

## Simulation Model 1:1

### Study 1 - Static Stress

#### Study Properties

Study Type	Static Stress
Last Modification Date	2020-08-18, 15:17:24

#### Settings

##### General

##### Damping

##### Mesh

Average Element Size (% of model size)	
Solids	5
Scale Mesh Size Per Part	No
Average Element Size (absolute value)	-
Element Order	Parabolic
Create Curved Mesh Elements	Yes
Max. Turn Angle on Curves (Deg.)	60
Max. Adjacent Mesh Size Ratio	1.5
Max. Aspect Ratio	10
Minimum Element Size (% of average size)	10

##### Adaptive Mesh Refinement

Number of Refinement Steps	0
Results Convergence Tolerance (%)	20
Portion of Elements to Refine (%)	10
Results for Baseline Accuracy	Von Mises Stress

#### Materials

Component	Material	Safety Factor
Body1	ABS Plastic	Yield Strength

##### ABS Plastic

Density	1.06E-06 kg / mm <sup>3</sup>
Young's Modulus	2240 MPa
Poisson's Ratio	0.38
Yield Strength	20 MPa
Ultimate Tensile Strength	29.6 MPa
Thermal Conductivity	1.6E-04 W / (mm C)
Thermal Expansion Coefficient	8.57E-05 / C
Specific Heat	1500 J / (kg C)

#### Contacts

##### Mesh

Type	Nodes	Elements
Solids	4280	2217

#### Load Case1

## ☐ Constraints

### ☐ Fixed1

Type	Fixed
Ux	Yes
Uy	Yes
Uz	Yes

### ☐ Selected Entities



## ☐ Loads

### ☐ Force1

Type	Force
Magnitude	300 N
X Value	-300 N
Y Value	0 N
Z Value	0 N
Flip Direction	Yes
Force Per Entity	No

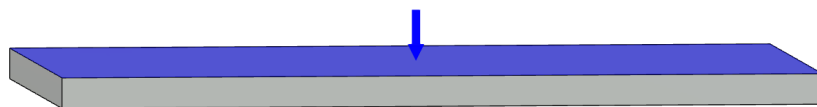
### ☐ Selected Entities



### Force2

Type	Force
Magnitude	50 N
X Value	0 N
Y Value	-50 N
Z Value	0 N
Force Per Entity	No

### Selected Entities



## Results

### Result Summary

Name	Minimum	Maximum
Safety Factor		
Safety Factor (Per Body)	9.875	15
Stress		
Von Mises	0.00273 MPa	2.025 MPa
1st Principal	-0.005271 MPa	1.582 MPa
3rd Principal	-2.07 MPa	0.3426 MPa
Normal XX	-0.7656 MPa	1.573 MPa
Normal YY	-1.249 MPa	0.5149 MPa
Normal ZZ	-0.7656 MPa	0.6215 MPa
Shear XY	-1.117 MPa	0.2816 MPa
Shear YZ	-0.2728 MPa	0.2136 MPa
Shear ZX	-0.08393 MPa	0.07464 MPa
Displacement		
Total	0 mm	0.003429 mm
X	-0.0031 mm	1.118E-05 mm
Y	-0.001397 mm	7.306E-05 mm
Z	-8.6E-04 mm	9.755E-04 mm
Reaction Force		
Total	0 N	7.104 N
X	-0.06837 N	5.728 N
Y	-1.841 N	4.194 N
Z	-0.7446 N	0.9629 N
Strain		
Equivalent	1.383E-06	0.001647
1st Principal	1.011E-12	0.001309
3rd Principal	-0.001534	-1.694E-06
Normal XX	-1.322E-05	6.694E-04
Normal YY	-3.674E-04	1.292E-04
Normal ZZ	-1.875E-04	1.757E-05
Shear XY	-0.001377	3.47E-04
Shear YZ	-3.361E-04	2.632E-04
Shear ZX	-1.034E-04	9.197E-05

## ☐ Safety Factor

### ☐ Safety Factor (Per Body)

0  8



☐ **Stress**

☐ **Von Mises**

[MPa] 0.003  2.025



☐ **1st Principal**

[MPa] -0.005  1.582



☐ **3rd Principal**

[MPa] -2.07  0.343



☐ **Displacement**

☐ **Total**

[mm] 0  0.003429

