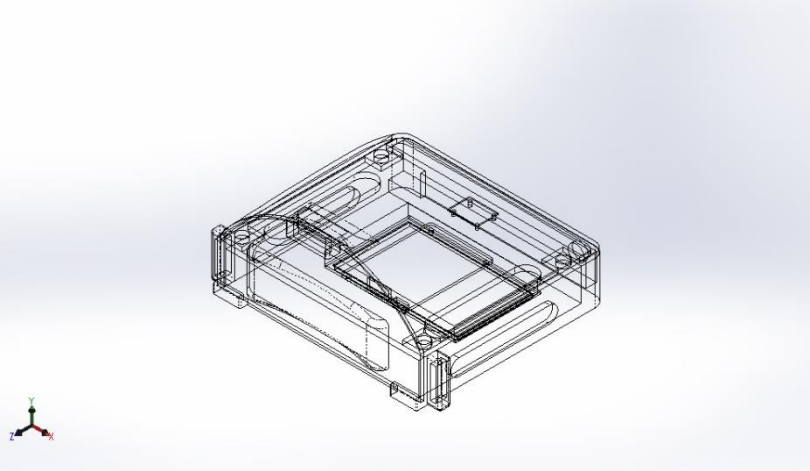


Simulation of AssemblyV2

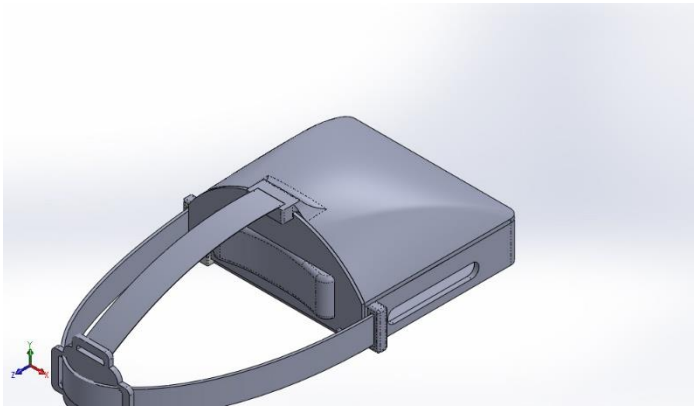
Date: Tuesday, March 20, 2018
Designer: Solidworks
Study name: Drop Test 1
Analysis type: Drop Test

