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|  | |  | | --- | | **Simulation of Corner Filleted Single Axis Flexure**  **Date: Monday, March 12, 2018 Designer: Solidworks**  **Study name: Static 2**  **Analysis type: Static** | | Table of Contents  [Description 1](#_Toc508585830)  [Assumptions 2](#_Toc508585831)  [Model Information 2](#_Toc508585832)  [Study Properties 3](#_Toc508585833)  [Units 3](#_Toc508585834)  [Material Properties 4](#_Toc508585835)  [Loads and Fixtures 4](#_Toc508585836)  [Mesh information 5](#_Toc508585837)  [Resultant Forces 6](#_Toc508585838)  [Beams 6](#_Toc508585839)  [Study Results 7](#_Toc508585840)  [Conclusion 9](#_Toc508585841) | |
| Description No Data |

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| Assumptions |

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| Model Information  |  |  |  |  |  | | --- | --- | --- | --- | --- | | |  | | --- | |  |   ****Model name:** Corner Filleted Single Axis Flexure**  ****Current Configuration:** Default** | | | | | ****Solid Bodies**** | | | | | ****Document Name and Reference**** | ****Treated As**** | ****Volumetric Properties**** | ****Document Path/Date Modified**** | | **Fillet2** | **Solid Body** | ****Mass:0.00350172 kg****  ****Volume:2.71451e-006 m^3****  ****Density:1290 kg/m^3****  ****Weight:0.0343169 N**** | ****C:\Users\Ankur\Desktop\IITD Sem 8\DPM\Corner Filleted Single Axis Flexure.SLDPRT****  **Mar 11 16:53:04 2018** | |

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| Study Properties  |  |  | | --- | --- | | Study name | Static 2 | | 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 | FFEPlus | | Inplane Effect: | Off | | Soft Spring: | Off | | Inertial Relief: | Off | | Incompatible bonding options | Automatic | | Large displacement | On | | Compute free body forces | On | | Friction | Off | | Use Adaptive Method: | Off | | Result folder | SOLIDWORKS document (C:\Users\Ankur\Desktop\IITD Sem 8\DPM) | |

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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:**** | **PVC 0.007 Plasticized** | | ****Model type:**** | **Linear Elastic Isotropic** | | ****Default failure criterion:**** | **Unknown** | | ****Tensile strength:**** | **1.3e+007 N/m^2** | | ****Elastic modulus:**** | **6e+006 N/m^2** | | ****Poisson's ratio:**** | **0.47** | | ****Mass density:**** | **1290 kg/m^3** | | ****Shear modulus:**** | **2e+006 N/m^2** | | **SolidBody 1(Fillet2)(Corner Filleted Single Axis Flexure)** | | **Curve Data:N/A** | | | |

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| **Loads and Fixtures**  | ****Fixture name**** | ****Fixture Image**** | ****Fixture Details**** | | --- | --- | --- | | **Fixed-1** |  | |  |  | | --- | --- | | Entities: | **1 face(s)** | | Type: | **Fixed Geometry** | | | ****Resultant Forces****   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Components** | **X** | **Y** | **Z** | **Resultant** | | **Reaction force(N)** | **3.44252e-005** | **1.99979** | **2.35229e-006** | **1.99979** | | **Reaction Moment(N.m)** | **0** | **0** | **0** | **0** | | | |  | ****Load name**** | ****Load Image**** | ****Load Details**** | | --- | --- | --- | | **Force-1** |  | |  |  | | --- | --- | | Entities: | **1 edge(s)** | | Reference: | **Edge< 1 >** | | Type: | **Apply force** | | Values: | **---, ---, 2 N** | | |

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| Mesh information  |  |  | | --- | --- | | Mesh type | Solid Mesh | | Mesher Used: | Standard mesh | | Automatic Transition: | Off | | Include Mesh Auto Loops: | Off | | Jacobian points | 4 Points | | Element Size | 1.39556 mm | | Tolerance | 0.0697782 mm | | Mesh Quality | High |  Mesh information - Details  |  |  | | --- | --- | | Total Nodes | 12495 | | Total Elements | 7470 | | Maximum Aspect Ratio | 3.9032 | | % of elements with Aspect Ratio < 3 | 99.8 | | % of elements with Aspect Ratio > 10 | 0 | | % of distorted elements(Jacobian) | 0 | | Time to complete mesh(hh;mm;ss): | 00:00:01 | | Computer name: |  | |  | | |

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| Resultant ForcesReaction forces  | Selection set | Units | Sum X | Sum Y | Sum Z | Resultant | | --- | --- | --- | --- | --- | --- | | Entire Model | N | 3.44252e-005 | 1.99979 | 2.35229e-006 | 1.99979 |  Reaction Moments  | Selection set | Units | Sum X | Sum Y | Sum Z | Resultant | | --- | --- | --- | --- | --- | --- | | Entire Model | N.m | 0 | 0 | 0 | 0 | |
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| Beams No Data |

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| Study Results  | Name | Type | Min | Max | | --- | --- | --- | --- | | Stress1 | VON: von Mises Stress | 104.443 N/m^2  Node: 1 | 1.55964e+006 N/m^2  Node: 249 | | **Corner Filleted Single Axis Flexure-Static 2-Stress-Stress1** | | | |  | Name | Type | Min | Max | | --- | --- | --- | --- | | Displacement1 | URES: Resultant Displacement | 0 mm  Node: 516 | 7.04799 mm  Node: 46 | | **Corner Filleted Single Axis Flexure-Static 2-Displacement-Displacement1** | | | |  | Name | Type | Min | Max | | --- | --- | --- | --- | | Strain1 | ESTRN: Equivalent Strain | 1.83332e-005  Element: 1598 | 0.0869112  Element: 3662 | | **Corner Filleted Single Axis Flexure-Static 2-Strain-Strain1** | | | |  | Name | Type | | --- | --- | | Displacement1{1} | Deformed shape | | **Corner Filleted Single Axis Flexure-Static 2-Displacement-Displacement1{1}** | | |

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| Conclusion |