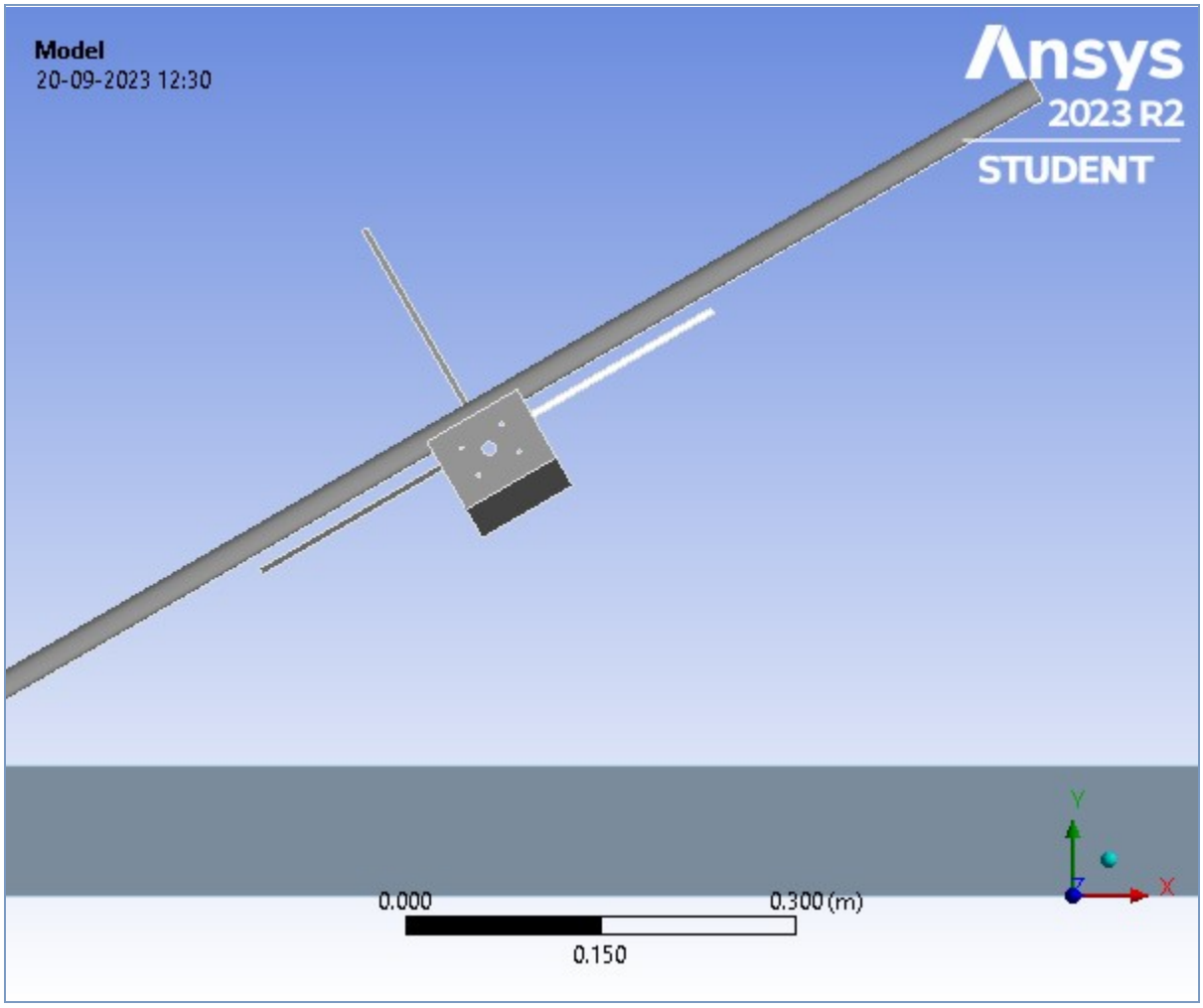
Project*

First Saved	Wednesday, September 20, 2023
Last Saved	Wednesday, September 20, 2023
Product Version	2023 R2
Save Project Before Solution	No
Save Project After Solution	No



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  - Composite, Epoxy/glass fiber, woven prepreg, biax.
  - Concrete

Report Not Finalized

Not all objects described below are in a finalized state. As a result, data may be incomplete, obsolete or in error. View first state problem. To finalize this report, edit objects as needed and solve the analyses.

