**Capacity Formula**

Annular capacity between casing or hole and drill pipe, tubing or casing

Case : hole size (Dh) = 12.25 inch  
 Drill pipe OD (Dp) = 5.0 inch

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**Annular Capacity between casing and multiple strings of tubing**

a. Annular capacity between casing and multiple strings of tubing (bbl/ft)

Case : Using two strings of tubing of same size ;  
 Dh = casing — 7.O inch — 29 lb/ft ID = 6.184 inch

T1 = tubing No.1 — 2-3/8 inch OD = 2.375 inch

T2 = tubing No.2 — 2-3/8 inch OD = 2.375 inch

b. Annular capacity between casing and multiple strings of tubing (ft/bbl)

Case : Using two strings of tubing of same size ;

Dh = casing — 7.0 inch — 29 lb/ft ID = 6.184 inch  
 T1 = tubing No.1 — 2-3/8 inch OD = 2.375 inch  
 T2 = tubing No.2 — 2-3/8 inch OD = 2.375 inch

c. Annular Capacity between casing and multiple strings of tubing (gal/ft)

Case : Using two tubing strings of different size :  
 Dh = casing — 7.0 inch — 29 lb/ft ID = 6.184 inch  
 T1 = tubing No.1 — 2-3/8 inch OD = 2.375 inch  
 T2 = tubing No.2 — 3-1/2 inch OD = 3.5 inch

d. Annular capacity between casing and multiple strings of tubing (ft/gal)

Case : Using two tubing strings of different sizes :  
 Dh = casing — 7.0 inch — 29 lb/ft ID = 6.184 inch  
 T1 = tubing No.1 — 2-3/8 inch OD = 2.375 inch  
 T2 = tubing No.2 — 3-1/2 inch OD = 3.5 inch

e. Annular capacity between casing and multiple strings of tubing

(ft3/linft)

Case : Using three of tubing

Dh = casing – 9-5/8 inch ID = 8.681 inch

T1 = tubing no.1 – 3-1/2 inch OD = 3.5 inch  
 T2 = tubing no.2 – 3-1/2 inch OD = 3.5 inch  
 T3 = tubing no.3 – 3-1/2 inch OD = 3.5 inch

f. Annular capacity between casing and multiple strings of tubing

(linft/ft3)

Case : Using three strings tubing of same size :  
 Dh = casing — 9-5/8 inch — 47 lb/ft ID = 8.681 inch  
 T1 = tubing No.1 – 3-1/2 inch OD = 3.5 inch  
 T2 = tubing No.2 – 3-1/2 inch OD = 3.5 inch  
 T3 = tubing No.3 - 3-1/2 inch OD = 3.5 inch

**Capacity of tubular and open hole : drill pipè, drill collars, tubing,  
casing, hole, and any cylindrical object**

Case : Determine the capacity (bbl/ft) of a 12-1/4 inch hole :

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Case : Determine the capacity (gal/ft) of 8-1/2 inch hole :

Case : Determine the capacity (ft/gal) of 8-1/2 inch hole :

Case : Determine the capacity (ft3/linft) for a 6.0 inch hole :

Case : Determine the capacity (linft/ft3) for a 6.0 inch hole :

**Amount of cuttings drilled per foot of hole drilled**

a. BARRELS of cuttings drilled per foot of hole drilled :

Case : Determine the number of barrels of cuttings drilled for

One foot of 12-1/4 inch hole drilled with 20% (0.20)

porosity :

b. CUBIC FEET of cuttings drilled per foot of hole drilled :

Case : Determine the cubic feed of cuttings drilled for one foot

Of 12-1/4 inch hole with 20% (0.20) porosity :

c. Total solids generated :

Wcg = 350 Ch x L (l-P) SG

Where ;

Wcg = solids generated (pounds)

Ch = capacity of hole (bbl/ft)  
 L = footage drilled (ft)  
 SG = specific gravity of cuttings  
 P = porosity (%)

Case : Determine the total pounds óf solids generated in drilling  
 100 ft of a 12-1/4 inch hole (0.1458 bbl/ft).

Specific gravity of cuttings = 2.40 gr/cc.Porosity = 20% :

Wcg = 350 x 0.1458 x l00 (1 - 0.20) x 2.4

= 9797.26 pounds