Table of Contents

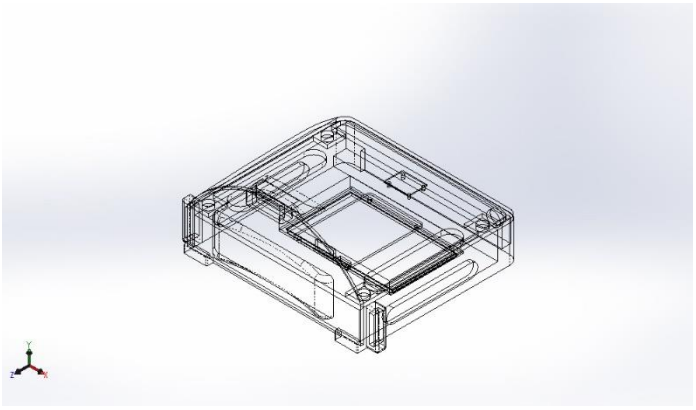
Description

No Data

Assumptions

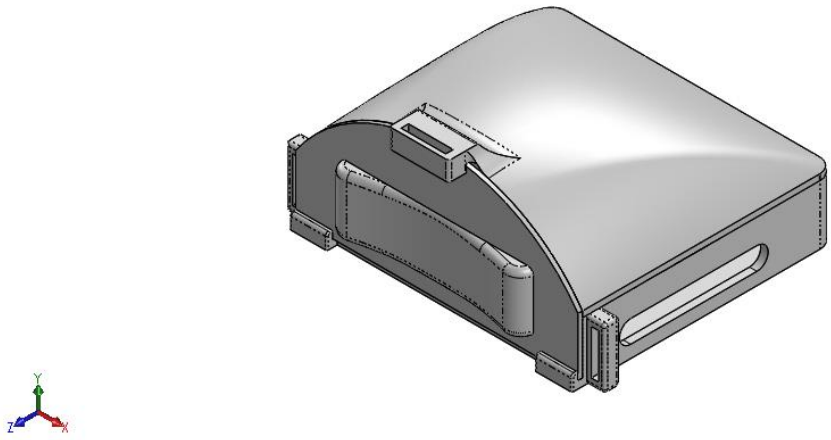


Original Model



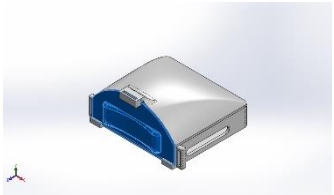
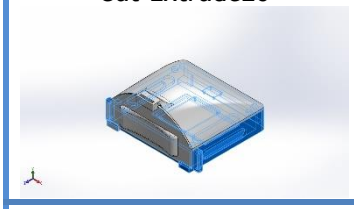
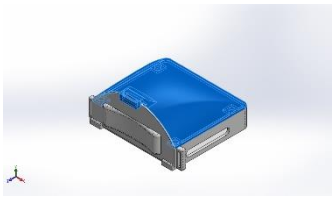
Model Analyzed

Model Information



Model name: AssemblyV2
Current Configuration: Default

Solid Bodies			
Document Name and Reference	**Treated As**	**Volumetric Properties**	**Document Path/Date Modified**

Fillet2 	Solid Body	**Mass:0.0197607 kg Volume:6.32342e-005 m^3 Density:312.5 kg/m^3 Weight:0.193655 N**	**C:\Users\Amir Shawwa\Desktop\W18\MECH 490\MECH 490\ARHeadset\CADS\ARV2\Back Cover V2.SLDPRT** Nov 05 15:02:13 2017
Cut-Extrude26 	Solid Body	**Mass:0.107369 kg Volume:0.000343581 m^3 Density:312.5 kg/m^3 Weight:1.05222 N**	**C:\Users\Amir Shawwa\Desktop\W18\MECH 490\MECH 490\ARHeadset\CADS\ARV2\Headset V2.SLDPRT** Mar 18 04:01:54 2018
Cut-Extrude2 	Solid Body	**Mass:0.265968 kg Volume:0.000114149 m^3 Density:2330 kg/m^3 Weight:2.60649 N**	**C:\Users\Amir Shawwa\Desktop\W18\MECH 490\MECH 490\ARHeadset\CADS\ARV2\Headset parts V2\Screen v3.SLDPRT** Nov 03 13:40:01 2017
Fillet10 	Solid Body	**Mass:0.0421456 kg Volume:0.000134866 m^3 Density:312.499 kg/m^3 Weight:0.413027 N**	**C:\Users\Amir Shawwa\Desktop\W18\MECH 490\MECH 490\ARHeadset\CADS\ARV2\Top Cover V2.SLDPRT** Mar 18 04:01:53 2018

Study Properties

Study name	Drop Test 1
Analysis type	Drop Test
Mesh type	Solid Mesh
Large displacement	On
Result folder	SOLIDWORKS document (C:\Users\Amir Shawwa\Desktop\W18\MECH 490\MECH 490\ARHeadset\CADS\AR V2\FEA)

Setup Information

Type	Drop height
Drop Height from Centroid	1 m
Gravity	9.81 m/s^2
Gravity Reference	Top Plane
Friction Coefficient	0
Target Stiffness	Rigid target
Critical Damping Ratio	0

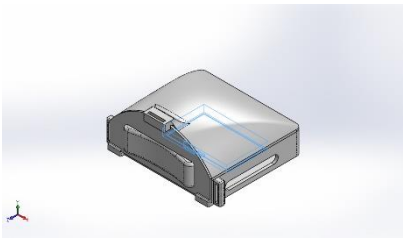
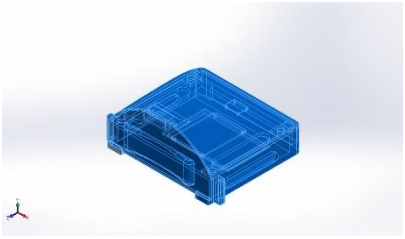
Result Options

