



DAEWOO CONBIL Co., Ltd.

Office : 1-305, 124 Bukbyeonjung-ro, Gimpo-si,
Gyeonggi-do, Korea
Tel : +82 31 987 7220 Fax : +82 31 982 1859
Mobil : +82 10 6801 7225

Factory : 99, Saemangeumbuk-ro, Gunsan-si,
Jeollabuk-do, Korea
Tel : +82 63 467 6655 Fax : +82 63 467 6644

E-mail : grplanks@gmail.com dotanks@naver.com

www.dotank.kr

DAEWOO CONBIL

GRP Sectional Panel Water Tank



WRAS
APPROVED
PRODUCT

DAEWOO CONBIL



DAEWOO CONBIL

CEO Message

We are truly appreciated to your interested in DAEWOO CONBIL.
We are a dedicated manufacturer of Construction and Building materials in South Korea.
Especially, we produce and provide the GRP sectional water tank, Steel water tank,
PE lining, artificial stone, underground electric joint box, bath tube, bath ceiling panel
to the customer satisfaction.

As an the front runner of construction and building materials, we creates the best qualified
products based on the newest facilities and a strict quality control system.
We have never compromised on the quality and the services provided
to the global customer. We believe in keeping the customers happy and providing them
with the best products at a reasonable cost.
All our staffs who will support you with their best efforts by keeping in constant touch
with your company and informing about the market requirements.
We look forward to a wonderful relationship together and success for all concerned.

Thank you,

Sincerely
DAEWOO CONBIL Co., Ltd.



Test for 1m x 1m x 4mH

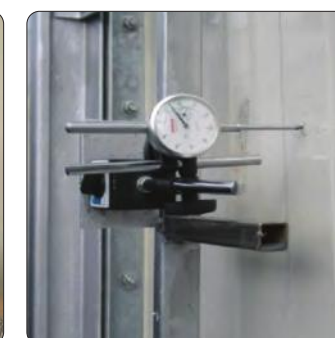
Physical property

DAEWOO CONBIL panel and reinforced parts
confirmed by a stric quality standard

ITEM	VALUE
Tensile strength	99.5MPa
Flexural Strength	165MPa
Flexural Modulus of Elasticity	13800MPa
Barcol Hardness	70
Absorption Rate	0.01%
Glass Fiber Content	32.1%
Odor & Taste	No Defects
Turbidity	Below 0.5 degree
Color	Below 1 degree
Light Transmission	Nil
Heavy Metals	Not Detected
Consumption of KMnO4	0.3mg/L
pH(20°C)	6.9
Phenol	Not Detected



Test for physical property



Test for Panel Transformation



Test for Hydraulic Pressure



Process of erection DAEWOO CONBIL GRP sectional water tank



Charge SMC sheet on the mould



Molded by hot hydraulic press



Inspect GRP panel



Drill on the GRP panel



Concrete foundation for the erection of water tank



Assemble bottom panel



Erect wall and partition panel



Assemble roof panel and manhole



Delivered high quality products to global customers

It is the time for you enjoy DAEWOO CONBIL water tank with best Quality and leading Technology.



Tank Size 6m x 6m x 2mH : 72 Ton



Tank Size 16m x 17m x 4mH : 1088 Ton



Tank Size 7m x 8m x 3mH : 168 Ton



Tank Size 7m x 9m x 2mH : 126 Ton



Tank Size 9m x 25m x 4mH : 900 Ton



Tank Size 6m x (3+3)m x 2mH : 72 Ton

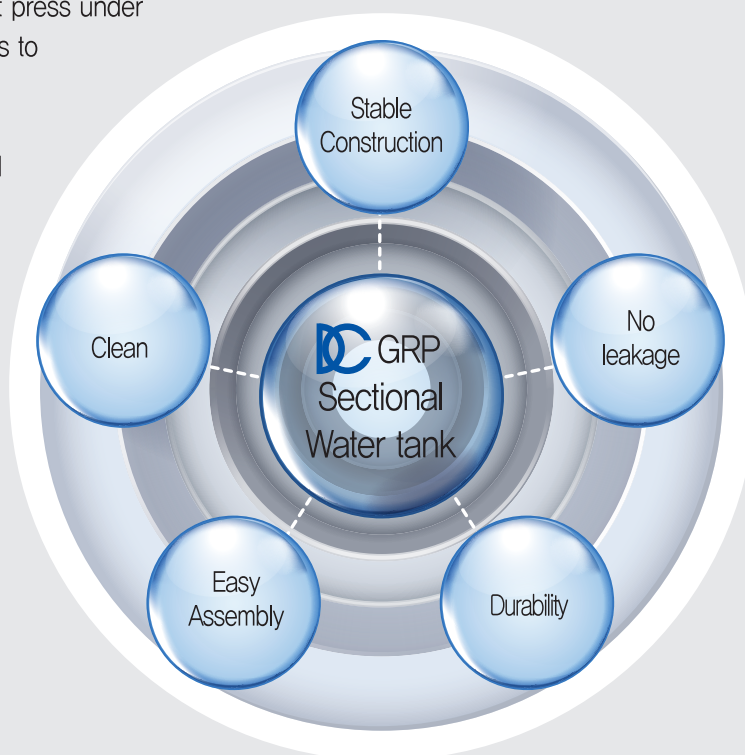


What is DAEWOO CONBIL GRP Water Tank?