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)

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\DEEKSHIT\Downloads\g3 wingtip landing.IGS
Type	Iges
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	Program Tolerance
Stitch Tolerance	0.0000001
Decompose Disjoint Geometry	Yes
Enclosure and Symmetry Processing	Yes

Geometry

TABLE 4
Model (A4) > Geometry

Object Name	*Geometry*
State	Fully Defined
Definition	
Source	C:\Users\DEEKSHIT\Downloads\g3 wingtip landing.IGS
Type	Iges
Length Unit	Millimeters
Display Style	Body Color
Bounding Box	
Length X	1.1302 m
Length Y	0.63089 m
Length Z	1.0907 m
Properties	
Volume	0.12726 m³
Mass	302.27 kg
Scale Factor Value	1.
Statistics	
Bodies	2
Active Bodies	2

Nodes	3431
Elements	4618
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	Program Tolerance
Decompose Disjoint Geometry	Yes
Enclosure and Symmetry Processing	Yes

TABLE 5
Model (A4) > Geometry > Parts

Object Name	*g3 wingtip landing-FreeParts*	*g3 wingtip landing-FreeParts[2]*
State	Meshed	
Graphics Properties		
Visible	Yes	
Transparency	1	
Definition		
Suppressed	No	
Stiffness Behavior	Flexible	
Coordinate System	Default Coordinate System	
Reference Temperature	By Environment	
Reference Frame	Lagrangian	
Material		
Assignment	Composite, Epoxy/glass fiber, woven prepreg, biax.	Concrete
Bounding Box		
Length X	0.87812 m	1.1302 m
Length Y	0.52096 m	1.e-001 m
Length Z	0.745 m	1.0907 m
Properties		
Volume	3.9878e-003 m³	0.12327 m³
Mass	7.4054 kg	294.87 kg
Centroid X	-3.2005e-002 m	3.5e-002 m

Centroid Y	0.21155 m	-9.8485e-002 m
Centroid Z	2.1906e-002 m	6.0941e-002 m
Moment of Inertia Ip1	0.19764 kg·m²	29.478 kg·m²
Moment of Inertia Ip2	0.60493 kg·m²	60.621 kg·m²
Moment of Inertia Ip3	0.41809 kg·m²	31.634 kg·m²
Statistics		
Nodes	1163	2268
Elements	3214	1404
Mesh Metric	None	

TABLE 6
Model (A4) > Materials

Object Name	*Materials*
State	Fully Defined
Statistics	
Materials	3
Material Assignments	0

Coordinate Systems

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

Object Name	*Global Coordinate System*
State	Fully Defined
Definition	
Type	Cartesian
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.]

Connections

TABLE 8
Model (A4) > Connections

Object Name	*Connections*
State	Fully Defined
Auto Detection	
Generate Automatic Connection On Refresh	Yes
Transparency	
Enabled	Yes
Statistics	
Contacts	0
Active Contacts	0
Joints	0
Active Joints	0
Beams	0
Active Beams	0

Bearings	0
Active Bearings	0
Springs	0
Active Springs	0
Body Interactions	1
Active Body Interactions	1

TABLE 9
Model (A4) > Connections > Body Interactions

Object Name	*Body Interactions*
State	Fully Defined
Advanced	
Contact Detection	Trajectory
Formulation	Penalty
Sliding Contact	Discrete Surface
Body Self Contact	Program Controlled
Element Self Contact	Program Controlled
Tolerance	0.2

TABLE 10
Model (A4) > Connections > Body Interactions > Body Interaction

Object Name	*Body Interaction*
State	Fully Defined
Scope	
Scoping Method	Geometry Selection
Geometry	All Bodies
Definition	
Type	Frictionless
Suppressed	No

Mesh

TABLE 11
Model (A4) > Mesh

Object Name	*Mesh*
State	Solved
Display	
Display Style	Use Geometry Setting
Defaults	
Physics Preference	Explicit
Element Order	Linear
Element Size	Default (4.2316e-002 m)
Sizing	
Use Adaptive Sizing	No
Growth Rate	Default (1.5)
Max Size	Default (4.2316e-002 m)
Mesh Defeaturing	Yes
Defeature Size	Default (4.2316e-003 m)
Capture Curvature	Yes
Curvature Min Size	Default (2.1158e-002 m)
Curvature Normal Angle	Default (72.0°)
Capture Proximity	No

