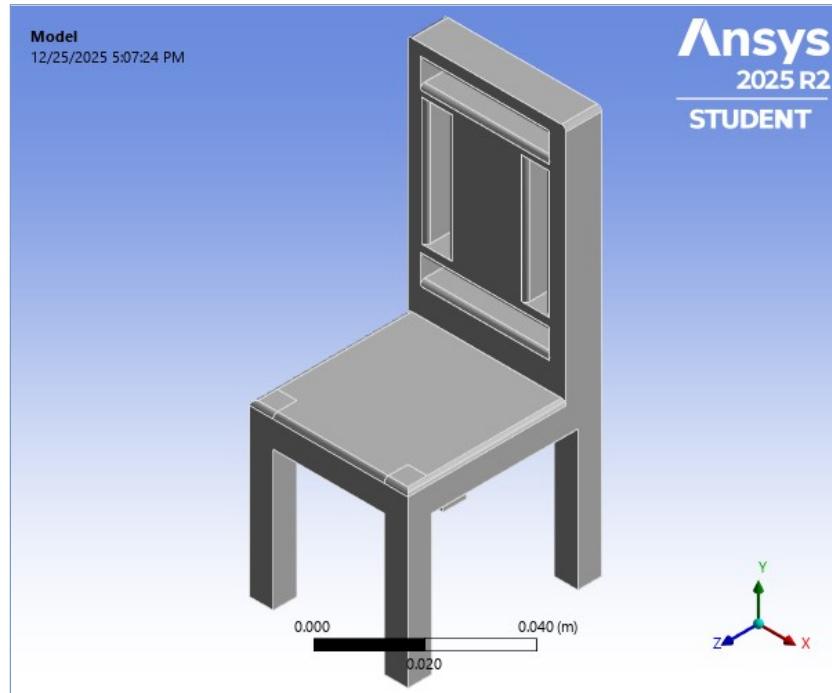


Project*

First Saved	Saturday, March 1, 2025
Last Saved	Saturday, March 1, 2025
Product Version	2025 R1
Save Project Before Solution	No
Save Project After Solution	No



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- [Model \(A4\)](#)
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 - [Solution Information](#)
 - [Results](#)
 - [Stress Tool](#)
 - [Safety Factor](#)
- [Material Data](#)
 - [wood](#)

Units

TABLE 1

Unit System	Metric (m, kg, N, s, V, A) Degrees rad/s Celsius
Angle	Degrees
Rotational Velocity	rad/s
Temperature	Celsius

Model (A4)