GRP Sectional Panel Tanks are constructed of panels made from SMC(Sheet Molding Compound) by hydraulic hot press under high temperature (150°C) and pressure conditions to maintain the best endurance.

Using stainless steel for the interior structure and plated steel for the exterior, the panel exhibits excellent resistance to erosion.

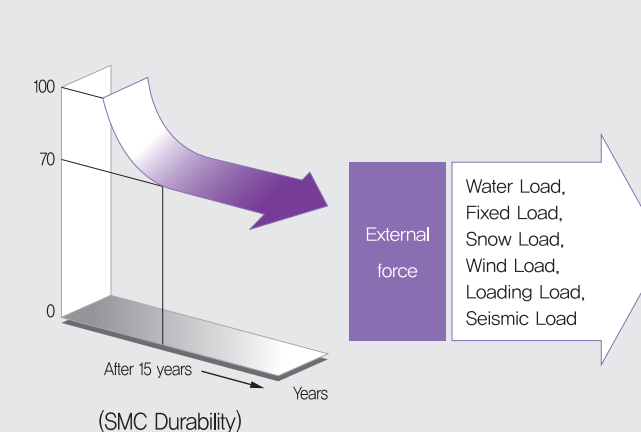
Easy installation with on-site bolt assembly and Tank shape and volume can be freely designed with no restrictions based on site location, weather or climate.



Structural Analysis of DAEWOO CONBIL GRP Panel

DAEWOO CONBIL GRP water tanks are designed to be the safest panels through optimized design.

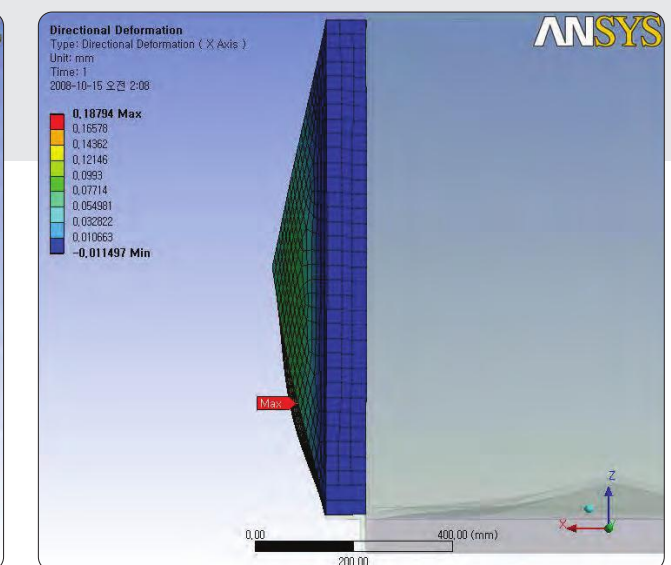
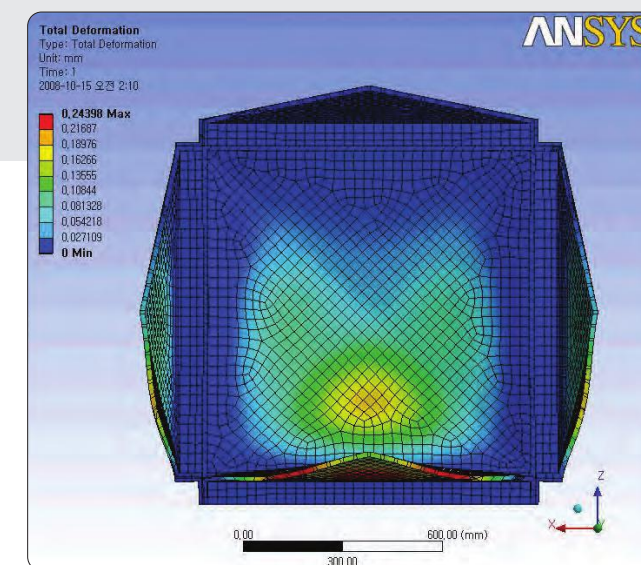
If the panels are reliable, the cost of reinforcement can be reduced and the best water tanks can be made at the most economic cost.



