion resistance on flat surfaces(CCT)

PosMAC3.0 shows 5 to 10 times the corrosion resistance compared to galvanized steel sheet on flat surfaces. In addition, PosMAC3.0 shows equal or greater corrosion resistance than galvalume on flat surfaces.

CCT	GI(H)				Galvalume	PosMAC3.0		
	The coating weight on both sides	120g/m ²	200g/m ²	300g/m ²		600g/m ²	100g/m ²	140g/m ²
10 cycle (80Hr)								
70 cycle (560Hr)								
120 cycle (960Hr)								

Test method: Cyclic Corrosion Test (CCT),
[ISO 14993] 1Cycle : Salt Spray 2Hr(5%NaCl, 35%) → Dry 4Hr(25%RH, 60°C) → Wet 2Hr(95%RH, 50°C)

PosMAC® 3.0's corrosion resistance on flat sheets compared to batch plated GI

(Korea Testing & Research Institute : Test No. TBO-000048)
 PosMAC3.0 shows 5~10 times corrosion resistance to that of batch plated GI sheet.



SST	PosMAC3.0		Batch plated GI	SST	PosMAC3.0		Batch plated GI
	60g/m ²	300g/m ²	550g/m ²		Coating weight	60g/m ²	300g/m ²
480 Hr				1200 Hr			
720 Hr				2400 Hr			

Test method : Salt Spray Test (SST), [ISO 9227, JIS Z2371, ASTM B117] 5%NaCl, 35°C

PE applied with POSMAC

POSMAC that has a fantastic anti corrosion effect and ECOCLEAR's new technology makes the best water tank. There is a new accessories like a flange bar, internal bracket. Better than STS materials that a rust happens soon after installation.



INTERNAL BRACKET 1760



CROSS PLATE(2 HOLES)



FLAT BAR 450/880/950



INTERNAL BRACKET 9090



INTERNAL BRACKET 17160



CROSS PLATE(4 HOLES)



FLANGE BAR 450/850/950/1200

SECTIONAL GRP WATER TANK INSTALLATION AND CAUTION

Installation scope

● Base Concrete

- 1) Customers are requested to make base concrete according to the designed specifications and the strength of the site.
- 2) Anchor bolts are to be fixed by our agents.
- 3) The required strength of the base concrete must be at least 180Kg/cm².
- 4) The thickness of mortar on the base concrete must not exceed 20mm.

● The Extent of Installation Work

- 1) If the customer designates the size of sockets for plumbing, our agents will install the sockets.
- 2) After the sockets are in place, the plumbing and heat insulation must be done by customer.

Caution

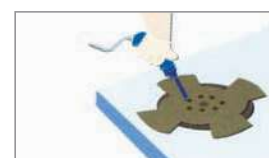
● Transportation

Do not place heavy loads or force on the panels during the transportation. Those parts touched with rope or other cargo must be cushioned.



● Pipe Installation

- 1) Be careful not to put any heavy weight on the pipes connected to the fitting.
- 2) Pipe installation must be started from the water tank side and be careful not to put unbalanced weight on the fitting.
- 3) Take precautions to avoid fire or other occurrences / accidents while welding.



● Maintenance

- 1) If it is not used for a long time, be sure to drain the water from the tank.
- 2) As the tank is a reservoir of water for consumption by people, regular inspection should be done for safety (more than twice a year)

