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Parallel Fillet Welds Formulas

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List of 15 Parallel Fillet Welds Formulas

Parallel Fillet Welds ↗

1) Allowable Load in Parallel Fillet Weld per Unit Length ↗

$$fx \quad P_a = 0.707 \cdot \tau \cdot h_l$$

[Open Calculator ↗](#)

$$ex \quad 569.5592 \text{N/mm} = 0.707 \cdot 38 \text{N/mm}^2 \cdot 21.2 \text{mm}$$

2) Force in Parallel Fillet Weld given Shear Stress ↗

$$fx \quad P_f = \tau \cdot L \cdot \frac{h_l}{\sin(\theta) + \cos(\theta)}$$

[Open Calculator ↗](#)

$$ex \quad 111080.8 \text{N} = 38 \text{N/mm}^2 \cdot 195 \text{mm} \cdot \frac{21.2 \text{mm}}{\sin(45^\circ) + \cos(45^\circ)}$$

3) Leg of Parallel Fillet Weld given Shear Stress ↗

$$fx \quad h_l = \frac{P_f}{\tau \cdot L \cdot \cos\left(\frac{\pi}{4}\right)}$$

[Open Calculator ↗](#)

$$ex \quad 21.19984 \text{mm} = \frac{111080 \text{N}}{38 \text{N/mm}^2 \cdot 195 \text{mm} \cdot \cos\left(\frac{\pi}{4}\right)}$$



4) Leg of Parallel Fillet Weld given Shear Stress and Weld Cut Angle ↗

$$fx \quad h_l = P_f \cdot \frac{\sin(\theta) + \cos(\theta)}{L \cdot \tau}$$

[Open Calculator ↗](#)

$$ex \quad 21.19984\text{mm} = 111080\text{N} \cdot \frac{\sin(45^\circ) + \cos(45^\circ)}{195\text{mm} \cdot 38\text{N/mm}^2}$$

5) Leg of Parallel Fillet Weld given Throat of Weld ↗

$$fx \quad h_l = \frac{h_t}{\cos\left(\frac{\pi}{4}\right)}$$

[Open Calculator ↗](#)

$$ex \quad 21.2132\text{mm} = \frac{15\text{mm}}{\cos\left(\frac{\pi}{4}\right)}$$

6) Length of Parallel Fillet Weld given Shear Stress ↗

$$fx \quad L = \frac{P_f}{\tau \cdot h_l \cdot \cos\left(\frac{\pi}{4}\right)}$$

[Open Calculator ↗](#)

$$ex \quad 194.9986\text{mm} = \frac{111080\text{N}}{38\text{N/mm}^2 \cdot 21.2\text{mm} \cdot \cos\left(\frac{\pi}{4}\right)}$$

7) Length of Parallel Fillet Weld given Shear Stress and Weld Cut Angle ↗

$$fx \quad L = P_f \cdot \frac{\sin(\theta) + \cos(\theta)}{h_l \cdot \tau}$$

[Open Calculator ↗](#)

$$ex \quad 194.9986\text{mm} = 111080\text{N} \cdot \frac{\sin(45^\circ) + \cos(45^\circ)}{21.2\text{mm} \cdot 38\text{N/mm}^2}$$



8) Maximum Shear Stress in Parallel Fillet Weld given Load ↗

$$fx \quad \tau = \frac{P_f}{0.707 \cdot L \cdot h_l}$$

[Open Calculator ↗](#)

$$ex \quad 38.00546 \text{N/mm}^2 = \frac{111080 \text{N}}{0.707 \cdot 195 \text{mm} \cdot 21.2 \text{mm}}$$

9) Shear Stress in Double Parallel Fillet Weld ↗

$$fx \quad \tau = \frac{P_{dp}}{0.707 \cdot L \cdot h_l}$$

[Open Calculator ↗](#)

$$ex \quad 188.1797 \text{Pa} = \frac{0.55 \text{N}}{0.707 \cdot 195 \text{mm} \cdot 21.2 \text{mm}}$$

