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Chris Haslego  
President  
Cheresources, Inc.

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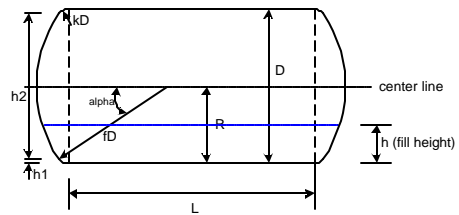
***Content Based  
Chemical Engineering***

**Tank Volume Calculations**  
Version 1.0

by Stephen M. Hall, PE  
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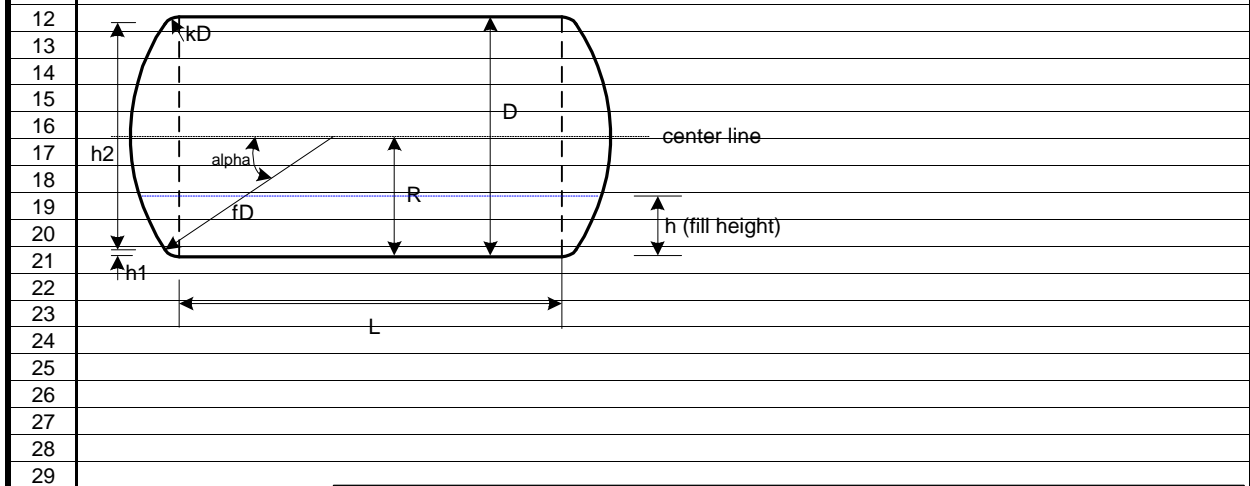
All cells are locked except user-defined data; unlock sheet from Tools menu (no password required)  
VIEW-COMMENTS to see some additional explanations.

DATA INPUT	
Project Data	
Prepared by	S. Hall
Date	27-Jan-04
<input type="radio"/> English <input type="radio"/> SI	
Client	Examples
W.O.	
Unit	One
Area	solvent Storage
General Data	
Project Description	Pilot Plant
Tank or Vessel Identification	T-101
Tank Parameters	
<b>Orientation</b>	<input type="radio"/> Vertical <input type="radio"/> Horizontal
<b>Shell</b>	<input type="radio"/> Cylindrical <input type="radio"/> Elliptical
Shell Length, tangent-to-tangent, L	48.0 inches
Shell Inside Diameter, D	140.0 inches
<b>Heads</b>	<input type="radio"/> Flat <input type="radio"/> Ellipsoidal <input type="radio"/> Spherical <input type="radio"/> Torispherical <input type="radio"/> Conical <input type="radio"/> Guppy
Note: both heads are identical Standard ASME F&D heads are $f=1.0$ and $k=0.06$	
Head Extension (tangent-to-end)	23.7 inches
Torispherical Parameters, f (dish)	1.0
k (knuckle)	0.06
Fill Height, h	135.4 inches
Calculation Results	
Volume of Tank, completely full	5123.1 gallons
Volume to Fill Height	5084.6 gallons



				TANK VOLUME CALCULATIONS			
				CLIENT		TANK ID	
				Examples		T-101	
REV	PREPARED BY	DATE	APPROVAL	W.O.		REQUISITION NO.	SPECIFICATION NO.
0	S. Hall	27-Jan-2004					
1							
2				UNIT	AREA	PROCURED BY	INSTALLED BY
				One	Solvent Storage		

1	<b>Shell</b>	Shell Length, tangent-to-tangent, L	48.0 inches
2		Shell Inside Diameter, D	140.0 inches
3			
4	<b>Heads</b>	Head Extension (tangent-to-end), a	23.7 inches
5		Torispherical Parameters, f (dish)	1
6		k (knuckle)	0.06
7	<b>Geometry</b>	The tank orientation is horizontal and the shell is cylindrical.	
8		The heads are torispherical (F&D); both heads are the same.	
9		Overall tank length	95.4 inches
10	<b>Volume</b>	Volume of tank completely full	5,123.1 gallons
11			



Fill %	Gallons
100%	5,123.1
95%	5,049.1
90%	4,904.9
85%	4,711.4
80%	4,477.2
75%	4,209.2
70%	3,913.1
65%	3,594.7
60%	3,259.6
55%	2,913.3
50%	2,561.5
45%	2,209.7
40%	1,863.4
35%	1,528.3
30%	1,209.9
25%	913.8
20%	645.8
15%	411.7
10%	218.1
5%	73.9
0%	0.0

Tank Contents versus Level

