November 15, 2016

Data Source Information Package for CMH-17

1. Introduction

CMH-17 provides an easy reference source of material properties used for a wide range of applications. Data are provided to the handbook to encourage use of materials, to archive data and reduce duplication of test programs, and to reduce costs for material qualification.

The requirements for data to be included in the handbook are provided in Volume 1 of CMH-17. This document summarizes that information and provides a directory for more specific information in the handbook. Additional information on data submission is furnished in this guide and the accompanying diskette. In all cases, the latest release of CMH-17 takes precedence over this guide. The information in this document is provided to assist in the development and submission of data for inclusion in CMH-17. Any questions may be addressed to the chairman of the Data Review working group or the CMH-17 Secretariat:

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Copies of the handbook are available from SAE:
http://books.sae.org/r-422.set3/

If you have any difficulty obtaining a copy of the handbook from SAE, contact the Secretariat.

2. Review process

The review process for handbook data is summarized in Figure 1. Two copies of the data (paper-copy or electronic format) are submitted to the Handbook Secretariat. One copy is forwarded to the Handbook Coordinator for initiation of the export control review. The Secretariat reviews the data documentation, prepares the data and performs statistical analysis per handbook requirements, and conducts a technical review consisting of comparisons to existing literature data and predictions based on micromechanics and laminate analysis. Any missing information is sought from the data source. The results of the analysis and review are submitted to the Data Review working group. The working group may approve the data or request additional information, analysis, or review. Following approval by the working group, the data are submitted to the CMH-17 Coordination Group for review. This distribution usually occurs in the yellow pages of a meeting proceedings or an annex depending on the export control status of the data.

At the same time, the distribution limitations of the data are considered. Information regarding any existing limitations is sought from the data source. Guidance on export control limitations is provided by a task group including representatives from government and industry. The recommendations of the task group are submitted to the Material Standardization Office for final release status.

Following approval of the data by the Coordination Group and export control release of the data, the data are included in the next draft of Volume 2 of the handbook. Data that remain under export control are included in a limited distribution annex to Volume 2. These drafts may be a change notice or revision depending on the publication schedule. The drafts are circulated for Department of Defense Coordination Review. Any changes necessary based on this review are made and the change notice or revision is released.

The length of time required for the data review process depends on a number of variables. The most common reason for delay is inadequate data documentation. Other factors include the Coordination Group and Data Review working group meeting schedules, the prioritization of data for consideration, and the publication schedule for the handbook. The order in which data are addressed is established by a task group which is composed primarily of working group chairs. The general order of prioritization is lamina/laminate mechanical property data, stress-strain curves, thermal properties, and properties for other material forms. Data which may be used in current development programs generally get the highest priority. Data for the other properties listed in the tables of Section 5 have not been submitted to the handbook to date. In addition, data which requires pooling or a variation in method of analysis will typically take much longer to reach approval.

In order for data to be considered at the next Data Review working group session, it is recommended that all data and documentation in electronic format reach the Secretariat at least two months prior to the meeting. If the process runs smoothly, the following range of times required for approval may apply.

Step	Time (months)
Data Submittal to Approval by Working Group	2 - 8
.. to Coordination Group Approval	4 - 5
.. to DOD Coordination Review Completion (if export controlled)	4 - 18
.. to Handbook Release	2 - 4
Total	12 - 35

