Important Basics of Petrochemicals Formulas PDF

Formulas
Examples
with Units

List of 9
Important Basics of Petrochemicals Formulas

1) Aniline Point Formula

Evaluate Formula

Formula

$$AP = \frac{DI \cdot 100}{°API}$$

Example with Units

$$268.2927\,°F = \frac{110 \cdot 100}{41}$$

2) API Gravity Formula

Evaluate Formula

Formula

$$°API = \left(\frac{141.5}{SG}\right) - 131.5$$

Example

$$41.061 = \left(\frac{141.5}{0.82}\right) - 131.5$$

3) BMCI Number Formula

Evaluate Formula

Formula

$$BMCI = \left(\frac{48640}{T}\right) + \left(473.7 \cdot SG\right) - 456.8$$

Example with Units

$$109.7047 = \left(\frac{48640}{273.15\,K}\right) + \left(473.7 \cdot 0.82\right) - 456.8$$

4) Characterisation Factor Formula

Evaluate Formula

Formula

$$C_f = \frac{\left(T_{BP}\right)^{\frac{1}{3}}}{SG}$$

Example with Units

$$14.1119 = \frac{\left(1549.53\,°Ra\right)^{\frac{1}{3}}}{0.82}$$

5) Diesel Index Formula

Evaluate Formula

Formula

$$DI = °API \cdot \left(\frac{AP}{100}\right)$$

Example with Units

$$109.47 = 41 \cdot \left(\frac{267\,°F}{100}\right)$$

6) Melt Flow Index Formula

Evaluate Formula

Formula

$$MI = \frac{M_p}{10}$$

Example with Units

$$0.077 = \frac{0.77\,g}{10}$$

7) Molal Average Boiling Point Based on Characterisation Factor Formula

Evaluate Formula

Formula

$$T_{BP} = \left(C_f \cdot SG \right)^3$$

Example with Units

$$1549.5351\,°Ra = \left(12.55 \cdot 0.82 \right)^3$$

8) Saybolt Method Viscosity Formula

Evaluate Formula

Formula

$$v = \left(0.219 \cdot t \right) - \left(\frac{149.7}{t} \right)$$

Example with Units

$$6.5283\,cSt = \left(0.219 \cdot 45\,s \right) - \left(\frac{149.7}{45\,s} \right)$$

9) Viscosity Index Mixture Formula

Evaluate Formula

Formula

$$VI = \left(\frac{L - U}{L - H} \right) \cdot 100$$

Example with Units

$$99.588 = \left(\frac{711.24\,cSt - 310\,cSt}{711.24\,cSt - 308.34\,cSt} \right) \cdot 100$$

Variables used in list of Basics of Petrochemicals Formulas above

- **°API** API Gravity
- **AP** Diesel Aniline Point *(Fahrenheit)*
- **BMCI** Bureau of Mines Correlation Index (BMCI) Number
- C_f Characterisation Factor
- **DI** Diesel Index
- **H** Paraffinic Viscosity *(Centistokes)*
- **L** Aromatic's Viscosity *(Centistokes)*
- M_p Weight of Polymer *(Gram)*
- **MI** Melt Flow Index
- **SG** Specific Gravity
- **t** Time *(Second)*
- **T** Temperature *(Kelvin)*
- T_{BP} Molal Average Boiling Point *(Rankine)*
- **U** Lube Oil Viscosity *(Centistokes)*
- **v** Saybolt Method Viscosity *(Centistokes)*
- **VI** Viscosity Index

Constants, Functions, Measurements used in list of Basics of Petrochemicals Formulas above

- Measurement: **Weight** in Gram (g)
  Weight Unit Conversion
- Measurement: **Time** in Second (s)
  Time Unit Conversion
- Measurement: **Temperature** in Fahrenheit (°F), Kelvin (K), Rankine (°Ra)
  Temperature Unit Conversion
- Measurement: **Kinematic Viscosity** in Centistokes (cSt)
  Kinematic Viscosity Unit Conversion

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