10) Shear Stress in Parallel Fillet Weld ↗

$$fx \quad \tau = \frac{P_f}{0.707 \cdot L \cdot h_l}$$

[Open Calculator ↗](#)

$$ex \quad 38.00546 \text{N/mm}^2 = \frac{111080 \text{N}}{0.707 \cdot 195 \text{mm} \cdot 21.2 \text{mm}}$$

11) Shear Stress in Parallel Fillet Weld given Load ↗

$$fx \quad \tau = P_f \cdot \frac{\sin(\theta) + \cos(\theta)}{L \cdot h_l}$$

[Open Calculator ↗](#)

$$ex \quad 37.99972 \text{N/mm}^2 = 111080 \text{N} \cdot \frac{\sin(45^\circ) + \cos(45^\circ)}{195 \text{mm} \cdot 21.2 \text{mm}}$$



12) Shear Stress Parallel Fillet Weld ↗

$$fx \quad \tau = \frac{P_f}{L \cdot h_l \cdot \cos\left(\frac{\pi}{4}\right)}$$

[Open Calculator ↗](#)

$$ex \quad 37.99972 \text{N/mm}^2 = \frac{111080 \text{N}}{195 \text{mm} \cdot 21.2 \text{mm} \cdot \cos\left(\frac{\pi}{4}\right)}$$

13) Tensile Force on Parallel Fillet Weld Plate given Shear Stress ↗

$$fx \quad P_f = \tau \cdot L \cdot h_l \cdot 0.707$$

[Open Calculator ↗](#)

$$ex \quad 111064 \text{N} = 38 \text{N/mm}^2 \cdot 195 \text{mm} \cdot 21.2 \text{mm} \cdot 0.707$$

14) Throat of Parallel Fillet Weld ↗

$$fx \quad h_t = h_l \cdot \cos\left(\frac{\pi}{4}\right)$$

[Open Calculator ↗](#)

$$ex \quad 14.99066 \text{mm} = 21.2 \text{mm} \cdot \cos\left(\frac{\pi}{4}\right)$$

15) Width of Plane in Double Parallel Fillet Weld ↗

$$fx \quad t' = \frac{h_l}{\sin(\theta) + \cos(\theta)}$$

[Open Calculator ↗](#)

$$ex \quad 14.99066 \text{mm} = \frac{21.2 \text{mm}}{\sin(45^\circ) + \cos(45^\circ)}$$



Variables Used

- h_l Leg of Weld (Millimeter)
- h_t Throat Thickness of Weld (Millimeter)
- L Length of Weld (Millimeter)
- L Length of Weld (Millimeter)
- P_a Allowable Load Per Unit Length of Weld (Newton per Millimeter)
- P_{dp} Load on Double Parallel Fillet Weld (Newton)
- P_f Load on Parallel Fillet Weld (Newton)
- t' Plane Width in Double Parallel Fillet Weld (Millimeter)
- θ Weld Cut Angle (Degree)
- τ Shear Stress in Parallel Fillet Weld (Newton per Square Millimeter)
- τ Shearing Stress (Pascal)



Constants, Functions, Measurements used

- **Constant:** **pi**, 3.14159265358979323846264338327950288

Archimedes' constant

- **Function:** **cos**, cos(Angle)

Cosine of an angle is the ratio of the side adjacent to the angle to the hypotenuse of the triangle.

- **Function:** **sin**, sin(Angle)

Sine is a trigonometric function that describes the ratio of the length of the opposite side of a right triangle to the length of the hypotenuse.

- **Measurement:** **Length** in Millimeter (mm)

Length Unit Conversion 

- **Measurement:** **Pressure** in Newton per Square Millimeter (N/mm²)

Pressure Unit Conversion 

- **Measurement:** **Force** in Newton (N)

Force Unit Conversion 

- **Measurement:** **Angle** in Degree (°)

Angle Unit Conversion 

- **Measurement:** **Surface Tension** in Newton per Millimeter (N/mm)

Surface Tension Unit Conversion 

- **Measurement:** **Stress** in Pascal (Pa)

Stress Unit Conversion 



Check other formula lists

- [Butt Welds Formulas](#) ↗
- [Parallel Fillet Welds Formulas](#) ↗
- [Transverse Fillet Weld Formulas](#) ↗

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