Design Basis : External force < Maximum feature / Safety Factor

Item	Design Condition
Seismic load	horizontal Seismic $K_h = 2/3$ Vertical $K_v = 1/3$ Designed bases on $K_h = 1/3G$, horizontal seismic load, Water Level [Height in Meters] x 0.1KGF/cm ² [0.01MPa]
Hydrostatic Pressure	Designed to stand against hydrostatic pressure enough The max. change of side wall is less than 1.0% of total height left in Water for 48 hours.
Snow Load	60 kgf/m ² [at the base of 30cm of snow depth] Designed to stand under 200kg/m ² enough
Wind Load	Wind Load – 255 kgf/m ² [2.55 x 10 ⁻³ Mpa] Designed to stand under max. 60m/sec even in case tank dose not include water.
Illumination	Illumination – Under 0.1%
Water Temperature	Under 30°C (normal) / Under 50°C (maximum) (Special making in case of thermal spring)

Structural Design of wall panel (1m X1m)



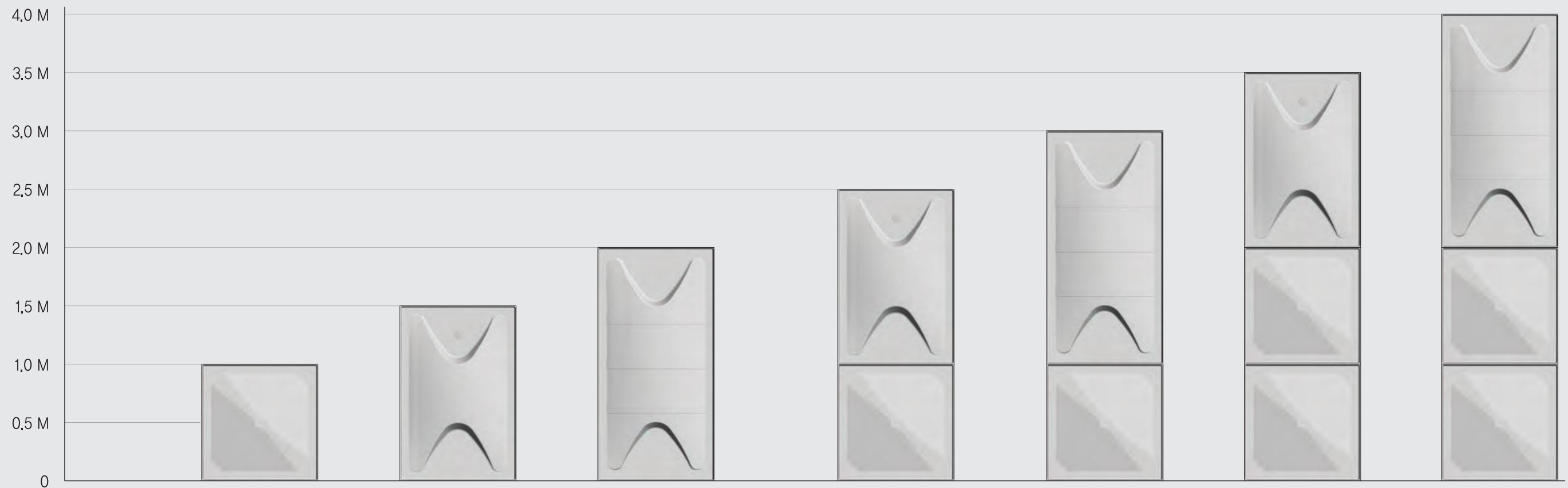
COMPARISON : DAEWOO CONBIL GRP panel type vs Other types

	Water quality	Water tightness	Durability	Transportation	Maintenance	Anti-corrosion	Installation
DAEWOO CONBIL GRP Tank	◎	◎	○	◎	◎	◎	◎
Concrete Tank	X	△	△	X	X	◎	△
Steel Tank	△	◎	○	△	X	X	X
Stainless Steel Tank	◎	◎	○	△	△	△	X
GRP Hand Lay-up tank	△	◎	○	X	△	◎	○

◎ : Very good ○ : Good △ : Normal X : Poor

※ GRP Panels are suitable to assemble the roof panel of stainless steel tank to avoid the rust by high concentration of chlorine contents

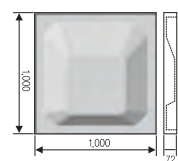
Various Shape and Size of DAEWOO CONBIL GRP Panel



