

. Mechanical Design Limitations

- API 650 Bottom Course Max. Cost
- Tank Pile
- .
- 가 Tank
- Unavailable(Dead) Stock
- Tank Pump Transfer System
- FRT Floating Roof Cost
- Mixing
- .
- .
- Fixed Roof Tank Vapor Space
- 가 Tank
- Overturning
- Floating Roof Maintenance (가 Roof Travelling Time)

2) Tank

- (1) Nominal Capacity()
- Round Number Tank

- , Tank .
- (2) Gross Capacity()

- , $V = (\pi/4) D^2 h$.
- (3) Storage Capacity()
- Tank .

- (4) Operating(or Working) Capacity()

Tank Dead Stock(Unavailable Inventory)

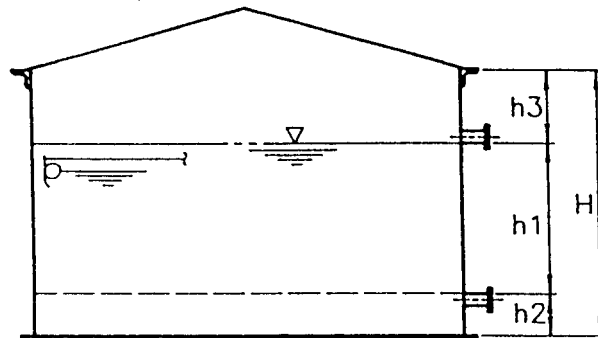
Dead Stock Level Shell Outlet Nozzle

Level Sloshing , FRT Roof Support 가 Resting

Weather Shield , Floating Roof Secondary Seal
Top Angle

(5) Fixed Roof Tank Operating Capacity

가. Operating Capacity = $(\pi/4)D^2h_1, \{h_1 = H-(h_2+h_3)\}$



. h_2 : Outlet Nozzle Inside Dia. Topmost Elevation

. h_3 : 가

- 가 Max. Freeboard Level

- Overflow Nozzle Inside Diameter Lowest Point

- Air foam Chamber Inside Diameter Lowest Point 300mm,
1000mm (146)

- 가 Level

146

Tank

5/100

10/100

(6) Internal Floating Roof Tank Operating Capacity

가. Operating Capacity = $(\pi/4)D^2h_1, \{h_1 = H-(h_2+h_3)\}$

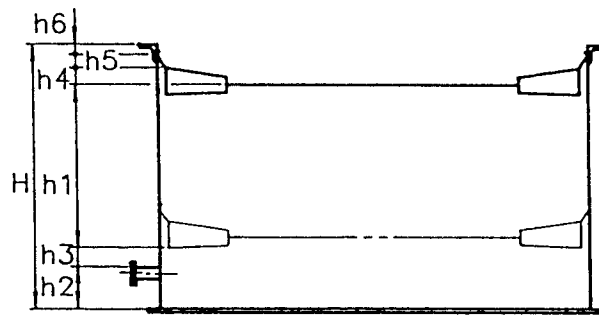
. h_3 :

- Circulation Vent Overflow Nozzle Inside Dia. Lowest Point

- Internal Floating Roof Min. Height H_f H_3

h_2 : Outlet Nozzle Inside Dia. Topmost Elevation

(7) External Floating Roof Tank Operating Capacity



가. Operating Capacity $= (\pi/4)D^2h_1$

$$\{h_1 = H - (h_2 + h_3 + h_4 + h_5 + h_6)\}$$

. h_2 : Outlet Nozzle Inside Dia. Topmost Elevation

. h_3 : Pontoon Bottom Edge Outlet Nozzle Inside Dia. Top Most Point Seal Outlet Opening Information Min. 150mm

* , Manhole Outlet Nozzle $(h_2 + h_3)$ Seal Manhole Opening

. h_4 : Deck Plate (Deck Plate) Pontoon Cover Plate Point Inform 610mm

. h_5 : h_4 Point Secondary Seal Weather Shield Inform. 610mm

. h_6 : h_5 Top Angle 150mm

2.

1.0 가 1.0
1.0

LPG	0.5 ~ 0.6	Kerosene	0.78 ~ 0.8
Naphtha	0.65 ~ 0.76	Diesel	0.8 ~ 0.84
Gasoline	0.73 ~ 0.76	Heavy Oil	0.83 ~ 0.96
Jet	0.76 ~ 0.8		0.82 ~ 0.91

3.

Tank 가 가
가
가
Wax Coating 가 Coating

(: mpy)

	()	()
	0 ~ 0.125	0.6
	0 ~ 0.05	0.3
,	0.05 ~ 0.125	0.4
Gasoline	0.05 ~ 0.25	0.4

Tank Oil Sand .Cathodic
Protection 가
Mist, , Urethane Foam
Tank Foam Freon Gas 가
, Calcium Silicate 가
가 , Floating Roof Deck
Tank
가 Coating, Lining
Tank
Datasheet

4. Design Metal Temperature

API 650 Tank 200 (93.3)
 Appendix "M" Max. 500 (260)
 . API Design Tank 260 .
 Design Metal Temperature
 , 가 Tank 가 Cycle
 .
 :
 : , ,
 .

1) (200 < <500)
 KS API 가 260 (500)
 80 , Asphalt Molten Sulfur
 170

2)

Brittle Fracture

DMT(Design Metal Temperature)

- Shell Plate
 - Shell Reinforcing Plate
 - Shell Insert Plate
 - Shell Bottom Plate
 - Shell Manhole Nozzle Neck Plate
 - Shell Nozzle Plate Ring Flange API
- DMT 가 가 .

(1) Full Liquid

가 Design Metal Temp.
 가 Tank
 Tank
 , 8 가 .

(2) Empty
Tank

Tank

(3) Hydrostatic Test

5.

API 650 Appendix E, Seismic Design

6.

API 650 3.11 Wind Load on Tanks (Overturning Stability)