FIGURE 1
Model (A4) > Figure

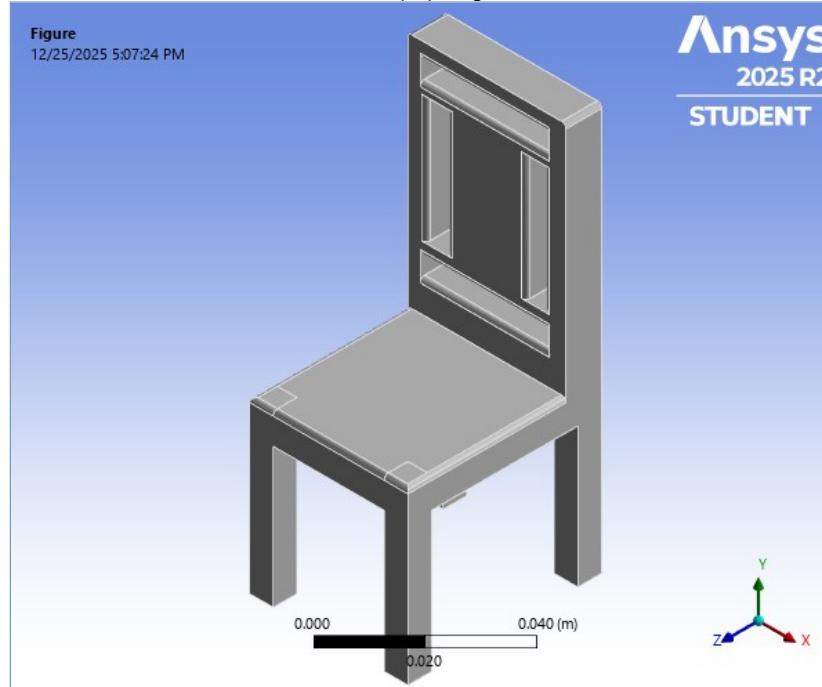


TABLE 2
Model (A4) > Geometry Imports

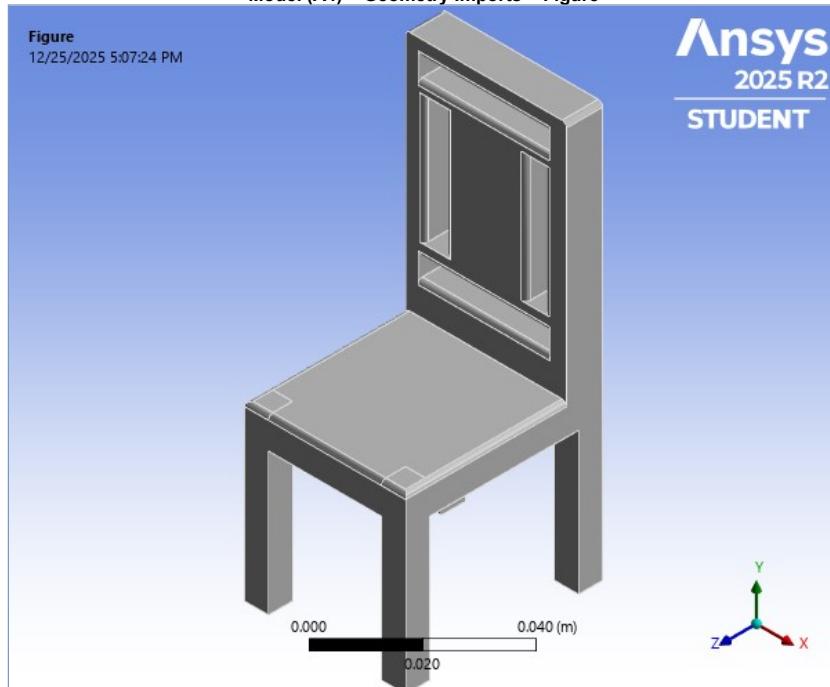
Object Name	Geometry Imports
State	Solved

TABLE 3
Model (A4) > Geometry Imports > Geometry Import (A3)

Object Name	Geometry Import (A3)
State	Solved
Definition	
Source	C:\Users\lmhmd\Desktop\Ansys mechanical\3d\chair final .STEP
Type	Step
Basic Geometry Options	
Solid Bodies	Yes
Surface Bodies	Yes
Line Bodies	No
Parameters	Independent
Parameter Key	ANS;DS
Attributes	No
Named Selections	No
Material Properties	No
Advanced Geometry Options	
Use Associativity	Yes
Coordinate Systems	No
Reader Mode Saves Updated File	No

Use Instances	Yes
Smart CAD Update	Yes
Compare Parts On Update	No
Analysis Type	3-D
Mixed Import Resolution	None
Import Facet Quality	Source
Clean Bodies On Import	No
Stitch Surfaces On Import	None
Decompose Disjoint Geometry	Yes
Enclosure and Symmetry Processing	Yes

FIGURE 2
Model (A4) > Geometry Imports > Figure



Geometry

TABLE 4
Model (A4) > Geometry

Object Name	Geometry
State	Fully Defined
Definition	
Source	C:\Users\mhmd\Desktop\Ansys mechanical\3d\chair final .STEP
Type	Step
Length Unit	Millimeters
Element Control	Program Controlled
Display Style	Body Color
Bounding Box	
Length X	4.008e-002 m
Length Y	0.103 m
Length Z	4.9e-002 m
Properties	
Volume	3.3556e-005 m ³
Mass	3.1744e-002 kg
Scale Factor Value	1.
Statistics	
Bodies	1
Active Bodies	1
Nodes	61469
Elements	38908
Mesh Metric	None
Update Options	
Assign Default Material	No
Basic Geometry Options	
Solid Bodies	Yes
Surface Bodies	Yes
Line Bodies	No
Parameters	Independent
Parameter Key	ANS;DS
Attributes	No
Named Selections	No
Material Properties	No
Advanced Geometry Options	
Use Associativity	Yes
Coordinate Systems	No
Reader Mode Saves Updated File	No
Use Instances	Yes
Smart CAD Update	Yes
Compare Parts On Update	No
Analysis Type	3-D
Mixed Import Resolution	None
Import Facet Quality	Source
Clean Bodies On Import	No
Stitch Surfaces On Import	None
Decompose Disjoint Geometry	Yes
ID_GeometryPrefProcessPhysicsDefinition	No

TABLE 5 Model (A4) > Geometry > Parts	
Object Name	ChairCut-Extrude6
State	Meshed
Graphics Properties	
Visible	Yes
Transparency	1
Definition	
Suppressed	No
Stiffness Behavior	Flexible
Coordinate System	Default Coordinate System
Reference Temperature	By Environment
Treatment	None
Material	
Assignment	wood
Nonlinear Effects	Yes
Thermal Strain Effects	Yes
Bounding Box	
Length X	4.008e-002 m
Length Y	0.103 m
Length Z	4.9e-002 m
Properties	
Volume	3.3556e-005 m ³
Mass	3.1744e-002 kg
Centroid X	1.2877e-004 m
Centroid Y	5.1265e-002 m
Centroid Z	6.2773e-003 m
Moment of Inertia Ip1	2.6639e-005 kg·m ²
Moment of Inertia Ip2	2.6534e-005 kg·m ²
Moment of Inertia Ip3	1.0486e-005 kg·m ²
Statistics	
Nodes	61469
Elements	38908
Mesh Metric	None

