

GENOA A & B BASIS ALLOWABLES SIMULATION (ABS)

GENOA A & B Basis is an add-on package that accurately predicts A-basis and B-basis strength values that are critical to reduce risk in the structural designs of aircraft and automotive structures made from composite material. This add-on effectively reduces the number of coupon tests by simulating the scatter in composite material properties and fabrication parameters.

There are three distinct capabilities (options) available for predicting A and B Basis allowables:

- ✓ **Option 1: Using user provided test data**
 - This capability complies with MIL HDBK 17E: Military Handbook for Polymer Matrix Composites and FAA CFR 14 Aeronautics and Space.
 - Does not involve progressive failure analysis (No FEA).
- ✓ **Option 2: Using simulation combined with limited test data**
 - Reproduces scatter from limited tests
 - One coupon from each cure cycle of each batch is recommended as input
 - Coefficient of variation of fiber and matrix properties and composite fabrication parameter entered by user
 - Normal, Lognormal, and Weibull distributions supported
 - Combines FEA and Unit Cell with scatter from test
 - Computes sensitivity information which ranks the influence of the random variables on the strength.
- ✓ **Option 3: Using simulation without test data**
 - Reproduces scattered strength for coupon or structural component by simulation.
 - Same random input as option 2 except without test.
 - Scatter and sensitivities in strength are produced
 - Once the various strength data are collected, the data are passed to option 1 again as if they were real test data to assess A and B basis values using Mil HDBK procedures. This capability is very effective when no test data are available and can be used as a guide to material selection.

Key Benefits

- Effective tool to reduce risk in structural design.
- Reduces the number of coupon tests needed for material qualification.
- Accelerates material qualification for certification.
- Provides a guideline to material selection when no test data are available.
- Evaluates scatter in material strength.
- Applicable to all types of material architectures, all types of ASTM tests, and all levels of structural components.

System Requirements

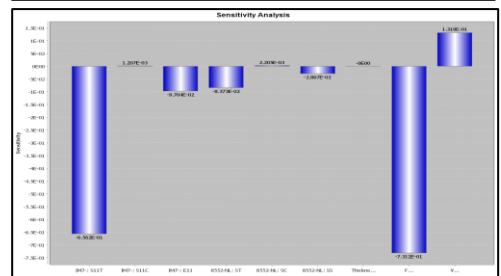
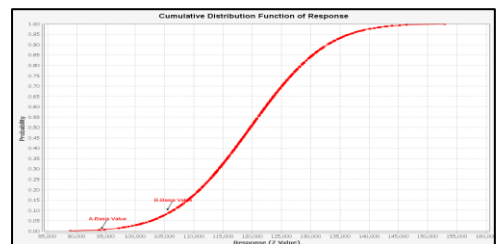
- Windows XP/Vista/7/8 or Linux (64-bit)
- Java 1.7 minimum Runtime Libraries

Minimum Configuration

With the minimum configuration, performance and Functionality may be less than expected.

- 1 GHz or higher CPU, 4GB RAM, 10GB disk space

Generate CDF and Sensitivities For All Manufacturing and Layup Variables Considered



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