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|  | |  | | --- | | **Simulation of upper arm**  **Date: zondag 9 oktober 2016 Designer: Teun**  **Study name: SimulationXpress Study**  **Analysis type: Static** | | Table of Contents  [Description 1](#_Toc463805108)  [Assumptions 2](#_Toc463805109)  [Model Information 2](#_Toc463805110)  [Material Properties 3](#_Toc463805111)  [Loads and Fixtures 3](#_Toc463805112)  [Mesh Information 4](#_Toc463805113)  [Study Results 6](#_Toc463805114)  [Conclusion 8](#_Toc463805115) | |
| Description No Data |

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| Assumptions |

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| Model Information  |  |  |  |  |  | | --- | --- | --- | --- | --- | | |  | | --- | |  |   ****Model name:** upper arm**  ****Current Configuration:** Default** | | | | | ****Solid Bodies**** | | | | | ****Document Name and Reference**** | ****Treated As**** | ****Volumetric Properties**** | ****Document Path/Date Modified**** | | **Cut-Extrude3** | **Solid Body** | ****Mass:0.10574 kg****  ****Volume:1.37324e-005 m^3****  ****Density:7700 kg/m^3****  ****Weight:1.03625 N**** | ****D:\Documents\Industrieel Ontwerper\Jaar 3\Bachelor opdracht\cad\pack and go 2\upper arm.SLDPRT****  **Oct 07 11:55:50 2016** | |

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| Material Properties  |  |  |  | | --- | --- | --- | | ****Model Reference**** | ****Properties**** | ****Components**** | |  | |  |  | | --- | --- | | ****Name:**** | **Alloy Steel** | | ****Model type:**** | **Linear Elastic Isotropic** | | ****Default failure criterion:**** | **Max von Mises Stress** | | ****Yield strength:**** | **620.422 N/mm^2** | | ****Tensile strength:**** | **723.826 N/mm^2** | | **SolidBody 1(Cut-Extrude3)(upper arm)** | |

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| **Loads and Fixtures**  | ****Fixture name**** | ****Fixture Image**** | ****Fixture Details**** | | --- | --- | --- | | **Fixed-1** |  | |  |  | | --- | --- | | Entities: | **1 face(s)** | | Type: | **Fixed Geometry** | |  | ****Load name**** | ****Load Image**** | ****Load Details**** | | --- | --- | --- | | **Force-1** |  | |  |  | | --- | --- | | Entities: | **1 face(s)** | | Type: | **Apply normal force** | | Value: | **5 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 | 2.57151 mm | | Tolerance | 0.128575 mm | | Mesh Quality | High |  Mesh Information - Details  |  |  | | --- | --- | | Total Nodes | 23219 | | Total Elements | 11608 | | Maximum Aspect Ratio | 15.376 | | % of elements with Aspect Ratio < 3 | 86.4 | | % of elements with Aspect Ratio > 10 | 0.0517 | | % of distorted elements(Jacobian) | 0 | | Time to complete mesh(hh;mm;ss): | 00:00:05 | | Computer name: | TEUN-PC | |  | | |

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| Study Results  | Name | Type | Min | Max | | --- | --- | --- | --- | | Stress | VON: von Mises Stress | 0.00302417 N/mm^2 (MPa)  Node: 217 | 38.9325 N/mm^2 (MPa)  Node: 910 | | **upper arm-SimulationXpress Study-Stress-Stress** | | | |  | Name | Type | Min | Max | | --- | --- | --- | --- | | Displacement | URES: Resultant Displacement | 0 mm  Node: 15 | 0.0742052 mm  Node: 240 | | **upper arm-SimulationXpress Study-Displacement-Displacement** | | | |  | Name | Type | | --- | --- | | Deformation | Deformed Shape | | **upper arm-SimulationXpress Study-Displacement-Deformation** | |  | Name | Type | Min | Max | | --- | --- | --- | --- | | Factor of Safety | Max von Mises Stress | 15.9359  Node: 910 | 205154  Node: 217 | | **upper arm-SimulationXpress Study-Factor of Safety-Factor of Safety** | | | | |

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| Conclusion |