FIGURE 3
Model (A4) > Geometry > Figure

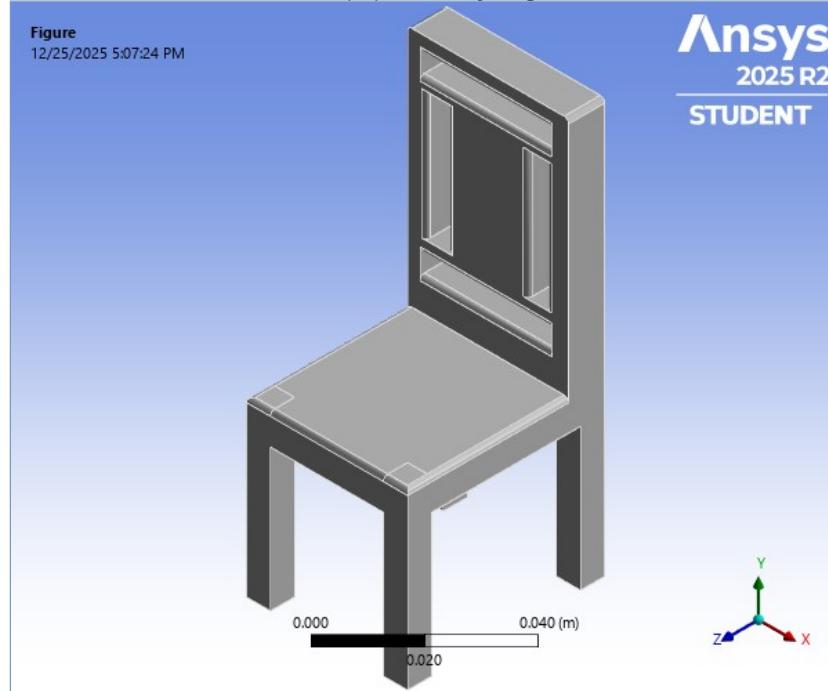


TABLE 6
Model (A4) > Materials

Object Name	Materials
State	Fully Defined
Statistics	
Materials	2
Material Assignments	0

Coordinate Systems

TABLE 7
Model (A4) > Coordinate Systems > Coordinate System

Object Name	Global Coordinate System
State	Fully Defined
Definition	
Type	Cartesian
Coordinate System ID	0.
Origin	
Origin X	0. m
Origin Y	0. m
Origin Z	0. m
Directional Vectors	
X Axis Data	[1. 0. 0.]
Y Axis Data	[0. 1. 0.]
Z Axis Data	[0. 0. 1.]

Mesh

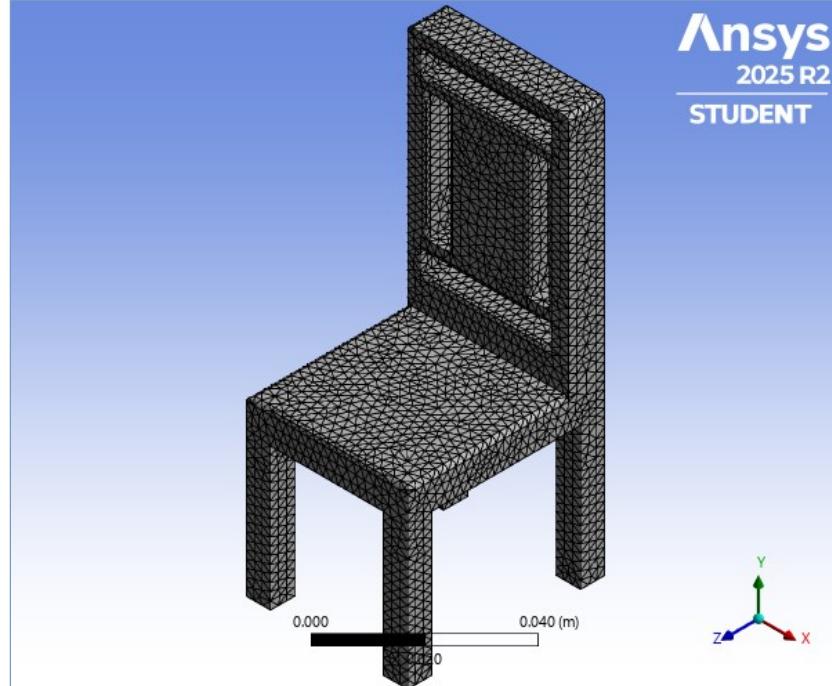
Transfer Properties	
Source	
Read Only	No

TABLE 8 Model (A4) > Mesh	
Object Name	Mesh
State	Solved
Display	
Display Style	Use Geometry Setting
Defaults	
Physics Preference	Mechanical
Element Order	Program Controlled
Element Size	Default
Sizing	
Use Adaptive Sizing	Yes
Resolution	Default (2)
Mesh Defeaturing	Yes
Defeature Size	Default
Transition	Fast
Span Angle Center	Coarse
Initial Size Seed	Assembly
Bounding Box Diagonal	0.1209 m
Average Surface Area	2.1208e-004 m ²
Minimum Edge Length	1.e-007 m
Quality	
Check Mesh Quality	Yes, Errors
Error Limits	Aggressive Mechanical
Target Element Quality	Default (5.e-002)
Smoothing	Medium
Mesh Metric	None
Inflation	
Use Automatic Inflation	None
Inflation Option	Smooth Transition
Transition Ratio	0.272
Maximum Layers	5
Growth Rate	1.2
Inflation Algorithm	Pre
Inflation Element Type	Wedges
View Advanced Options	No
Advanced	
Number of CPUs for Parallel Part Meshing	Program Controlled
Straight Sided Elements	No
Rigid Body Behavior	Dimensionally Reduced
Triangle Surface Mesher	Program Controlled
Topology Checking	Yes
Pinch Tolerance	Please Define
Generate Pinch on Refresh	No
Auto-Map Fillets	No
Automatic Methods	
Sheet Body Method	Quad Dominant
Sweepable Body Method	Sweep
Statistics	
Nodes	61469
Elements	38908
Show Detailed Statistics	No