Bounding Box Diagonal	1.6926 m
Average Surface Area	5.202e-002 m²
Minimum Edge Length	2.9452e-004 m
Quality	
Check Mesh Quality	Yes, Errors and Warnings
Target Element Quality	Default (0.2)
Target Characteristic Length (LS-DYNA)	Default (4.2316e-003 m)
Target Aspect Ratio (Explicit)	Default (5.0)
Smoothing	High
Mesh Metric	None
Inflation	
Use Automatic Inflation	None
Inflation Option	Smooth Transition
Transition Ratio	0.272
Maximum Layers	1
Growth Rate	1.2
Inflation Algorithm	Pre
View Advanced Options	No
Advanced	
Number of CPUs for Parallel Part Meshing	Program Controlled
Straight Sided Elements	
Rigid Body Behavior	Full Mesh
Triangle Surface Mesher	Program Controlled
Topology Checking	Yes
Pinch Tolerance	Default (1.9042e-002 m)
Generate Pinch on Refresh	No
Statistics	
Nodes	3431
Elements	4618
Show Detailed Statistics	No

Explicit Dynamics (A5)

TABLE 12
Model (A4) > Analysis

Object Name	*Explicit Dynamics (A5)*
State	Not Solved
Definition	
Physics Type	Structural
Analysis Type	Explicit Dynamics
Solver Target	AUTODYN
Options	
Environment Temperature	22. °C
Generate Input Only	No

TABLE 13
Model (A4) > Explicit Dynamics (A5) > Initial Conditions

Object Name	*Initial Conditions*
State	Fully Defined

TABLE 14
Model (A4) > Explicit Dynamics (A5) > Initial Conditions > Initial Condition

Object Name	*Pre-Stress (None)*
State	Fully Defined
Definition	
Pre-Stress Environment	None Available
Pressure Initialization	From Deformed State

TABLE 15
Model (A4) > Explicit Dynamics (A5) > Analysis Settings

Object Name	*Analysis Settings*
State	Fully Defined
Analysis Settings Preference	
Type	Program Controlled
Step Controls	
Number Of Steps	1
Current Step Number	1
Load Step Type	Explicit Time Integration
End Time	1.e-002
Resume From Cycle	0
Maximum Number of Cycles	1e+07
Maximum Energy Error	0.1
Reference Energy Cycle	0
Initial Time Step	Program Controlled
Minimum Time Step	Program Controlled
Maximum Time Step	Program Controlled
Time Step Safety Factor	0.9
Characteristic Dimension	Diagonals
Automatic Mass Scaling	No
Solver Controls	
Solve Units	mm, mg, ms
Beam Solution Type	Bending
Beam Time Step Safety Factor	0.5
Hex Integration Type	Exact
Shell Sublayers	3
Shell Shear Correction Factor	0.8333
Shell BWC Warp Correction	Yes
Shell Thickness Update	Nodal
Tet Integration	Average Nodal Pressure
Shell Inertia Update	Recompute
Density Update	Program Controlled
Minimum Timestep for SPH	1.e-010 s
Minimum Density Factor for SPH	0.2
Maximum Density Factor for SPH	3.
Density Cutoff Option For SPH	Limit Density
Minimum Velocity	1.e-006 m s^-1
Maximum Velocity	1.e+010 m s^-1
Radius Cutoff	1.e-003

