

Coffee Mug Design

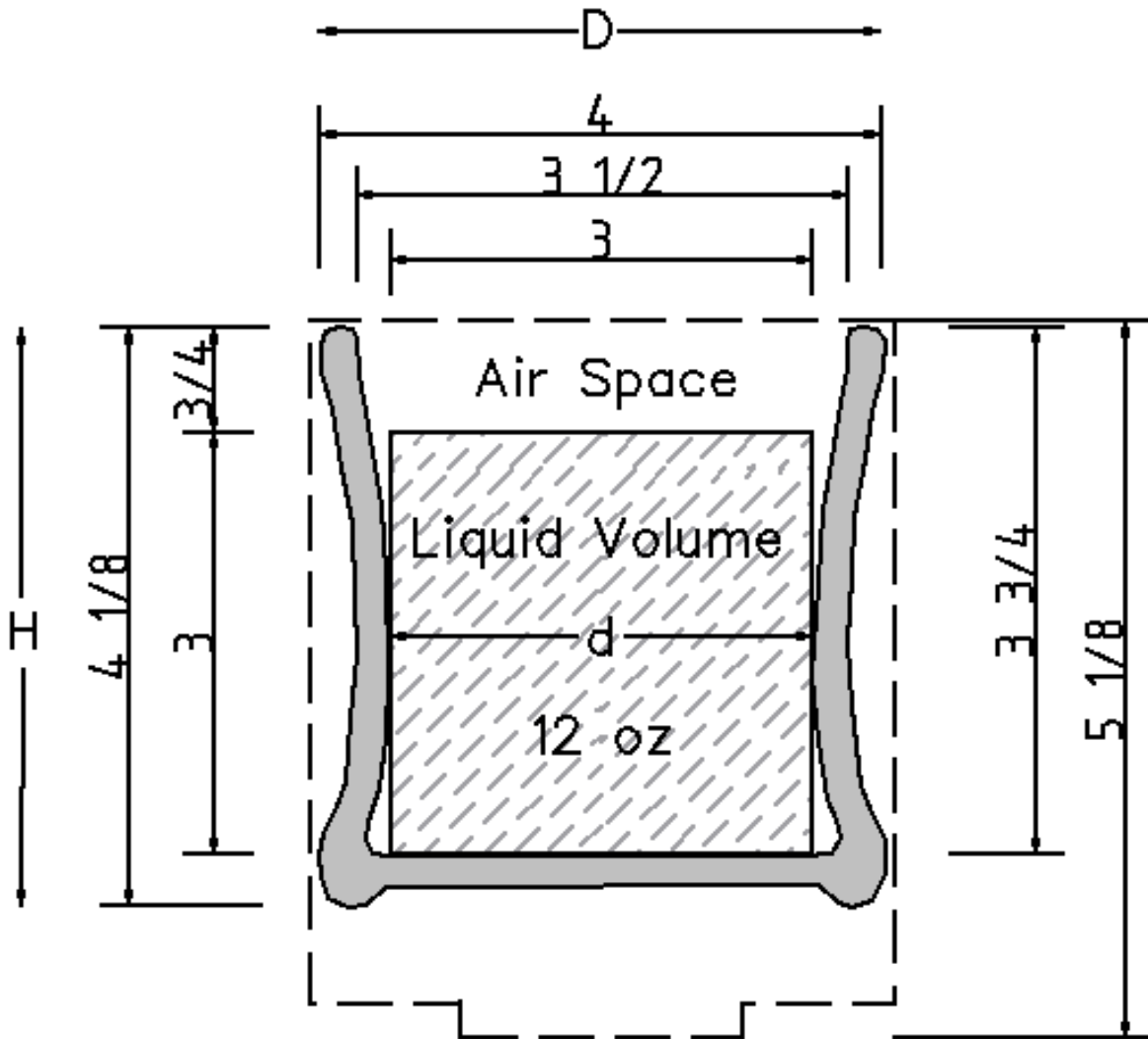
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Basic equation	$V = \pi r^2 h$		
Constraints	$d = 2r = h$	$r = h/2$	
New equation	$V = \pi h^3/4$	$h = (4V/\pi)^{1/3}$	
Constants	$1 \text{ gal} = 231 \text{ in}^3$	$1 \text{ gal} = 128 \text{ oz}$	$1 \text{ oz} = 1.805 \text{ in}^3$
Final equation	$d = h = 1.32V^{1/3}$		

### Coffee Mug Design

**$V = 12$  ounces,  $d = 3.02$  inches, Wall thickness =  $\frac{1}{4}$  inches**



V / ounce	d / inch	D / inch	H / inch
8	2.64 $\approx$ 2 5/8	3 5/8	3 3/4
12	3.02 $\approx$ 3	4	4 1/8
16	3.33 $\approx$ 3 5/16	4 5/16	4 7/16
20	3.58 $\approx$ 3 9/16	4 9/16	4 11/16
24	3.81 $\approx$ 3 13/16	4 13/16	4 15/16