TABLE 9
Model (A4) > Mesh > Mesh Controls

Object Name	Body Sizing
State	Fully Defined
Scope	
Scoping Method	Geometry Selection
Geometry	1 Body
Definition	
Suppressed	No
Type	Element Size
Element Size	2.e-003 m
Advanced	
Defeature Size	Default
Behavior	Soft

FIGURE 4
Model (A4) > Mesh > Figure



Static Structural (A5)

TABLE 10
Model (A4) > Analysis

Object Name	<i>Static Structural (A5)</i>
State	Solved
Definition	
Physics Type	Structural
Analysis Type	Static Structural
Solver Target	Mechanical APDL
Options	
Environment Temperature	22. °C
Generate Input Only	No

TABLE 11
Model (A4) > Static Structural (A5) > Analysis Settings

Object Name	Analysis Settings
State	Fully Defined
Step Controls	
Number Of Steps	1.
Current Step Number	1.
Step End Time	1. s
Auto Time Stepping	Program Controlled
Solver Controls	
Solver Type	Program Controlled
Weak Springs	Off
Solver Pivot Checking	Program Controlled
Large Deflection	Off
Inertia Relief	Off
Quasi-Static Solution	Off
Rotordynamics Controls	
Coriolis Effect	Off
Restart Controls	
Generate Restart Points	Program Controlled
Retain Files After Full Solve	No
Combine Restart Files	Program Controlled
Nonlinear Controls	
Newton-Raphson Option	Program Controlled
Force Convergence	Program Controlled
Moment Convergence	Program Controlled
Displacement Convergence	Program Controlled
Rotation Convergence	Program Controlled
Line Search	Program Controlled
Stabilization	Program Controlled
Advanced	
Inverse Option	No
Contact Split (DMP)	Program Controlled
Output Controls	
Output Selection	None
Stress	Yes
Back Stress	No
Strain	Yes
Contact Data	Yes
Nonlinear Data	No
Nodal Forces	No
Volume and Energy	Yes
Euler Angles	Yes
General Miscellaneous	No
Contact Miscellaneous	No
Store Results At	All Time Points
Result File Compression	Program Controlled
Analysis Data Management	
Solver Files Directory	E:\from mhmd LAB\Ansys mechanical\3d\wood chair_files\dp0\SYS\MECH\

Future Analysis	None
Scratch Solver Files Directory	
Save MAPDL db	No
Contact Summary	Program Controlled
Delete Unneeded Files	Yes
Nonlinear Solution	No
Solver Units	Active System
Solver Unit System	mks

TABLE 12
Model (A4) > Static Structural (A5) > Loads

Object Name	Fixed Support	Force	Force 2		
State	Fully Defined				
Scope					
Scoping Method	Geometry Selection				
Geometry	4 Faces	3 Faces	1 Face		
Definition					
Type	Fixed Support	Force			
Suppressed	No				
Define By	Components				
Applied By	Surface Effect				
Coordinate System	Global Coordinate System				
X Component	0. N (ramped)				
Y Component	-250. N (ramped)	0. N (ramped)	0. N (ramped)		
Z Component	0. N (ramped)	-80. N (ramped)			