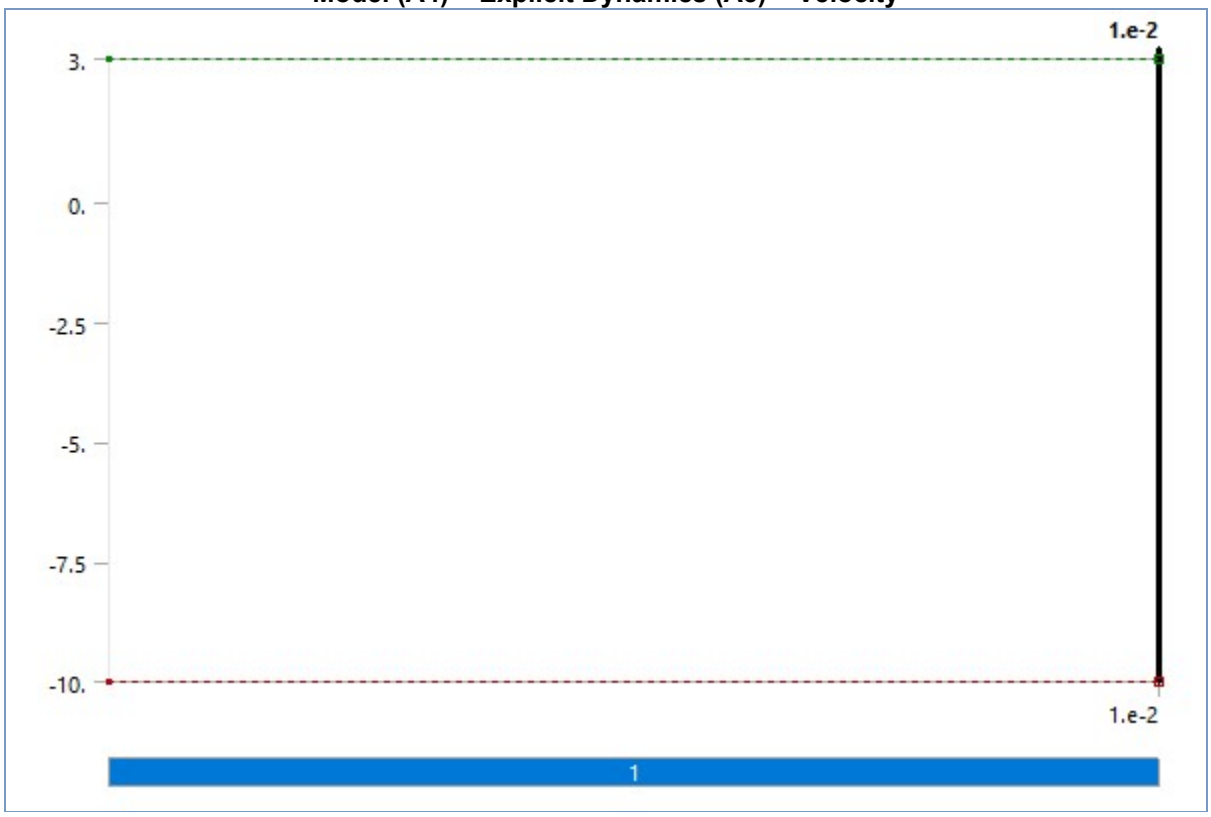
Minimum Strain Rate Cutoff	1.e-010
Detonation Point Burn Type	Program Controlled
Euler Domain Controls	
Domain Size Definition	Program Controlled
Display Euler Domain	Yes
Scope	All Bodies
X Scale factor	1.2
Y Scale factor	1.2
Z Scale factor	1.2
Domain Resolution Definition	Total Cells
Total Cells	2.5e+05
Lower X Face	Flow Out
Lower Y Face	Flow Out
Lower Z Face	Flow Out
Upper X Face	Flow Out
Upper Y Face	Flow Out
Upper Z Face	Flow Out
Euler Tracking	By Body
Damping Controls	
Linear Artificial Viscosity	0.2
Quadratic Artificial Viscosity	1.
Linear Viscosity in Expansion	No
Artificial Viscosity For Shells	Yes
Linear Artificial Viscosity for SPH	1.
Quadratic Artificial Viscosity for SPH	1.
Hourglass Damping	AUTODYN Standard
Viscous Coefficient	0.1
Static Damping	0.
Erosion Controls	
On Geometric Strain Limit	Yes
Geometric Strain Limit	1.5
On Material Failure	No
On Minimum Element Time Step	No
Retain Inertia of Eroded Material	Yes
Output Controls	
Step-aware Output Controls	No
Save Results on	Equally Spaced Points
Result Number Of Points	20
Save Restart Files on	Equally Spaced Points
Restart Number Of Points	5
Save Result Tracker Data on	Cycles
Tracker Cycles	1

Output Contact Forces	Off
Analysis Data Management	
Solver Files Directory	C:\Users\DEEKSHIT\AppData\Local\Temp\WB_DEEKSHIT_9352_2 \wbnew_files\dp0\SYS\MECH\
Scratch Solver Files Directory	