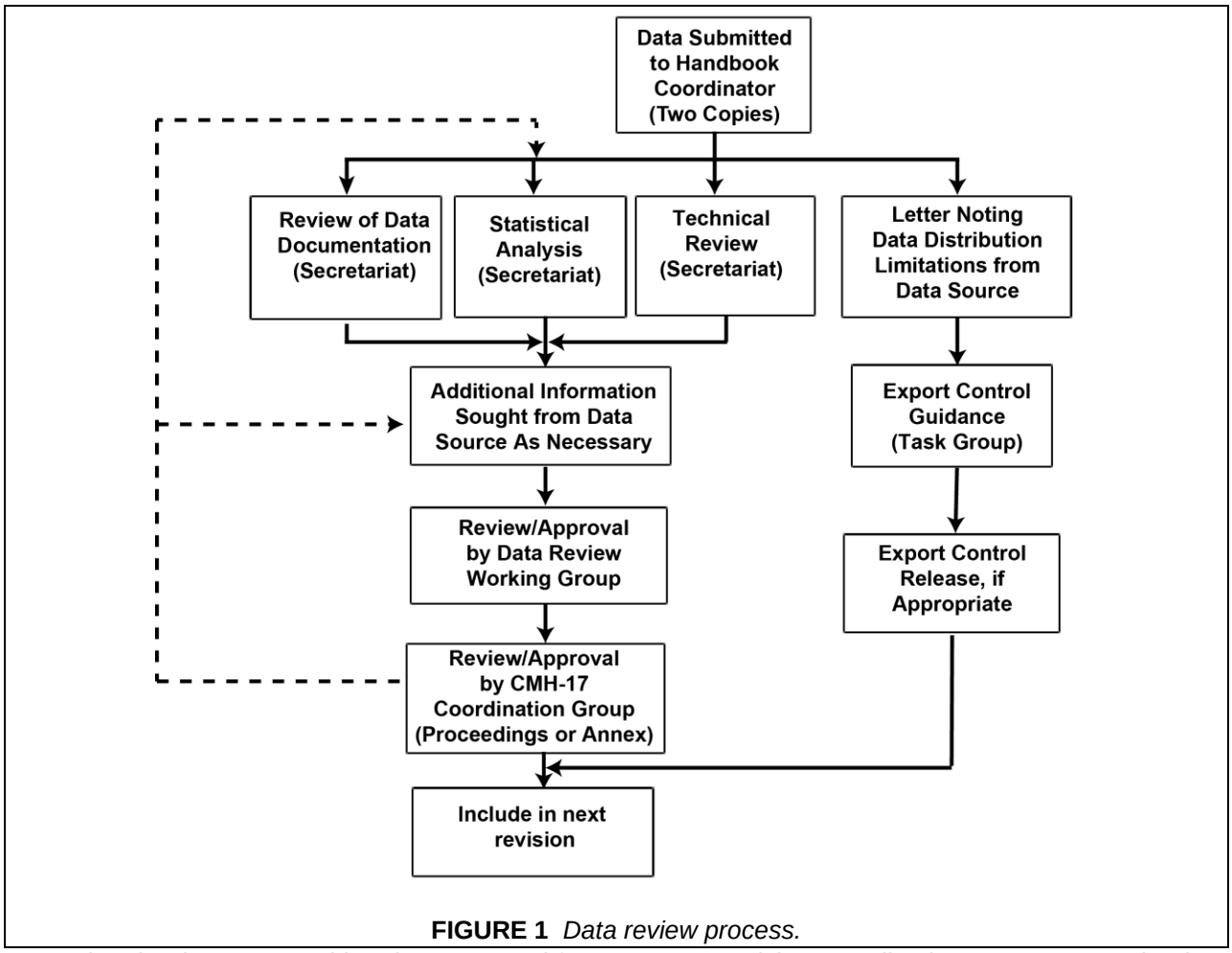

FIGURE 1 *Data review process.*

Note that the data are considered as approved for use upon receiving Coordination Group approval. The export control review process is conducted concurrently with these steps and generally does not take as long.

3. Requirements

3.1. Classes of data/sampling

CMH-17 provides for the inclusion of several different classes of data in the handbook:

A75 – Robust Sampling Data
Statistically-based material properties that meet the most stringent handbook level of population sampling, data documentation and test method requirements. A- and B-values are presented in the handbook. The upper-case letter A is used for summary tables.

A55 – Reduced Sampling Data
Statistically-based material properties that meet the most stringent handbook level of data documentation and test method requirements with reduced sampling appropriate for certain applications (See Volume 3, Chapter 4, [Building Block Approach]). A- and B-values are presented in the handbook. The lower-case letter a is used for summary tables.

AP10 – Pooling, Robust Sampling Data

Statistically-based material properties that meet the most stringent level of data documentation and test methods requirements. Assumptions are met in order to pool variance across temperature and humidity conditions. A minimum of three environments is required. A-values are presented in the handbook. An underlined upper-case A is used in summary tables when there are ten or more batch-es and at least 60 specimens at all environments.