FIGURE 5
Model (A4) > Static Structural (A5) > Force

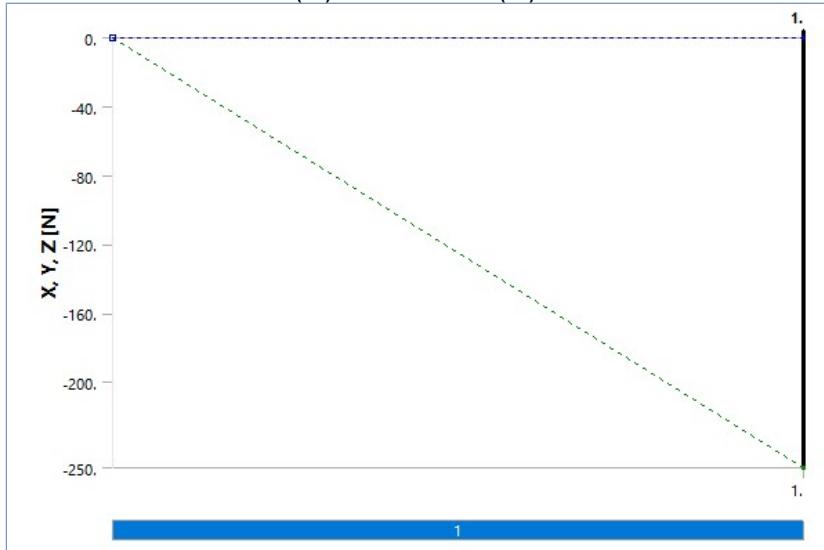


FIGURE 6
Model (A4) > Static Structural (A5) > Force > Figure

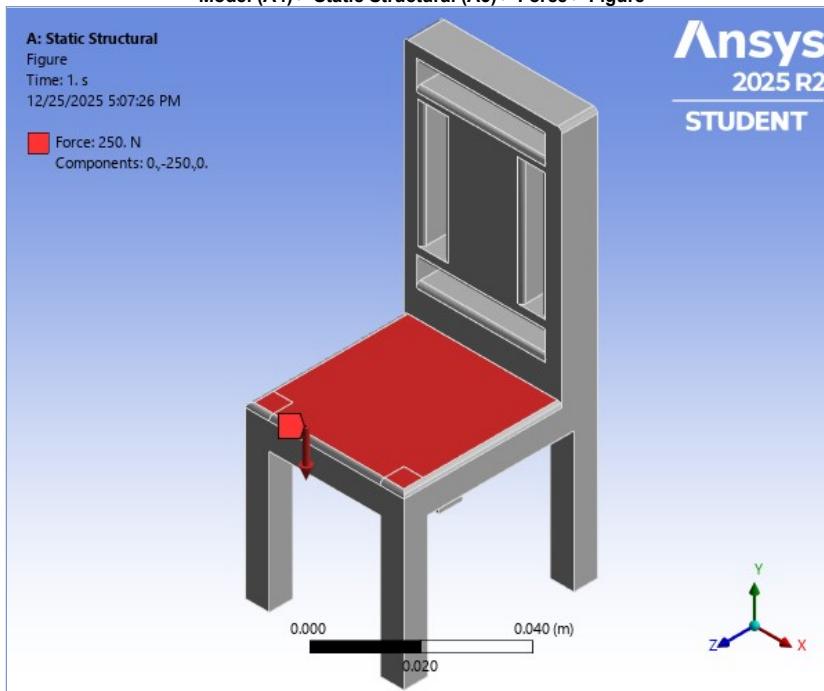


FIGURE 7
Model (A4) > Static Structural (A5) > Force 2

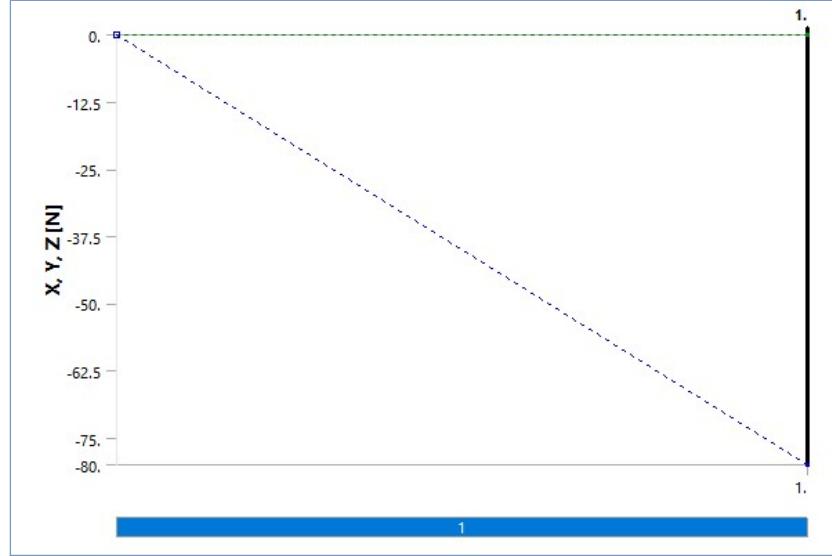
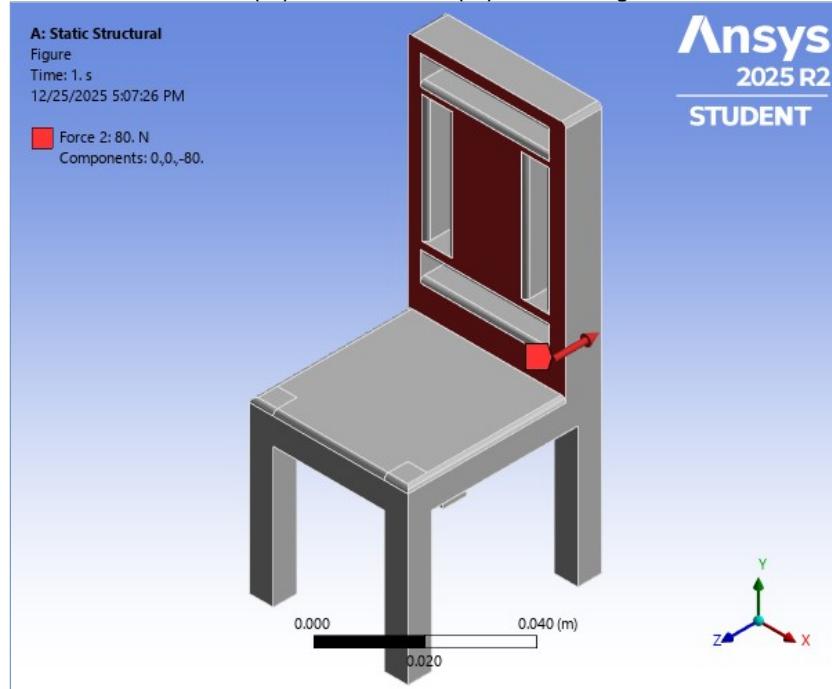