TABLE 16
Model (A4) > Explicit Dynamics (A5) > Loads

Object Name	*Velocity*	*Fixed Support*
State	Fully Defined	
Scope		
Scoping Method	Geometry Selection	
Geometry	1 Edge	1 Face
Definition		
Type	Velocity	Fixed Support
Define By	Components	
Coordinate System	Global Coordinate System	
X Component	Free	
Y Component	-10. m/s (step applied)	
Z Component	3. m/s (step applied)	
Suppressed	No	

FIGURE 1
Model (A4) > Explicit Dynamics (A5) > Velocity



Solution (A6)

TABLE 17
Model (A4) > Explicit Dynamics (A5) > Solution

Object Name	*Solution (A6)*
State	Solve Failed
Information	
Status	Solve Required, Partial Results Available
Post Processing	
Beam Section Results	No

TABLE 18
Model (A4) > Explicit Dynamics (A5) > Solution (A6) > Solution Information

Object Name	*Solution Information*
State	Obsolete
Solution Information	
Solution Output	Solver Output
Update Interval	2.5 s
Display Points	All
Display Filter During Solve	Yes

TABLE 19
Model (A4) > Explicit Dynamics (A5) > Solution (A6) > Results

Object Name	*Total Deformation*
State	Solved
Scope	
Scoping Method	Geometry Selection
Geometry	All Bodies
Definition	
Type	Total Deformation
By	Time
Display Time	Last
Separate Data by Entity	No
Calculate Time History	Yes
Identifier	
Suppressed	No
Results	
Minimum	0. m
Maximum	5.56e-002 m
Average	1.1671e-002 m
Minimum Occurs On	g3 wingtip landing-FreeParts[2]
Maximum Occurs On	g3 wingtip landing-FreeParts
Minimum Value Over Time	
Minimum	0. m
Maximum	0. m
Maximum Value Over Time	
Minimum	0. m
Maximum	5.56e-002 m
Information	
Time	2.9985e-003 s
Set	7
Cycle Number	8408

