

Archie's Equation:

$$S_w = \sqrt[n]{(F \times R_w) / R_t}$$

where: F = formation factor = a / ϕ^m

R_w = formation water resistivity

and m = cementation exponent, laboratory determined

and n = saturation exponent, laboratory determined

and a = a constant, normally found to be 1.0

$$\text{then: } S_w = \sqrt[n]{(a \cdot R_w) / \phi^m \cdot R_t}$$