FIGURE 8
Model (A4) > Static Structural (A5) > Force 2 > Figure



Solution (A6)

TABLE 13
Model (A4) > Static Structural (A5) > Solution

Object Name	<i>Solution (A6)</i>
State	Solved
Adaptive Mesh Refinement	
Max Refinement Loops	1.
Refinement Depth	2.
Information	
Status	Done
MAPDL Elapsed Time	6. s
MAPDL Memory Used	467. MB
MAPDL Result File Size	24.312 MB
Post Processing	
Beam Section Results	No
On Demand Stress/Strain	No

TABLE 14
Model (A4) > Static Structural (A5) > Solution (A6) > Solution Information

Object Name	<i>Solution Information</i>
State	Solved
Solution Information	
Solution Output	Solver Output
Newton-Raphson Residuals	0
Identify Element Violations	0
Update Interval	2.5 s
Display Points	All
FE Connection Visibility	
Activate Visibility	Yes
Display	All FE Connectors
Draw Connections Attached To	All Nodes
Line Color	Connection Type
Visible on Results	No
Line Thickness	Single
Display Type	Lines

TABLE 15

Model (A4) > Static Structural (A5) > Solution (A6) > Results		
Object Name	Total Deformation	Equivalent Stress
State	Solved	
Scope		
Scoping Method	Geometry Selection	
Geometry	All Bodies	
Definition		
Type	Total Deformation	Equivalent (von-Mises) Stress
By	Time	
Display Time	Last	
Separate Data by Entity	No	
Calculate Time History	Yes	
Identifier		
Suppressed	No	
Results		
Minimum	0. m	10756 Pa
Maximum	5.0301e-003 m	2.7152e+007 Pa
Average	1.7081e-003 m	2.1292e+006 Pa
Minimum Occurs On	Chair Cut-Extrude6	
Maximum Occurs On	Chair Cut-Extrude6	
Information		
Time	1. s	
Load Step	1	
Substep	1	
Iteration Number	1	
Integration Point Results		
Display Option	Averaged	
Average Across Bodies	No	

FIGURE 9
Model (A4) > Static Structural (A5) > Solution (A6) > Total Deformation

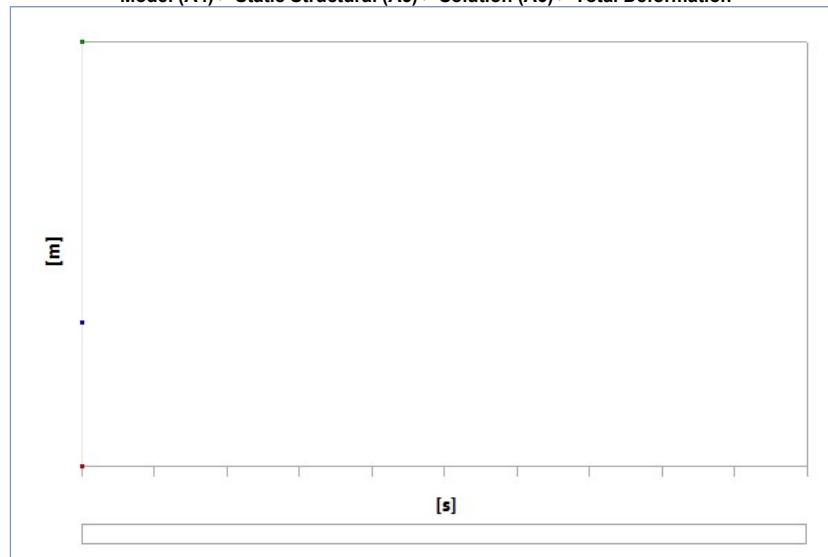


TABLE 16
Model (A4) > Static Structural (A5) > Solution (A6) > Total Deformation

Time [s]	Minimum [m]	Maximum [m]	Average [m]
1.	0.	5.0301e-003	1.7081e-003

FIGURE 10
Model (A4) > Static Structural (A5) > Solution (A6) > Total Deformation > Image

Ansys
2025 R1
STUDENT

A: Static Structural
Total Deformation
Type: Total Deformation
Unit: mm
Time: 1 s
01/03/2025 14:20:30

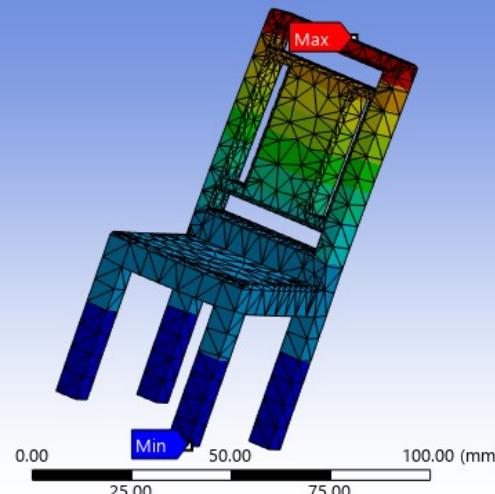


FIGURE 11
Model (A4) > Static Structural (A5) > Solution (A6) > Total Deformation > Figure

A: Static Structural
Figure
Type: Total Deformation
Unit: m
Time: 1 s
12/25/2025 5:07:27 PM