FIGURE 2
Model (A4) > Explicit Dynamics (A5) > Solution (A6) > Total Deformation

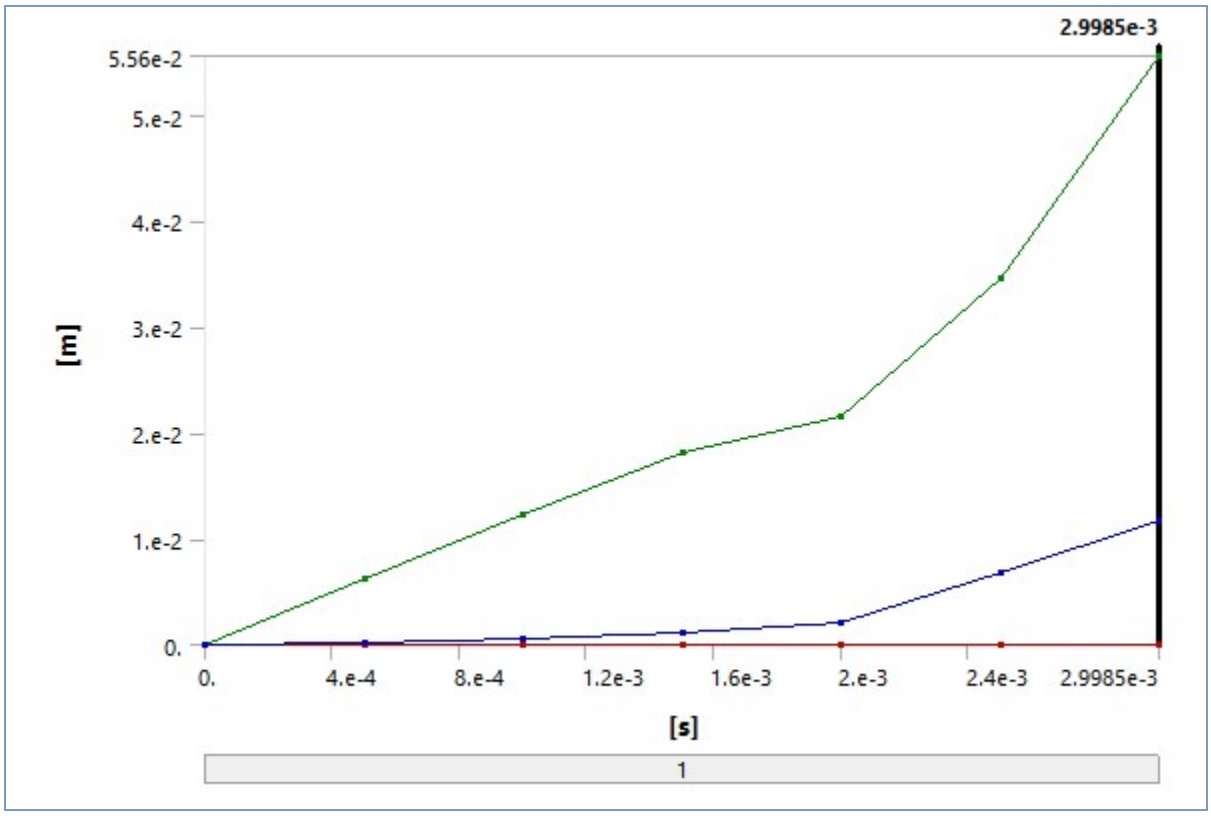


TABLE 20
Model (A4) > Explicit Dynamics (A5) > Solution (A6) > Total Deformation

Time [s]	Minimum [m]	Maximum [m]	Average [m]
1.1755e-038	0.	0.	0.
5.0013e-004		6.2464e-003	1.7972e-004
1.0003e-003		1.2289e-002	5.4865e-004
1.5003e-003		1.8225e-002	1.0486e-003
2.0003e-003		2.1532e-002	2.0169e-003
2.5002e-003		3.4593e-002	6.7373e-003
2.9985e-003		5.56e-002	1.1671e-002

Material Data

Composite, Epoxy/glass fiber, woven prepreg, biax.

TABLE 21
Composite, Epoxy/glass fiber, woven prepreg, biax. > Constants

Density	1857 kg m^-3
Tensile Yield Strength	4.401e+008 Pa
Tensile Ultimate Strength	4.401e+008 Pa
Coefficient of Thermal Expansion	1.688e-005 C^-1
Thermal Conductivity	0.5523 W m^-1 C^-1
Specific Heat	1069 J kg^-1 C^-1
Resistivity	5.586e+013 ohm m
Electric Loss Tangent	3.266e-003
Relative Permittivity	5.012

TABLE 22
Composite, Epoxy/glass fiber, woven prepreg, biax. > Opacity

Red	Green	Blue
153	51	51

Opacity
0.6

Metallic Finish
0

TABLE 23
Composite, Epoxy/glass fiber, woven prepreg, biax. > Isotropic Elasticity

Young's Modulus Pa	Poisson's Ratio	Bulk Modulus Pa	Shear Modulus Pa	Temperature C
2.64e+010	0.1543	1.2728e+010	1.1436e+010	23

TABLE 24
Composite, Epoxy/glass fiber, woven prepreg, biax. > Isotropic Secant Coefficient of Thermal Expansion

Zero-Thermal-Strain Reference Temperature C
23

Concrete

TABLE 25
Concrete > Constants

Density	2392 kg m^-3
Tensile Yield Strength	1.095e+006 Pa
Tensile Ultimate Strength	1.196e+006 Pa
Coefficient of Thermal Expansion	1.015e-005 C^-1
Thermal Conductivity	2.071 W m^-1 C^-1
Specific Heat	936.3 J kg^-1 C^-1
Resistivity	58500 ohm m
Electric Loss Tangent	3.162e-003
Relative Permittivity	9.798

TABLE 26
Concrete > Opacity

Red	Green	Blue
153	153	153

Opacity
0.8

Metallic Finish
0

TABLE 27
Concrete > Isotropic Elasticity

Young's Modulus Pa	Poisson's Ratio	Bulk Modulus Pa	Shear Modulus Pa	Temperature C
1.936e+010	0.1414	8.998e+009	8.4808e+009	23

TABLE 28
Concrete > Isotropic Secant Coefficient of Thermal Expansion

Zero-Thermal-Strain Reference Temperature C
20