

Exposición 10: Número de Reynolds

1)

$$\rho = 1258 \text{ kg/m}^3, \quad \eta = 9.6 \times 10^{-1} \text{ Pa}\cdot\text{s}$$

$$d = 150 \text{ mm}$$

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$$V_p = 3.6 \text{ m/s}$$

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$$N_r = \frac{(3.6)(0.15)(1258)}{9.6 \times 10^{-1}} = 707.625$$

2)

$$d = 10 \text{ cm}$$

$$\varepsilon = 0.1 \text{ mm}$$

$$N_r = 640 \rightarrow f = 0.076$$

$$N_r = 2600 \rightarrow f = 0.046$$

$$N_r = 100000 \rightarrow f = 0.021$$

$$\text{Boguslaw relation} = \frac{\varepsilon}{d} = 0.001$$

3) Boguslaw relation = zero

$$Flujo = 1 \times 10^5$$

$$f = \frac{0.25}{\left(\log \left(\frac{1}{3.7(200)} + \frac{5.74}{(1 \times 10^5)^{0.9}} \right) \right)^2} = 0.0204$$