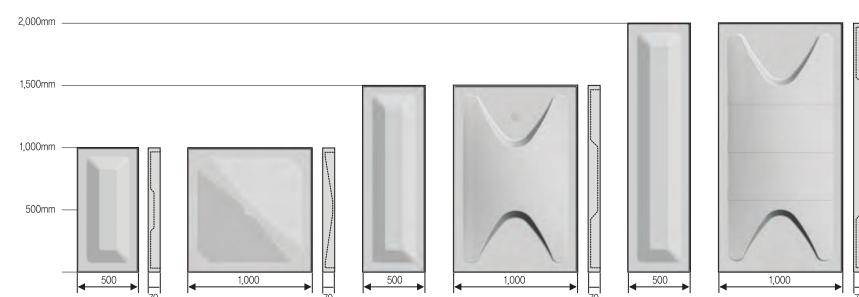
● Own designed panel

DAEWOO CONBIL produces exclusive panels and providing such as partition, manhole, flange and drain by the purpose.

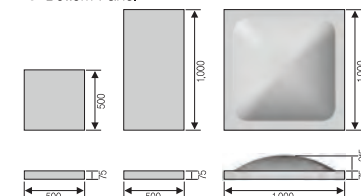
● Exclusive Panel for connecting Flange Development of Exclusive Panel for Flange in Korea.



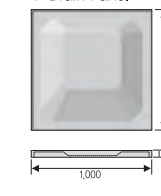
● Various design for wall Panel



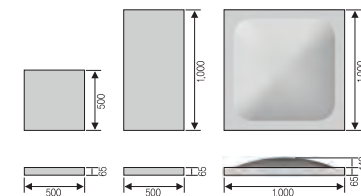
● Bottom Panel



● Drain Panel



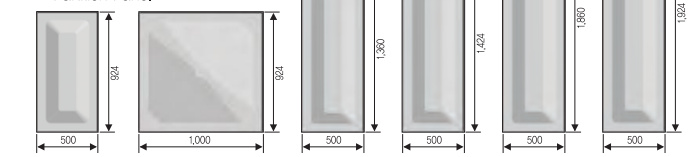
● Roof Panel



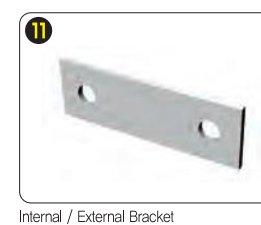
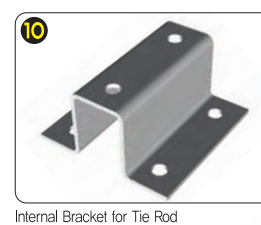
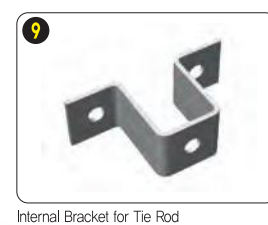
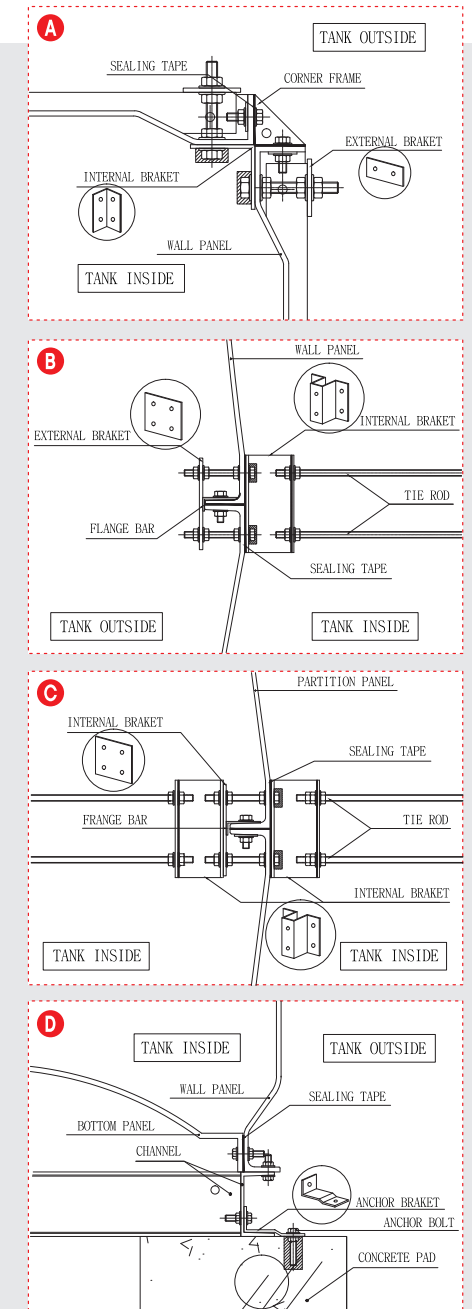
● Manhole Panel



