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|  | |  | | --- | | **Simulation of Corner Filleted Single Axis Flexure**  **Date: Wednesday, May 2, 2018 Designer: Solidworks**  **Study name: 2N45DEG**  **Analysis type: Static** | | Table of Contents  [Description 1](#_Toc513049517)  [Assumptions 2](#_Toc513049518)  [Model Information 2](#_Toc513049519)  [Study Properties 3](#_Toc513049520)  [Units 3](#_Toc513049521)  [Material Properties 4](#_Toc513049522)  [Loads and Fixtures 4](#_Toc513049523)  [Connector Definitions 5](#_Toc513049524)  [Contact Information 5](#_Toc513049525)  [Mesh information 6](#_Toc513049526)  [Sensor Details 7](#_Toc513049527)  [Resultant Forces 7](#_Toc513049528)  [Beams 7](#_Toc513049529)  [Study Results 8](#_Toc513049530)  [Conclusion 10](#_Toc513049531) | |
| 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**** | | **Cut-Extrude1** | **Solid Body** | ****Mass:0.00350158 kg****  ****Volume:2.71441e-006 m^3****  ****Density:1290 kg/m^3****  ****Weight:0.0343155 N**** | ****C:\Users\Ankur\Desktop\IITD Sem 8\DPM\Corner Filleted Single Axis Flexure.SLDPRT****  **Mar 12 04:17:26 2018** | |

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| Study Properties  |  |  | | --- | --- | | Study name | 2N45DEG | | 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(Cut-Extrude1)(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)** | **1.41422** | **1.41423** | **-1.44134e-006** | **2.00001** | | **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: | **-2 N** | | |

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| Connector Definitions No Data |

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| Contact Information No Data |

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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 | 1.39554 mm | | Tolerance | 0.0697772 mm | | Mesh Quality | High |  Mesh information - Details  |  |  | | --- | --- | | Total Nodes | 12670 | | Total Elements | 7575 | | Maximum Aspect Ratio | 10.542 | | % of elements with Aspect Ratio < 3 | 99 | | % of elements with Aspect Ratio > 10 | 0.158 | | % of distorted elements(Jacobian) | 0 | | Time to complete mesh(hh;mm;ss): | 00:00:02 | | 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 | 1.41422 | 1.41423 | -1.44134e-006 | 2.00001 |  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 | 83.3354 N/m^2  Node: 563 | 961317 N/m^2  Node: 10544 | | **Corner Filleted Single Axis Flexure-2N45DEG-Stress-Stress1** | | | |  | Name | Type | Min | Max | | --- | --- | --- | --- | | Displacement1 | URES: Resultant Displacement | 0 mm  Node: 1 | 11.8943 mm  Node: 578 | | **Corner Filleted Single Axis Flexure-2N45DEG-Displacement-Displacement1** | | | |  | Name | Type | Min | Max | | --- | --- | --- | --- | | Strain1 | ESTRN: Equivalent Strain | 4.06541e-005  Element: 1774 | 0.115556  Element: 7509 | | **Corner Filleted Single Axis Flexure-2N45DEG-Strain-Strain1** | | | | |

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| Conclusion |