Solution Time After Impact	273.1 microsec
Save Results Starting From	0 microsec
No. of Plots	25
No. of Graph Steps Per Plot	20
Number of vertex	0

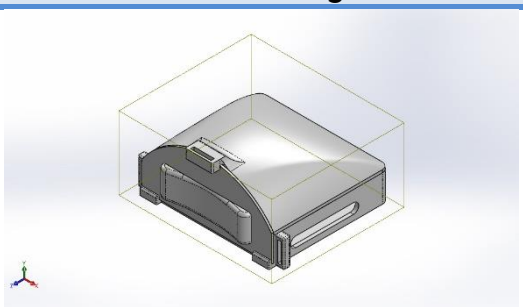
Units

Unit system:	SI (MKS)
Length/Displacement	mm
Temperature	Kelvin
Angular velocity	Rad/sec
Pressure/Stress	N/m^2

Material Properties

Model Reference	Properties	Components
	**Name:** Silicon **Model type:** Linear Elastic Isotropic **Default failure criterion:** Unknown **Yield strength:** 1.2e+008 N/m^2 **Elastic modulus:** 1.124e+011 N/m^2 **Poisson's ratio:** 0.28 **Mass density:** 2330 kg/m^3 **Shear modulus:** 4.9e+010 N/m^2	SolidBody 1(Cut-Extrude2)(Screen v3-1)
Curve Data:N/A		
	**Name:** PLA (3D Printed) **Model type:** Linear Elastic Isotropic **Default failure criterion:** Max von Mises Stress **Yield strength:** 1.3e+007 N/m^2 **Tensile strength:** 1.5e+007 N/m^2 **Elastic modulus:** 3.4e+009 N/m^2 **Poisson's ratio:** 0.38 **Mass density:** 312.5 kg/m^3	SolidBody 1(Fillet2)(Back Cover V2-2), SolidBody 5(Cut-Extrude26)(Headset V2-1), SolidBody 8(Fillet10)(Top Cover V2-1)
Curve Data:N/A		

Contact Information

Contact	Contact Image	Contact Properties
Global Contact		**Type:** Bonded **Components:** 1 component(s) **Options:** Compatible mesh

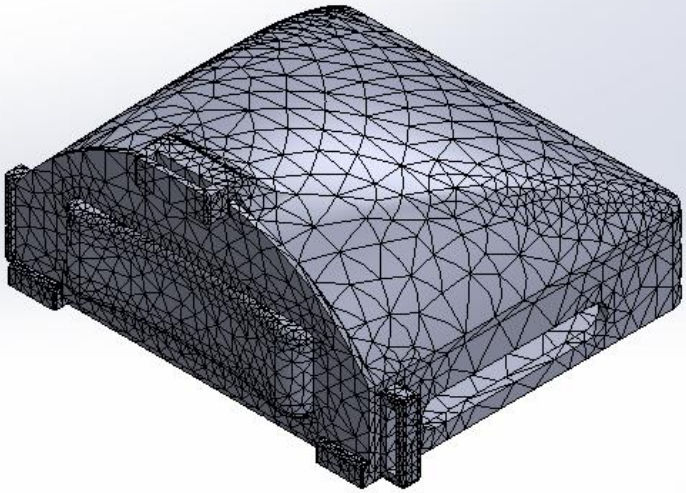
Mesh information

Mesh type	Solid Mesh
Mesher Used:	Curvature-based mesh
Jacobian points	4 Points
Maximum element size	17.5261 mm
Minimum element size	3.50522 mm
Mesh Quality	High
Remesh failed parts with incompatible mesh	Off