● Partition Panel



GRP water tank Internal reinforcement structure



Hygienic Panel

DAEWOO CONBIL panel which is possible to make the GRP panels in a variety of colours. In most cases, however, this type of tank is installed in the open, exposed to direct sunlight. If the GRP panels are translucent, the growth of algae and other micro-organisms would be accelerated. After extensive testing and research, DAEWOO CONBIL has adopted panel to minimize this problem, completely opaque and does not permit the passage of any light through it. A typical problem with steel tanks has always been the high thermal conductivity and expansion of coefficient of steel. These characteristics can cause loosening of the panel connecting bolts in areas of wide temperature change



Cracked surface for Concrete water tank after 3 years installation

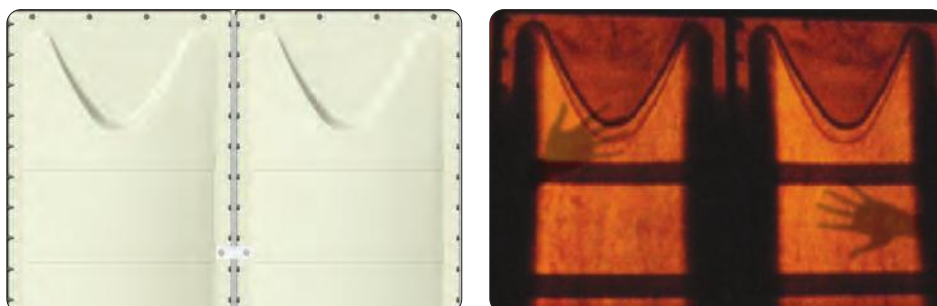


Rusted steel for STS Water tank after 3 years installation



Inside state of DAEWOO CONBIL GRP Water tank after 3 years installation

Blocked penetration of light to prevent algae growth



Various design by water tank capacity

Various sized panels can make the below tanks that utilize the most horizontal & perpendicular space and also can be erected from small capacity tank to huge tank.



1,000 Liter for home



90,000 Liter for industry

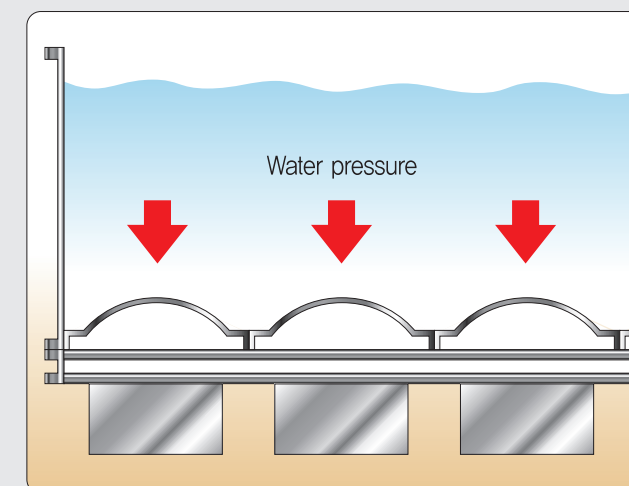


1,080,000 Liter big project

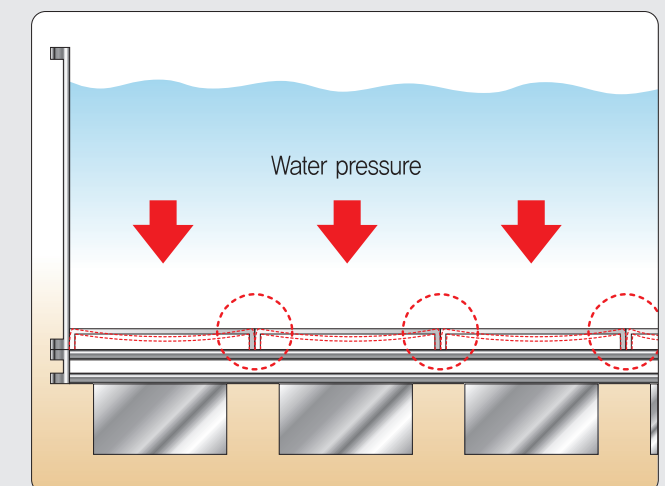


Safety of water pressure

The convex bottom panel can be the water pressure created by filling the tank seals the joints preventing leakage. In other type tanks, water pressure can loosen the joints breaking the seal, and allowing the stored water to leak out.