AP5 – Pooling, Reduced Sampling Data
Statistically-based material properties that meet the most stringent level of data documentation and test methods requirements. Assumptions are met in order to pool variance across temperature and humidity conditions. A minimum of three environments is required. A-values are presented in the handbook. An underlined lower-case a is used in summary tables when there are five or more batch-es and at least 40 specimens at all environments.

B30 – Robust Sampling Data
Statistically-based material properties that meet the most stringent handbook level of population sampling for B-values, data documentation and test method requirements. B-values are presented in the handbook. The upper-case letter B is used for summary tables.

B18 – Reduced Sampling Data
Statistically-based material properties that meet the most stringent handbook level of data documentation and test method requirements with reduced sampling appropriate for B-values for certain applications (See Volume 3, Chapter 4 (Building Block Approach)). The ANOVA statistical analysis will not be used to calculate basis values for datasets with less than five (5) batches. B-values are presented in the handbook. The lower-case letter b is used for summary tables.

BP5 – Pooling, Robust Sampling Data
Statistically-based material properties that meet the most stringent level of data documentation and test methods requirements. Assumptions are met in order to pool variance across temperature and humidity conditions. A minimum of three environments is required. B-values are presented in the handbook. An underlined upper-case B is used in summary tables when there are five or more batches and at least 25 specimens at all environments.

BP3 – Pooling, Reduced Sampling Data
Statistically-based material properties that meet the most stringent level of data documentation and test methods requirements. Assumptions are met in order to pool variance across temperature and humidity conditions. A minimum of three environments is required. B-values are presented in the handbook. An underlined lower-case b is used in summary tables when there are three or more batches and at least 15 specimens at all environments.

M – Mean Data
Mean material properties that meet the most stringent handbook level of data documentation and test method requirements. This data class generally applies to modulus and Poisson's ratio data and other properties for which basis values are not typically used. The upper case letter M is used for summary tables.

I – Interim Data
Data that do not meet the specific sampling or data documentation requirements required of B and A data classes. Interim data can be subdivided into two categories:

1. Data that meet data documentation requirements for B and A data classes, but for which insufficient batches or replicates were tested. These data may potentially be pooled with other data to create a properly-sampled population that meets the B and A data requirements.
2. Data which fail to meet the data documentation requirements for B and A data, even if the population sampling is adequate for those data classes. Such data cannot be used for subsequent pooling.

The upper-case letter I is used for summary tables.

S – Screening Data
Data representing fewer than three batches, or data resulting from a test method limited to the screening level of approval. The screening data class is intended to provide for rapid inclusion in the handbook of data for new materials and other information that is useful even with a limited data set as described in Volume 1, Section 2.1.2.2 and as illustrated by the recommended test matrix of Table 2.3.1.1. The upper-case letter S is used for summary tables.

3.2 Material and process specification requirements

All materials submitted to the handbook should be manufactured in accordance with a material specification that imposes requirements on key physical and mechanical properties and should be processed in accordance with a process specification that adequately controls key processing parameters. A copy of the material and process specifications, either in electronic or hardcopy format, shall be submitted to the Secretariat along with the data for consideration for inclusion in Volume 2 of the Handbook. Additional data documentation requirements are provided in Volume 2, Section 2.5.6.

The material supplier shall produce all materials submitted to the handbook under a process control document (PCD).

The material specification, process specification, and PCD should be prepared and maintained in accordance with FAA Advisory Circular 23-20 "Acceptance Guidance on Material Procurement and Process Specifications for Polymer Matrix Composite Systems," or equivalent.

As noted in Section 2.2.5.1, the magnitude of a basis value is a function of the amount of data obtained, the number of batches represented, and the uniformity of the batches produced. Basis values are presented in the handbook only for B and A data classes. The minimum sampling requirements for each class are shown in the table below.

Minimum sampling requirements for CMH-17 data classes.