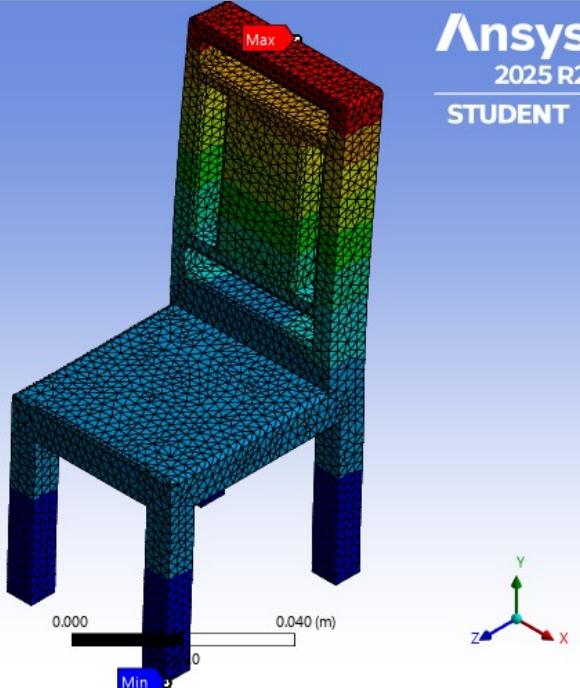
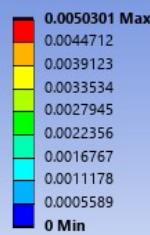


FIGURE 12
Model (A4) > Static Structural (A5) > Solution (A6) > Equivalent Stress

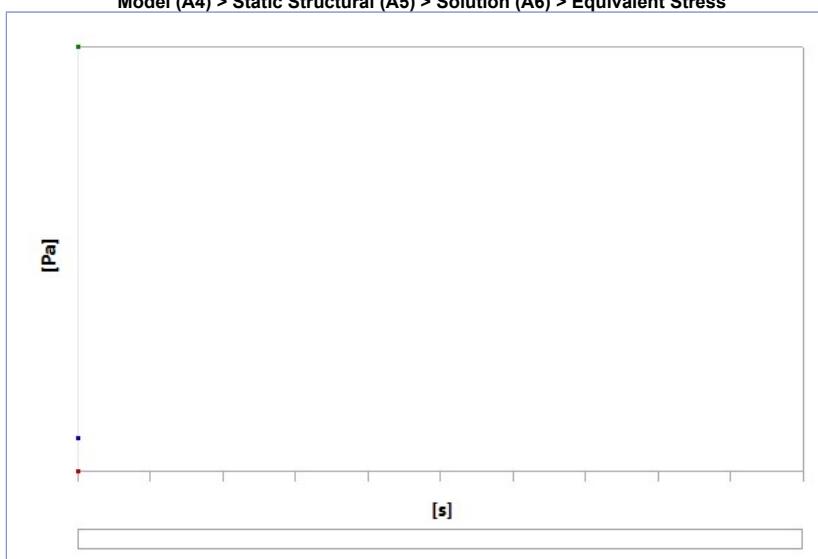


TABLE 17
Model (A4) > Static Structural (A5) > Solution (A6) > Equivalent Stress

Time [s]	Minimum [Pa]	Maximum [Pa]	Average [Pa]
1.	10756	2.7152e+007	2.1292e+006

FIGURE 13
Model (A4) > Static Structural (A5) > Solution (A6) > Equivalent Stress > Figure

A: Static Structural
Figure
Type: Equivalent (von-Mises) Stress
Unit: Pa
Time: 1 s
12/25/2025 5:07:27 PM

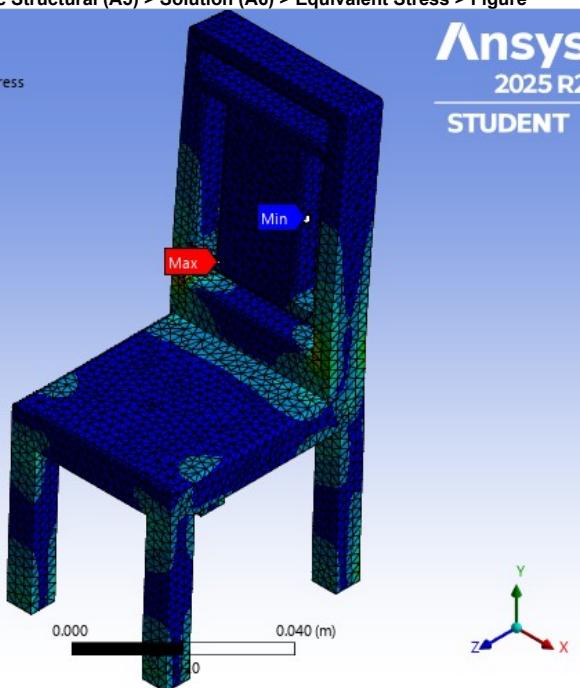
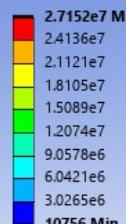


TABLE 18

Model (A4) > Static Structural (A5) > Solution (A6) > Stress Safety Tools

Object Name	Stress Tool
State	Solved
Definition	
Theory	Max Equivalent Stress
Stress Limit Type	Tensile Yield Per Material