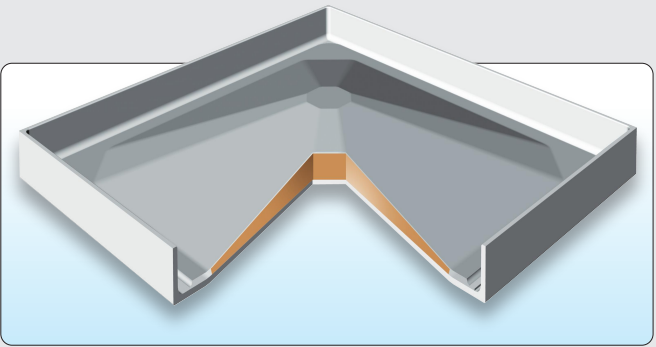
DAEWOO CONBIL convex bottom panel



General bottom panel

Excellent Insulation

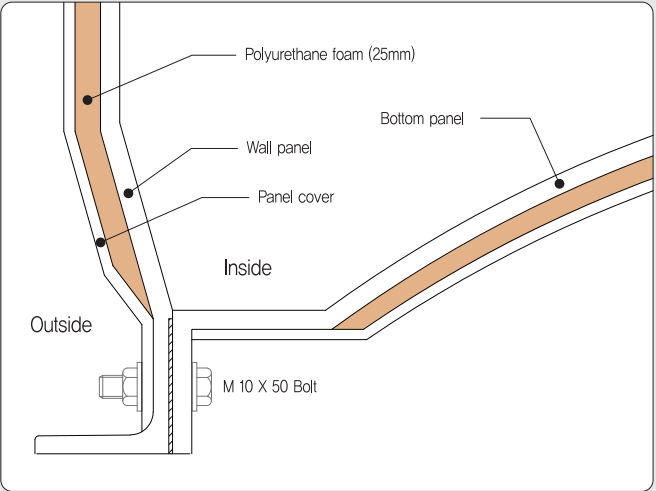
The heat insulation panel with 3 layers structure improves heat insulation effect, protects water condensation on the outside of the tank and minimizes temperature variation of the stored water.



Comparison of Thermal Conductivity

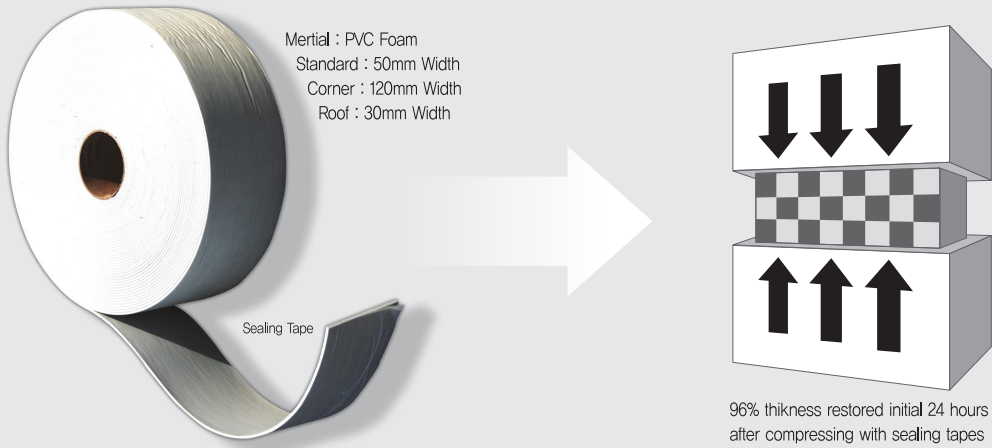
Tank type	Thermal Conductivity Kcal / m.hr°C (j / m hr°C)
STEEL	37.0 (1,55 X 100,000)
GRP (Non-insulated)	0.15 (630)
GRP (Insulated)	0.02 (84)

Tank type	Coefficient of Overall Thermal Transmission Kcal / m².hr°C (j / m² hr°C)	
	Air - Panel - Air	Water - Panel - Air
STEEL	14.3 (59.9)	24 (100)
GRP (Non-insulated)	3.0 (13)	5 (21)
GRP (Insulated)	0.9 (3.8)	1 (4)