Mesh information - Details

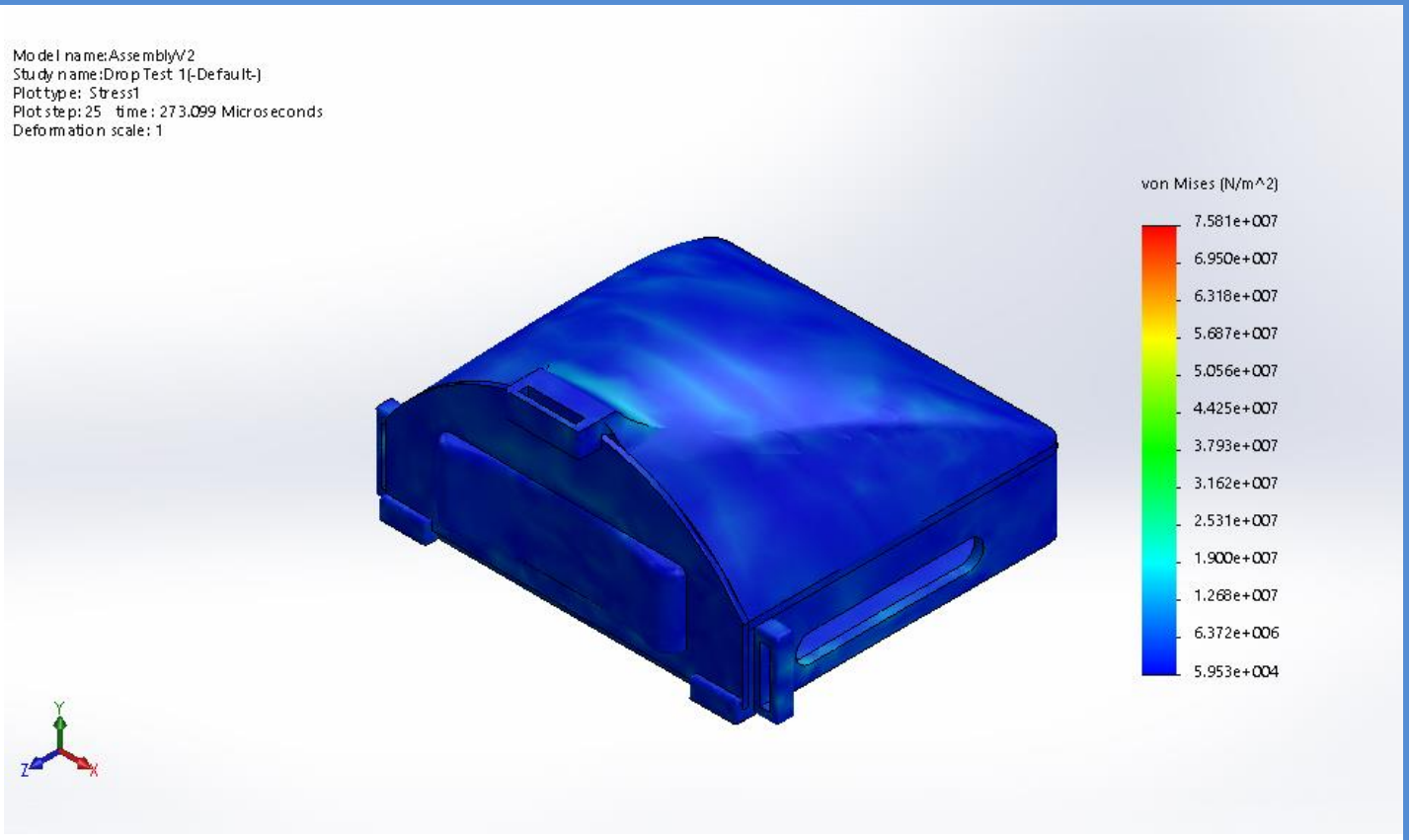
Total Nodes	28975
Total Elements	33335
Maximum Aspect Ratio	58.739
% of elements with Aspect Ratio < 3	63.6
% of elements with Aspect Ratio > 10	2.67
% of distorted elements(Jacobian)	0
Time to complete mesh(hh;mm;ss):	00:00:05
Computer name:	LENOVO-PC