			Minimum Requirements	
Designation	Symbol	Description	Number of Batches	Number of Specimens
A75	A	A-Basis – Robust Sampling	10	75
A55	a	A-Basis – Reduced Sampling	5	55
AP10	A	A-Basis – Pooling, Robust Sampling	10*	60*
AP5	a	A-Basis – Pooling, Reduced Sampling	5*	40*
B30	B	B-Basis – Robust Sampling	5	30
B18	b	B-Basis – Reduced Sampling	3	18
BP5	B	B-Basis – Pooling, Robust Sampling	5*	25*
BP3	b	B-Basis – Pooling, Reduced Sampling	3*	15*
M	M	Mean	3	18
I	I	Interim	3	15
S	S	Screening	1	5

* At each environment

3.3 Additional requirements for B and A data classes

The prepreg batches shall be prepared by the material supplier using production facilities. For unidirectional tape materials, the first five prepreg batches shall consist of five different fiber and five different matrix constituent lots (for A data, three for B). The sixth (or fourth) batch, and on, may be unique combinations of previously used fiber and resin lots. For fabric materials involving warp and fill

yarns, each batch of prepreg shall be made from separate batches of fabric and resin. Each batch of fabric shall contain different fiber lots in each of the warp and fill directions, as shown in the table below (note: for the A data class, at least five prepreg batches will be required).

Fiber lots for fabric prepreg batches.

Prepreg Batch	Fabric Batch	Warp Yarn	Fill Yarn	Resin Batch
1	Fabric Batch A	Fiber Lot 1	Fiber Lot A	1
2	Fabric Batch B	Fiber Lot 2	Fiber Lot B	2
3	Fabric Batch C	Fiber Lot 3	Fiber Lot C	3
4	Fabric Batch D	Fiber Lot 4	Fiber Lot D	4
5	Fabric Batch E	Fiber Lot 5	Fiber Lot E	5

Note: Fiber lots 1 – 5 must be unique; fiber lots A – E must be unique; however, the same fiber lot may be used for one fabric batch in the warp direction and one fabric batch in the fill direction.

The sixth (or fourth) batch, and on, may be unique combinations of previously used fiber, fabric, and resin lots.

For each condition and property, batch replicates should be sampled from at least two different test panels covering at least two separate processing cycles. Test panels shall be nondestructively evaluated using ultrasonic inspection or another suitable nondestructive inspection technique. Test specimens shall not be extracted from panel areas having indications of questionable quality. A test plan (or report) shall document laminate design, specimen sampling details, fabrication procedures (including material traceability information), inspection methods, specimen extraction methods, labeling schemes, and test methods.

3.4 Test methods

The test methods which are acceptable for generating handbook data are listed in the handbook chapter applicable to the material form. For example, test methods for lamina/laminate properties are discussed in Volume 1, Chapter 6. The *test method* requirements which apply to a given data set are the requirements that were in effect on the date the test was performed.

3.5 Units

Preferred units for handbook submission are one of the two sets shown in Table 3. If these are not the units in which the data were recorded, please include the original units in the submission.

3.6 Documentation

Data documentation requirements which apply to a given data set are the requirements that were in effect on the date that the data were submitted to the handbook. A checklist showing the current data documentation requirements for lamina/laminate properties is provided in this document. This list is drawn from Volume 1, Table 2.5.6, of the handbook.

If all documentation listed is not provided, the Data Review Working Group chairs will determine if the data are adequate for Handbook publication.

TABLE 3 *Preferred units for data submittal.*

Unit Approach	U.S. Customary	S.I.
Strength/stress	ksi	MPa
Modulus	Msi	GPa
Strain	μ	μ
Temperature	F	C
Pressure (processing)	psi	kPa
Time (processing)	min	min
Cured ply thickness, specimen dimensions	in.	mm
Resin content	wt%	wt%
Fiber volume	vol%	vol%
Void volume	vol%	vol%
Areal weight	g/m^2	g/m^2
Density	g/cm^3	g/cm^3
Twist	turns/in	turns/25 mm
End count, pick count	/in	/25 mm
Humidity	%RH	%RH
Time (conditioning)	days or as appropriate	days or as appropriate

Conditioning
Panel fiber volume
Nominal density - fiber, matrix, and composite
Nominal thickness
Raw data - thickness, property (strength, strain-to-failure, modulus, Poisson's ratio)
Method of calculating modulus and Poisson's ratio, if reported
Sizing
Fiber areal weight for each batch

Inclusion of these data is possible only with a warning statement of the following form:

ALL DOCUMENTATION PRESENTLY REQUIRED WERE NOT SUPPLIED FOR THIS MATERIAL.