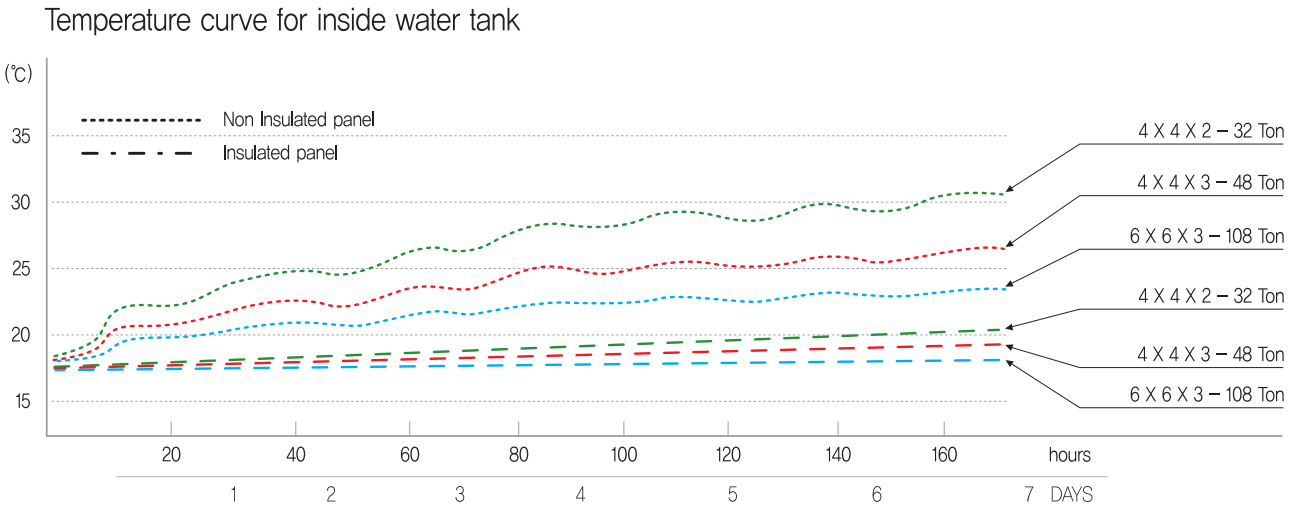
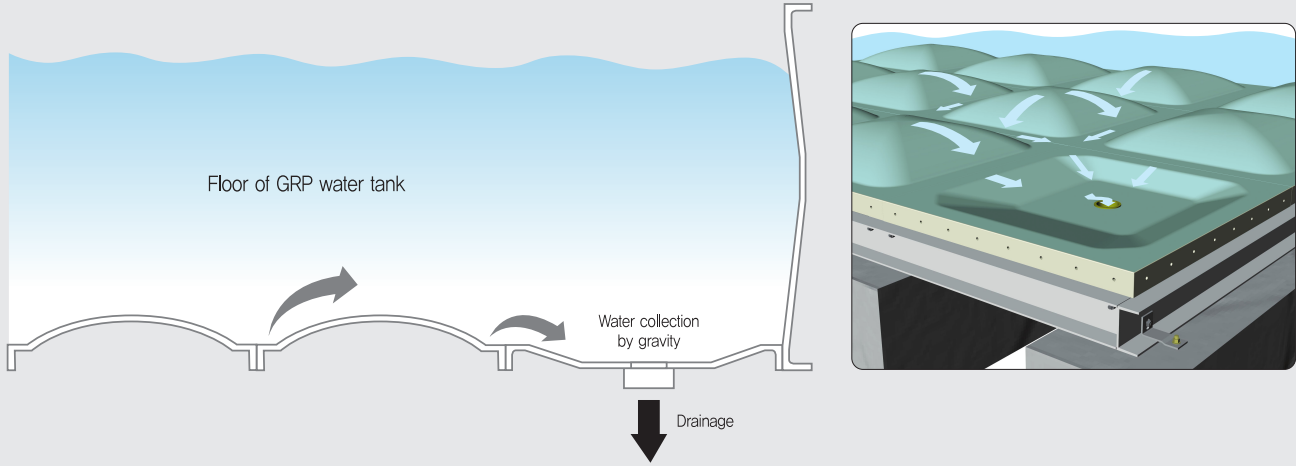
Water Tightness

The joints are sealed with a special sealing tape for GRP sectional panel water tank with long experience and technology. 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 water leakage of the tank.



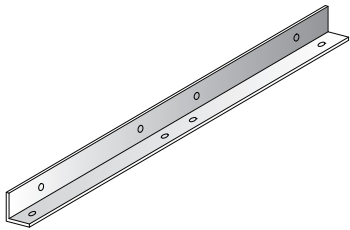
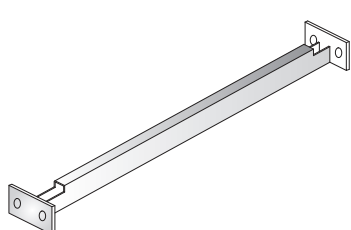
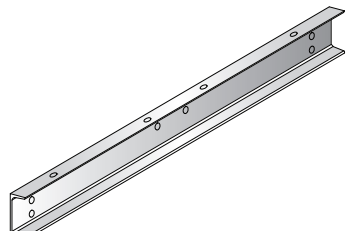
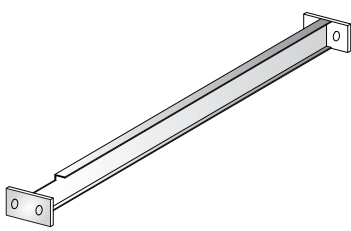
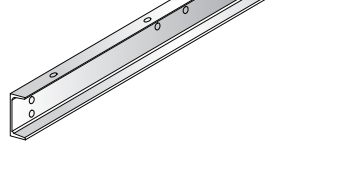

Complete Drainage

The convex bottom panels with a concave drain panel system make sure complete and fast drainage. It's very useful to take a maintenance inside of water tank.



