

# Study Report

Analyzed File	platforma_zak v6
Version	Autodesk Fusion 360 (2.0.8809)
Creation Date	2020-08-13, 14:37:53
Author	ASUS

## Project Properties

Title	Studies
Author	ASUS

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## Simulation Model 1:1

### Study 1 - Static Stress

#### Study Properties

Study Type	Static Stress
Last Modification Date	2020-08-13, 14:36:19

#### Settings

##### General

Contact Tolerance	0.1 mm
Remove Rigid Body Modes	No

##### Damping

▣

##### Mesh

Average Element Size (% of model size)	
Solids	10
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)	20

##### 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
Lego, 32524, Technic, Liftarm 1 x 7 Thick v1:1	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	33272	18097

## Load Case1

### Constraints

#### Fixed1

Type	Fixed
Ux	Yes
Uy	Yes
Uz	Yes

### Selected Entities



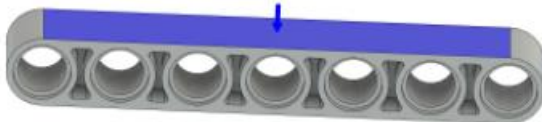
## Loads

### Force1

Type	Force
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Magnitude	0.16 N
X Value	0 N
Y Value	0.16 N
Z Value	0 N
Force Per Entity	No

**Selected Entities**



**Results**

**Result Summary**

Name	Minimum	Maximum
Safety Factor		
Safety Factor (Per Body)	15	15
Stress		
Von Mises	3.857E-05 MPa	0.03638 MPa
1st Principal	-0.004404 MPa	0.02325 MPa
3rd Principal	-0.02295 MPa	0.003304 MPa
Normal XX	-0.01445 MPa	0.01475 MPa
Normal YY	-0.02014 MPa	0.01605 MPa
Normal ZZ	-0.008526 MPa	0.007712 MPa
Shear XY	-0.02078 MPa	0.02026 MPa
Shear YZ	-0.00789 MPa	0.008081 MPa
Shear ZX	-0.003252 MPa	0.002902 MPa
Displacement		
Total	0 mm	2.797E-04 mm
X	-3.658E-05 mm	3.669E-05 mm
Y	-2.358E-06 mm	2.797E-04 mm
Z	-5.81E-06 mm	5.825E-06 mm
Reaction Force		
Total	0 N	0.01449 N
X	-0.01141 N	0.0102 N
Y	-0.01416 N	0.004191 N
Z	-0.001477 N	0.001762 N

Strain		
Equivalent	1.751E-08	2.987E-05
1st Principal	1.855E-08	2.547E-05
3rd Principal	-2.626E-05	-1.075E-08
Normal XX	-5.976E-06	6.12E-06
Normal YY	-7.841E-06	6.014E-06
Normal ZZ	-2.339E-06	2.756E-06
Shear XY	-2.561E-05	2.496E-05
Shear YZ	-9.721E-06	9.957E-06
Shear ZX	-4.007E-06	3.575E-06

### Safety Factor

#### Safety Factor (Per Body)

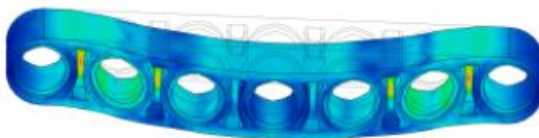
0  8



### Stress

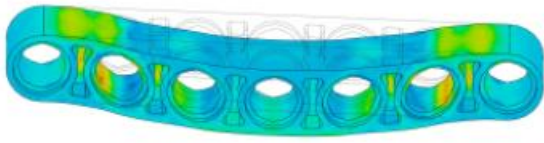
#### Von Mises

[MPa] 0.00004  0.03638



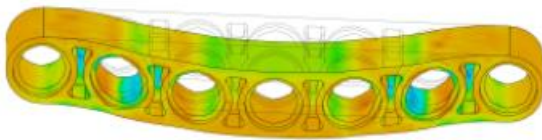
### 1st Principal

[MPa] -0.0044 0.02325



### 3rd Principal

[MPa] -0.02295 0.0033



### Displacement

#### Total

[mm] 0 2.797E-04

