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|  | |  | | --- | | **Simulation of TV Bracket**  **Date: Monday, March 17, 2025 Designer: Solidworks**  **Study name: Static**  **Analysis type: Static** | | Table of Contents  [Description 1](#_Toc193125894)  [Assumptions 2](#_Toc193125895)  [Model Information 2](#_Toc193125896)  [Study Properties 3](#_Toc193125897)  [Units 3](#_Toc193125898)  [Material Properties 4](#_Toc193125899)  [Loads and Fixtures 4](#_Toc193125900)  [Connector Definitions 5](#_Toc193125901)  [Interaction Information 5](#_Toc193125902)  [Mesh information 5](#_Toc193125903)  [Sensor Details 6](#_Toc193125904)  [Resultant Forces 6](#_Toc193125905)  [Beams 6](#_Toc193125906)  [Study Results 7](#_Toc193125907)  [Conclusion 9](#_Toc193125908)  [Appendix 9](#_Toc193125909) | |
| Description No Data |

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| Assumptions |

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| Model Information  |  |  |  |  |  | | --- | --- | --- | --- | --- | | |  | | --- | |  |   ****Model name:** TV Bracket**  ****Current Configuration:** FEA** | | | | | ****Solid Bodies**** | | | | | ****Document Name and Reference**** | ****Treated As**** | ****Volumetric Properties**** | ****Document Path/Date Modified**** | | **Fillet2** | **Solid Body** | ****Mass:0.185214 kg****  ****Volume:0.000132295 m^3****  ****Density:1,400 kg/m^3****  ****Weight:1.81509 N**** | ****D:\New Life\Learning SOLIDWORKS\Vertanux1 Simulations\Lab 1\TV Bracket.SLDPRT****  **Mar 17 17:25:58 2025** | |

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| Study Properties  |  |  | | --- | --- | | Study name | Static | | Analysis type | Static | | Mesh type | Solid Mesh | | Thermal Effect: | On | | Thermal option | Include temperature loads | | Zero strain temperature | 298 Kelvin | | Include fluid pressure effects from SOLIDWORKS Flow Simulation | Off | | Solver type | Automatic | | Inplane Effect: | Off | | Soft Spring: | Off | | Inertial Relief: | Off | | Incompatible bonding options | Automatic | | Large displacement | Off | | Compute free body forces | On | | Friction | Off | | Use Adaptive Method: | Off | | Result folder | SOLIDWORKS document (D:\New Life\Learning SOLIDWORKS\Vertanux1 Simulations\Lab 1) | |

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

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| Material Properties  |  |  |  | | --- | --- | --- | | ****Model Reference**** | ****Properties**** | ****Components**** | |  | |  |  | | --- | --- | | ****Name:**** | **Nylon 6/10** | | ****Model type:**** | **Linear Elastic Isotropic** | | ****Default failure criterion:**** | **Unknown** | | ****Yield strength:**** | **1.39043e+08 N/m^2** | | ****Tensile strength:**** | **1.42559e+08 N/m^2** | | ****Elastic modulus:**** | **8.3e+09 N/m^2** | | ****Poisson's ratio:**** | **0.28** | | ****Mass density:**** | **1,400 kg/m^3** | | ****Shear modulus:**** | **3.2e+09 N/m^2** | | ****Thermal expansion coefficient:**** | **3e-05 /Kelvin** | | **SolidBody 1(Fillet2)(TV Bracket)** | | **Curve Data:N/A** | | | |

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| **Loads and Fixtures**  | ****Fixture name**** | ****Fixture Image**** | ****Fixture Details**** | | --- | --- | --- | | **Fixed-1** |  | |  |  | | --- | --- | | Entities: | **2 face(s)** | | Type: | **Fixed Geometry** | | | ****Resultant Forces****   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Components** | **X** | **Y** | **Z** | **Resultant** | | **Reaction force(N)** | **3.8147e-05** | **311.375** | **9.53674e-06** | **311.375** | | **Reaction Moment(N.m)** | **0** | **0** | **0** | **0** | | | |  | ****Load name**** | ****Load Image**** | ****Load Details**** | | --- | --- | --- | | **Force-1** |  | |  |  | | --- | --- | | Entities: | **1 face(s)** | | Type: | **Apply normal force** | | Value: | **70 lbf** | | |

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| Connector Definitions No Data |

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| Interaction Information No Data |

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| Mesh information  |  |  | | --- | --- | | Mesh type | Solid Mesh | | Mesher Used: | Blended curvature-based mesh | | Jacobian points for High quality mesh | 16 Points | | Maximum element size | 6.49862 mm | | Minimum element size | 2.16618 mm | | Mesh Quality | High |  Mesh information - Details  |  |  | | --- | --- | | Total Nodes | 9132 | | Total Elements | 5339 | | Maximum Aspect Ratio | 14.652 | | % of elements with Aspect Ratio < 3 | 98.4 | | Percentage of elements with Aspect Ratio > 10 | 0.0375 | | Percentage of distorted elements | 0 | | Time to complete mesh(hh;mm;ss): | 00:00:03 | | Computer name: |  | |

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| Sensor Details No Data |

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| Resultant ForcesReaction forces  | Selection set | Units | Sum X | Sum Y | Sum Z | Resultant | | --- | --- | --- | --- | --- | --- | | Entire Model | N | 3.8147e-05 | 311.375 | 9.53674e-06 | 311.375 |  Reaction Moments  | Selection set | Units | Sum X | Sum Y | Sum Z | Resultant | | --- | --- | --- | --- | --- | --- | | Entire Model | N.m | 0 | 0 | 0 | 0 | |
| Free body forces  | Selection set | Units | Sum X | Sum Y | Sum Z | Resultant | | --- | --- | --- | --- | --- | --- | | Entire Model | N | 4.19617e-05 | -0.000230432 | 9.53674e-06 | 0.000234415 |  Free body moments  | Selection set | Units | Sum X | Sum Y | Sum Z | Resultant | | --- | --- | --- | --- | --- | --- | | Entire Model | N.m | 0 | 0 | 0 | 1e-33 | |

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| Beams No Data |

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| Study Results  | Name | Type | Min | Max | | --- | --- | --- | --- | | Stress1 | VON: von Mises Stress | 5.840e-03N/mm^2 (MPa)  Node: 2563 | 1.508e+01N/mm^2 (MPa)  Node: 179 | | **TV Bracket-Static-Stress-Stress1** | | | |  | Name | Type | Min | Max | | --- | --- | --- | --- | | Displacement1 | URES: Resultant Displacement | 0.000e+00mm  Node: 1 | 3.960e-01mm  Node: 597 | | **TV Bracket-Static-Displacement-Displacement1** | | | |  | Name | Type | Min | Max | | --- | --- | --- | --- | | Strain1 | ESTRN: Equivalent Strain | 5.192e-07  Element: 259 | 1.165e-03  Element: 4190 | | **TV Bracket-Static-Strain-Strain1** | | | |  | Name | Type | Min | Max | | --- | --- | --- | --- | | Factor of Safety1 | Automatic | 2.000e+00  Node: 1 | 2.000e+00  Node: 1 | | **TV Bracket-Static-Factor of Safety-Factor of Safety1** | | | | |

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| Conclusion |

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| Appendix |