Specification of steel skid

1. Durability reinforcement parts by optimized structural designed
2. Providing all accessories to able erect water tank at construction site
3. Safety construct by bolt assembly without welding and make a short construction period and reduce the cost

Tank Height	Steel skid A (Main)		Steel skid B (Sub)	
Height 1m ~ 2,5m	angle 75 X 75 X 6mm		channel 75 X 40 X 3mm	
Height 3m ~ 4m	channel 125 X 65 X 6,5 X 8mm		channel 75 X 40 X 6mm	
Height 4,5m ~ 5m	channel 150 X 75 X 8 X 10mm		channel 100 X 50 X 6mm	

※ The above list is recommendable standard. It can be redesigned by customer's requirement and condition of construction site.

Specification of connection



1. Specification of connection

- Able to supply all installation accessories including connection by customer's requirement
- Customer should inform the specification of inlet, outlet, drain and overflow size.
- The below list is for DAEWOO CONBIL standard connection for customer's reference

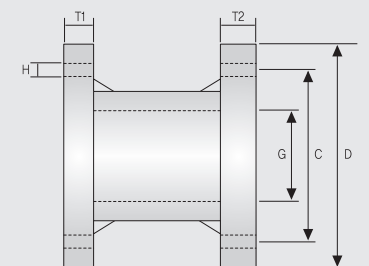
Standard Connection Size

Water tank capacity(m³)	Inlet	Outlet	Overflow	Drain
1m³ ~ 10m³	25A	50A	50A	25A
11m³ ~ 20m³	40A	50A	50A	40A
21m³ ~ 50m³	50A	65A	65A	40A
51m³ ~ 100m³	65A	80A	80A	50A
101m³ ~ 200m³	80A	100A	100A	50A
201m³ ~ 500m³	100A	125A	125A	80A
501m³ ~	125A	150A	150A	80A

2. Connection line-up

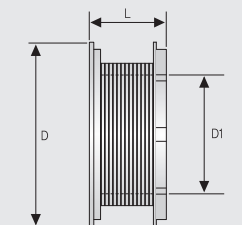
◆ Flange Type (PVC)

mm / inch	D	T1	T2	G	L	C	Hole
65A (2½)	175	20	25	77	140	140	4
80A (3)	185	20	25	90	140	150	8
100A (4)	210	20	25	115	140	175	8
125A (5)	250	20	25	140	140	210	8
150A (6)	280	20	25	170	140	240	8
200A (8)	330	22	25	220	150	290	12
250A (10)	400	24	25	270	170	355	12
300A (12)	445	24	25	320	170	400	16



◆ Socket Type (Brass)

mm / inch	D	D1	L	T
15A	43	19	26	1,5
20A	46	25	30	1,5
25A (1)	53	31	32	1,5
32A (1½)	66	39	35	1,5
40A (1½)	73	45	36	1,5
50A (2)	85	57	40	1,5
65A (2½)	111	72	46	2



Caution for the connection

Install a prop while installing piping and take care not to put an excessive load
Install pipes on the site where the tank is located and take care not to put on the biased load

◆ Steel skid assembly by Angle type

	Steel skid A	Steel skid B
1M	1140L	990L
1,5M	1640L	957L / 527L
2M	2140L	957L / 1027L
2,5M	1570L / 1070R	957L / 563L / 957L
3M	1570L / 1570R	957L / 1063L / 957L
3,5M	1570L / 2070R	957L / 994L / 563L / 957L
4M	2070L / 2070R	957L / 994L / 1063L / 957L
5M	2070L / 1000L / 2070L	957L / 994L / 1063L / 994L / 957L

◆ Steel skid assembly by Channel type

	Steel skid A	Steel skid B
1M	1120L	990L
1,5M	1620L	962L / 527L
2M	2120L	962L / 1021L
2,5M	1560L / 1060R	962L / 553L / 962L
3M	1560L / 1560R	962L / 1053L / 962L
3,5M	1560L / 2060R	962L / 994L / 553L / 962L
4M	2060L / 2060R	962L / 994L / 1053L / 962L
5M	2060L / 1000L / 2060L	962L / 994L / 1053L / 994L / 962L