

API 570 - Math Equations

API 570 Calcs

Short Term Corrosion Rate

$$CR_{ST} = \frac{t_{\text{previous}} - t_{\text{actual}}}{\text{\# of years between } t_{\text{previous}} \text{ \& } t_{\text{actual}}}$$

Long Term Corrosion Rate

$$CR_{LT} = \frac{t_{\text{initial}} - t_{\text{actual}}}{\text{\# of years between } t_{\text{previous}} \text{ \& } t_{\text{actual}}}$$

Remaining Life

$$RL = \frac{t_{\text{actual}} - t_{\text{required}}}{\text{Corrosion-Rate}}$$

Inspection Interval

$$\text{Interval} = \frac{1}{2} \text{ of RL or Table 2}$$

Required Thickness

$$t = \frac{PD}{2[(SE) + (PY)]}$$

Minimum Thickness

$$t_m = t + c$$

API 570 - Math Equations

B31.3 Calculations

Required Thickness
$t = \frac{PD}{2[(SE) + (PY)]}$

Minimum Thickness
$t_m = t + c$

Thermal Growth
$G = \frac{F \times L}{100}$ B31.3 Thermal Growth

MAWP
$P = \frac{2(SE) + (t - c)}{D}$

Blank Minimum Thickness
B31.3 par 304.5.3 page 28 $t_{m_blank} = d_g \sqrt{\frac{3P}{16 SE}} + c$

Hydrostatic Test Pressure
$\text{Test Pressure} = 1.5P \frac{S_t}{S}$

Pneumatic Test Pressure
$\text{Test Pressure} = 1.1 \times P$

API 570 - Math Equations

B16.5 Calculations

Sub-Minimum Thickness Calcs

$$S_{m_Enclosed\ Circles\ edge-to-edge} = 1.75 \sqrt{d \times t_m}$$

$$S_{m_{Dia}} = .35 \sqrt{d \times t_m}$$

$$S_{M_Measured\ Thickness} = .75 \times t_m$$

Blank Minimum Thickness

$$t_{m_blank} = d_g \sqrt{\frac{3P}{16 SE}} + c$$

MAWP

$$MAWP = 2 \frac{SEt}{D}$$

Pressure Test

$$\text{Test Pressure} = 1.5 \times P$$

- API 574 Calculations

API 574 Valve Body Thickness

$$t = 1.5 \left[\frac{PD}{2[(SE)]} \right]$$

How to Solve MATH equations?

- **How To Break MATH Questions?**

1. What answer do I need?
2. What will I NEED to solve equation?
3. What is KNOWN ?
4. What is UNKNOWN ?
5. How do I get the UNKNOWN's ?