

# Marhoun (1980) oil correlations @model

Oil correlations based on Middle Eastern oil samples.

|                                       |       |         |           |                                                                                                                                                                                                                                                                   |
|---------------------------------------|-------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bubble point pressure                 | $p_b$ | psia    |           | $p_b = c_1 R_s^{c_2} \gamma_g^{c_3} \gamma_o^{c_4} T^{c_5}$<br>$c_1 = 5.38088 \cdot 10^{-3}, c_2 = 0.715082, c_3 = -1.877840, c_4 = 3.1437, c_5 = 1.32657$                                                                                                        |
| Saturated gas solubility              | $R_s$ | scf/stb | $p \ p_b$ | $R_s(p, T) = [c_1^{-1} p \gamma_g^{-c_3} \gamma_o^{-c_4} T^{-c_5}]^{1/c_2}$<br>$c_1 = 5.38088 \cdot 10^{-3}, c_2 = 0.715082, c_3 = -1.877840, c_4 = 3.1437, c_5 = 1.32657$                                                                                        |
| Saturated oil formation volume factor | $B_o$ | bbl/stb | $p \ p_b$ | $B_o(p, T) = c_1 + c_2 T + c_3 F + c_4 F^2, F = R_s^{c_5}(p, T) \gamma_g^{c_6} \gamma_o^{c_7}$<br>$c_1 = 0.497069, c_2 = 0.862963 \cdot 10^{-3}, c_3 = 0.182594 \cdot 10^{-2}, c_4 = 0.318099 \cdot 10^{-5}$<br>$c_5 = 0.742390, c_6 = 0.323294, c_7 = -1.202040$ |

where

|                |             |                               |
|----------------|-------------|-------------------------------|
| Location       | Middle East |                               |
| $p$            | psia        | Fluid pressure                |
| $T$            | °F          | Initial formation temperature |
| $\gamma_{API}$ | °API        | Oil API gravity               |
| $\gamma_o$     | frac        | Oil specific gravity          |
| $\gamma_g$     | frac        | Gas specific gravity          |
| $R_{sb}$       | scf/stb     | Maximum Gas Solubility        |

## See Also

Petroleum Industry / Upstream / Petroleum Engineering / Subsurface E&P Disciplines / Reservoir Engineering (RE) / PVT correlations / Oil correlations

## References

Al-Marhoun, Muhammad Ali. "PVT Correlations for Middle East Crude Oils." J Pet Technol 40 (1988): 650–666. doi: <https://doi.org/10.2118/13718-PA>

