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|  | |  | | --- | | **Simulation of Finger**  **Date: Monday, May 7, 2018 Designer: Solidworks**  **Study name: Static 3**  **Analysis type: Static** | | Table of Contents  [Description 1](#_Toc513463705)  [Assumptions 2](#_Toc513463706)  [Model Information 2](#_Toc513463707)  [Study Properties 3](#_Toc513463708)  [Units 3](#_Toc513463709)  [Material Properties 4](#_Toc513463710)  [Loads and Fixtures 4](#_Toc513463711)  [Connector Definitions 5](#_Toc513463712)  [Contact Information 5](#_Toc513463713)  [Mesh information 6](#_Toc513463714)  [Sensor Details 7](#_Toc513463715)  [Resultant Forces 7](#_Toc513463716)  [Beams 7](#_Toc513463717)  [Study Results 8](#_Toc513463718)  [Conclusion 10](#_Toc513463719) | |
| Description No Data |

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| Assumptions |

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| Model Information  |  |  |  |  |  | | --- | --- | --- | --- | --- | | |  | | --- | |  |   ****Model name:** Finger**  ****Current Configuration:** Default** | | | | | ****Solid Bodies**** | | | | | ****Document Name and Reference**** | ****Treated As**** | ****Volumetric Properties**** | ****Document Path/Date Modified**** | | **Cut-Extrude2** | **Solid Body** | ****Mass:0.0363859 kg****  ****Volume:2.82061e-005 m^3****  ****Density:1290 kg/m^3****  ****Weight:0.356582 N**** | ****C:\Users\Ankur\Desktop\IITD Sem 8\DPM\Finger.SLDPRT****  **May 07 12:41:38 2018** | |

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| Study Properties  |  |  | | --- | --- | | Study name | Static 3 | | 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-Extrude2)(Finger)** | | **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)** | **2.49073e-005** | **-3.53524** | **3.53548** | **4.99975** | | **Reaction Moment(N.m)** | **0** | **0** | **0** | **0** | | | |  | ****Load name**** | ****Load Image**** | ****Load Details**** | | --- | --- | --- | | **Force-1** |  | |  |  | | --- | --- | | Entities: | **1 face(s)** | | Reference: | **Edge< 1 >** | | Type: | **Apply force** | | Values: | **---, ---, -5 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 | 3.04542 mm | | Tolerance | 0.152271 mm | | Mesh Quality | High |  Mesh information - Details  |  |  | | --- | --- | | Total Nodes | 12090 | | Total Elements | 7483 | | Maximum Aspect Ratio | 24.804 | | % of elements with Aspect Ratio < 3 | 97.2 | | % of elements with Aspect Ratio > 10 | 0.388 | | % 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 | 2.49073e-005 | -3.53524 | 3.53548 | 4.99975 |  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 | 23.3676 N/m^2  Node: 7072 | 1.60568e+006 N/m^2  Node: 9063 | | **Finger-Static 3-Stress-Stress1** | | | |  | Name | Type | Min | Max | | --- | --- | --- | --- | | Displacement1 | URES: Resultant Displacement | 0 mm  Node: 25 | 52.9201 mm  Node: 1 | | **Finger-Static 3-Displacement-Displacement1** | | | |  | Name | Type | Min | Max | | --- | --- | --- | --- | | Strain1 | ESTRN: Equivalent Strain | 6.12703e-006  Element: 2760 | 0.193971  Element: 3756 | | **Finger-Static 3-Strain-Strain1** | | | | |

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| Conclusion |