Select Material:

Selection from five different materials with additional option of custom material data is available in the educational version (more materials are available in the full version).

Select SI unit or English unit.

Note: *More detail explanations and descriptions for each step are available under* (i) *icon.*

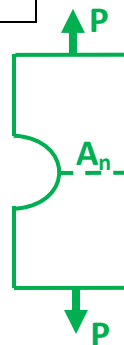## Specimen/Component & Input Type

Smooth
Select input

	Stress	Strain
SI units	MPa	m/m or mm/mm
English units	ksi	in/in

Notched
Input
Nominal Stress $S_n = P/A_n$
($S_n < \sigma_0$ where σ_0 is the yield strength)

Loading Type
Three loading types are available for selection:
1. Constant Amplitude Loading
2. Block Loading
3. Spectrum Loading

Input Data

For smooth specimen/component

k_t (or k_f) = 1, is set as default and cannot be changed

For notched specimen/component

k_t (or k_f) = 2, is set as default and can be changed accordingly

Constant Amplitude Loading

Input stress S_{level1} and S_{level2} or strain ε_{level1} and ε_{level2}

Loading starts from zero and proceeds to S_{level1} (or ε_{level1}) then is cycling between S_{level1} (or ε_{level1}) and S_{level2} (or ε_{level2}).

S_{level1} (or ε_{level1}) can be positive or negative.

Block & Spectrum Loadings

User have the option to download sample file or choose their own data file for analysis. Users can select a normalized factor if desired.

Analyze *(by clicking on)*

An Interactive Neuber's chart is displayed corresponding to S_{level1} or ε_{level1}, respectively.

Hysteresis

An initial loading and hysteresis loop (s) curves are displayed.

Life Prediction

Three live prediction approaches are available for selection:

1. Stress based (Goodman, Morrow, SWT, Walker),

2. Strain based (Morrow and strain versions of Goodman & Kujawski-Ellyin),

3. Stress-Strain based (SWT, Fatemi-Socie, SWT-deviatoric)

Life predictions are determined for all models within the selected approach (stress, strain or stress-strain based).

Note: *For $\sigma_m < 0$ Goodman's relation is typically set to $\sigma_{arG} = \sigma_a$.*

Output

Relevant local and nominal stresses and strains, endurance limits, calculated lives and fatigue graph(s) are displayed.

An entire screen or table only can be printed by selecting a suitable printing button.