TABLE 19

Model (A4) > Static Structural (A5) > Solution (A6) > Stress Tool > Results

Object Name	Safety Factor
State	Solved
Scope	
Scoping Method	Geometry Selection
Geometry	All Bodies
Definition	
Type	Safety Factor
By	Time
Display Time	Last
Separate Data by Entity	No
Calculate Time History	Yes
Identifier	
Suppressed	No
Integration Point Results	
Display Option	Averaged
Average Across Bodies	No
Results	
Minimum	1.6573
Minimum Occurs On	Chair Cut-Extrude6
Information	
Time	1. s
Load Step	1
Substep	1
Iteration Number	1

FIGURE 14

Model (A4) > Static Structural (A5) > Solution (A6) > Stress Tool > Safety Factor

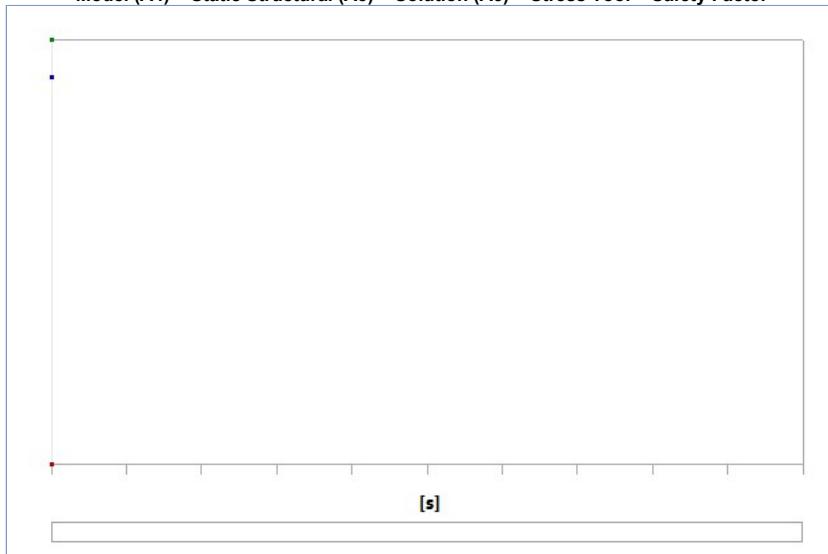


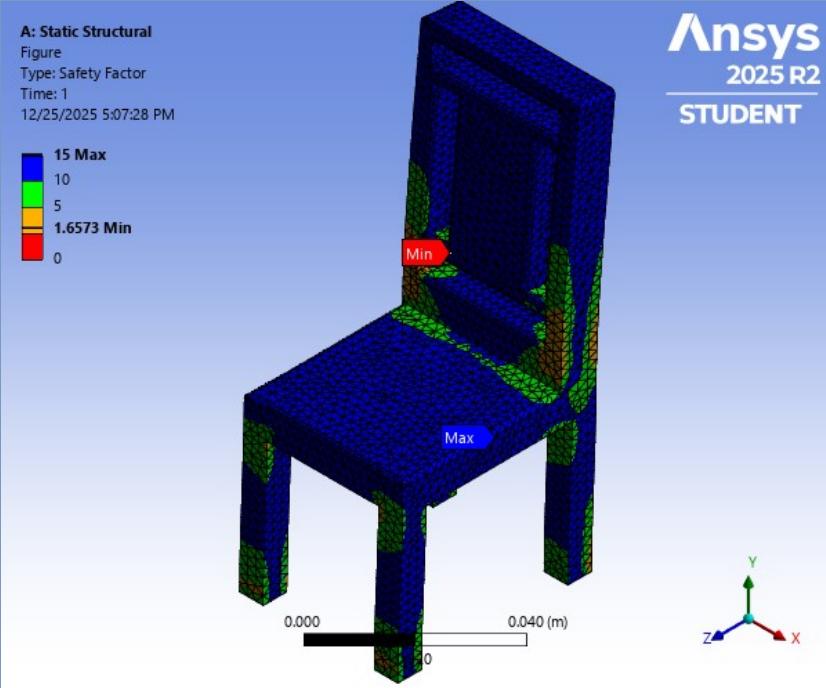
TABLE 20

Model (A4) > Static Structural (A5) > Solution (A6) > Stress Tool > Safety Factor

Time [s]	Minimum	Maximum	Average
1.	1.6573	15.	13.816

FIGURE 15

Model (A4) > Static Structural (A5) > Solution (A6) > Stress Tool > Safety Factor > Figure



Material Data

wood

TABLE 21
wood > Constants

Density | 946 kg m⁻³

TABLE 22

wood > Color

Red	Green	Blue
130	177	176

TABLE 23
wood > Isotropic Elasticity

Young's Modulus Pa	Poisson's Ratio	Bulk Modulus Pa	Shear Modulus Pa	Temperature C
1.144e+009	0.43	2.7238e+009	4.e+008	

TABLE 24
wood > Tensile Yield Strength

Tensile Yield Strength Pa
4.5e+007

TABLE 25
wood > Tensile Ultimate Strength

Tensile Ultimate Strength Pa
1.2e+008