Model name:AssemblyV2
Study name:Drop Test 1(-Default-)
Mesh type: Solid Mesh



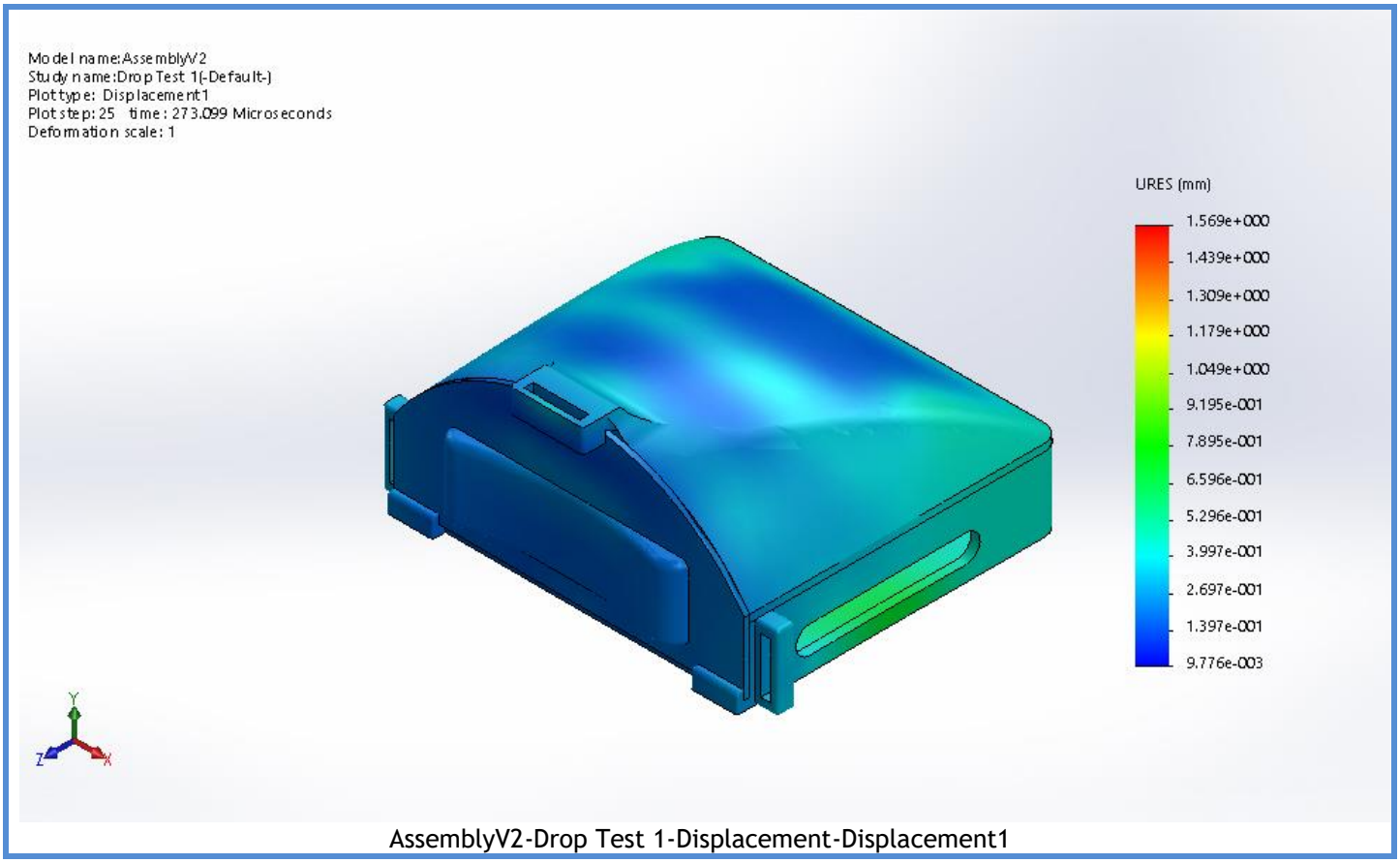
Study Results

Name	Type	Min	Max
Stress1	VON: von Mises Stress	59534.8 N/m^2 Node: 20924	7.58101e+007 N/m^2 Node: 19981



