MISCELLANEOUS FORMULAS

Round Tank ⇒ Gallons/Inch = 0.003402 x (Diameter in Inches)^2

Rectangular Tank ⇒ L x W x 0.6258 = Gallons/Inch

Cylindrical Tank on Its Side ⇒ $lh\sqrt{(0.017 \times d) + (1.7dh - h^2)} = in^3$

($in^3 \div 231$ = gallons)

Rod Content ⇒ 4.081 x (ID in Inches)^2 = Gallons/100 ft.

Rod Displacement ⇒ [4.081 x (OD in Inches)^2] – Rod Content = Gallons/ 100 ft.

Standard Calculations

Note: Dh = Diameter of hole, inches dp = Diameter of pipe, inches

Annular Volume ⇒ $\left(\frac{Dh^2 - dp^2}{24.52}\right) \times \text{Depth (ft.)} = \text{Gallons}$

Hole Volume/Pipe Capacity ⇒ $\left(\frac{Dh^2}{24.52}\right) \times \text{Depth (ft.)} = \text{Gallons}$

Annular Velocity (Air) ⇒ $\text{Cfm} \times \left(\frac{183.4}{Dh^2 - dp^2}\right) = \text{Ft./min}$

Annular Velocity (Fluid) ⇒ $\text{Pump Output (gal/min)} \times \left(\frac{24.52}{Dh^2 - dp^2}\right) = \text{Ft./min}$

Hydrostatic Pressure ⇒ $\text{Lbs./in}^2 = 0.052 \times \text{Mud Weight (lbs./gal)} \times \text{Depth (ft.)}$

Metric Calculations

Note: Dh = Diameter of hole, millimeters dp = Diameter of pipe, millimeters

Annular Volume ⇒ $\left(\frac{Dh^2 - dp^2}{1273}\right) \times \text{Depth (meters)} = \text{Liter/meter}$

Hole Volume/Pipe Capacity ⇒ $\left(\frac{Dh^2}{1273}\right) \times \text{Depth (meters)} = \text{Liter/meter}$

Annular Velocity (Air) ⇒ $\text{m}^3/\text{min} \times \left(\frac{1273000}{Dh^2 - dp^2}\right) = \text{Meters/min}$

Annular Velocity (Fluid) ⇒ $\text{Pump Output (Liters/min)} \times \left(\frac{1273}{Dh^2 - dp^2}\right) = \text{Meters/min}$

Hydrostatic Pressure ⇒ $\text{kPa} = 0.00981 \times \text{Mud Weight (kg/m}^3) \times \text{Depth (meters)}$