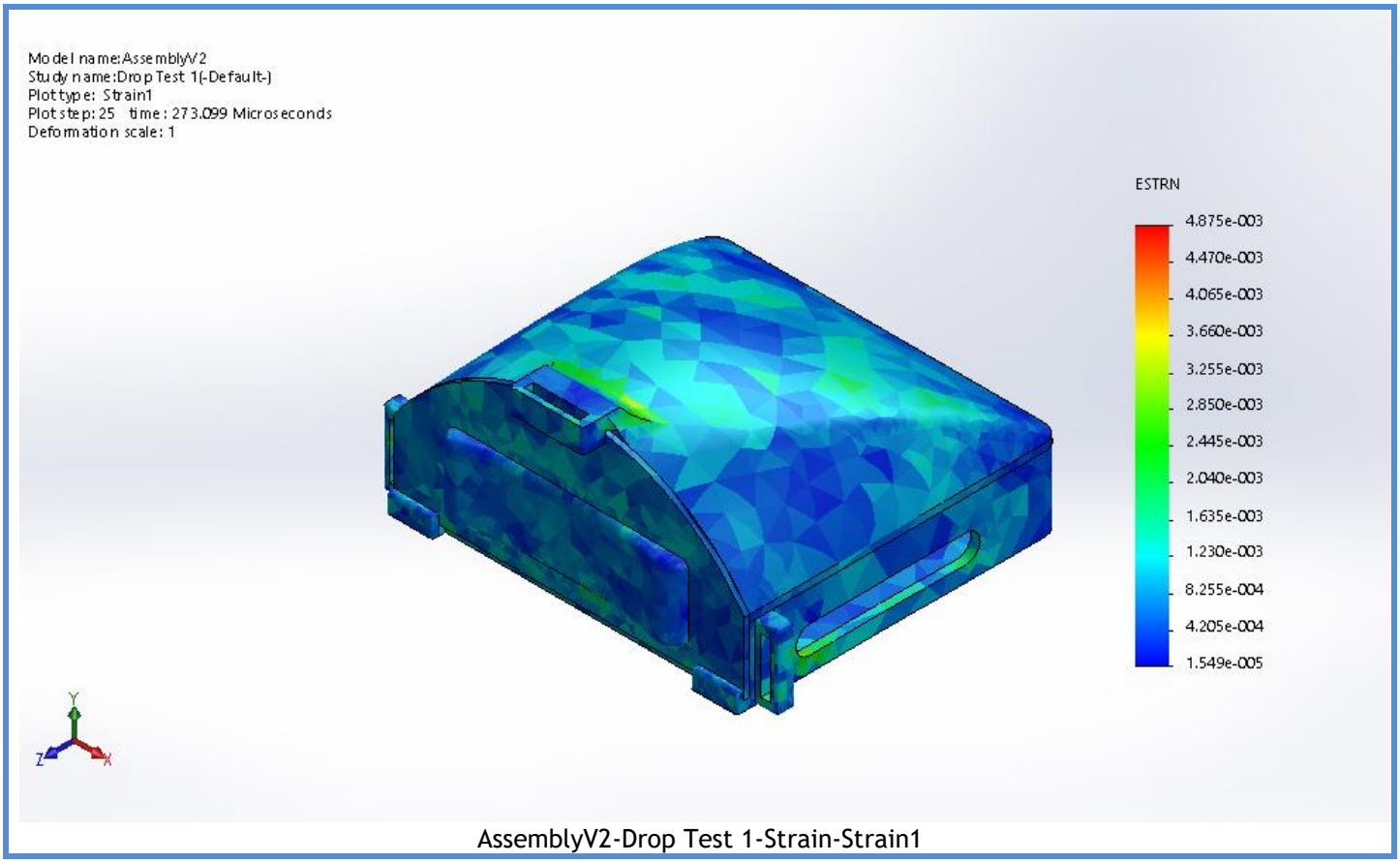
AssemblyV2-Drop Test 1-Stress-Stress1

Name	Type	Min	Max
Displacement1	URES: Resultant Displacement	0.00977578 mm Node: 16372	1.56928 mm Node: 14333



AssemblyV2-Drop Test 1-Displacement-Displacement1

Name	Type	Min	Max
Strain1	ESTRN: Equivalent Strain	1.54883e-005 Element: 10328	0.00487539 Element: 5205



AssemblyV2-Drop Test 1-Strain-Strain1

Conclusion