4. Transfer of Data

Virtually any electronic format for data submission is preferred to paper-copy. Utility programs have been written to reformat data files as needed. The secretariat currently uses Excel spreadsheet programs and PC and UNIX platforms with MAC available as needed. In addition, commercial conversion packages can be used as well as programming reformatting as needed.

5. General Guidance for Data Preparation

5.1. Guidance

1. *Data documentation* requirements which apply to a given data set are the requirements that were in effect on the date that the data were submitted to the handbook. A checklist showing the current data documentation requirements for lamina/laminate properties is provided in this package. When a newer revision of the requirements is less stringent for a particular field than the version on the date that the data were submitted, the less stringent requirement applies. If the requirement for a particular field has become more stringent, that information is requested, but not generally required.

   The greatest delay in data analysis and review is generally due to inadequate documentation.

2. *Data submission* - Please submit the raw data with specimen thickness measurements. It is helpful if all properties from one specimen are located together or can be identified as such.

3. *Statistical analysis* – CMH17 STATS is currently used to perform the statistical analysis on the data. CMH17 STATS is available from the CMH-17 Secretariat. However, please do not submit data files in CMH17 STATS input format only. The use of regression analysis in evaluating data is being considered by the handbook coordination group. If the data source has used regression for the submitted data set, the source can provide its regression scheme for Data Review working group consideration.

4. Normalized data may be submitted as long as the normalization procedure is documented and the raw data are also included.

5. Whenever possible, submit the data in *electronic format*. Please contact the Secretariat regarding any formats other than those mentioned in Section 4, but much flexibility is possible to avoid the effort and potential errors of reentering data from hardcopy.

6. Please submit two copies of the data to the CMH-17 Secretariat.

5.2. Property List

Tables 5.1 through 5.5 show the properties that the Coordination Group will consider for inclusion in the handbook. Lamina and laminate mechanical properties have received the greatest attention to date. Requirements and procedures for those properties are well established. Other properties should be discussed with the Data Review working group chair or the Secretariat prior to submission.

TABLE 5.1 *Reinforcement summary table properties.*

Type	Property
Thermal	expansion conductivity specific heat
Tension	ultimate strength Young's modulus strain to failure
Physical	diameter density twist chemical resistance electrical resistivity sizing level

TABLE 5.2 *Matrix summary table properties.*

Type	Property	Type	Property
Physical	density	Thermal	melting temperature -- crystalline thermoplastics crystallization rate -- crystalline thermoplastics shrinkage during cure
Compression	ultimate strength Young's modulus strain to failure	Electrical	dielectric constant loss tangent
Tensile	ultimate strength Young's modulus strain to failure	Processing	gel point gel time
Shear	ultimate strength shear modulus	Other	impact fracture toughness moisture expansion moisture diffusivity maximum equilibrium moisture content
Thermal	expansion conductivity specific heat glass transition temperature (wet/dry)		

TABLE 5.3 *Prepreg summary table properties.*

fiber areal weight	heat of reaction
resin content	tack
volatile content	drape
gel time	thickness, cured ply
flow	storage life at -- 18°C (0°F)
viscosity	out time at _ (temperature)

TABLE 5.4 *Lamina summary table properties.*

Type	Property	Type	Property
Physical	density	Thermal	expansion
	thickness/ply		conductivity
Compression	ultimate strength		specific heat
	Young's modulus		glass transition temperature
	strain to failure		emissivity
	Poisson's ratio		
Tension	ultimate strength	Electrical	resistivity
	Young's modulus		dielectric constant
	strain to failure		loss tangent
	Poisson's ratio		
Shear	ultimate strength	Other	processing data
	shear modulus		fiber volume
	strain to failure		resin content
	offset shear strength		moisture expansion

TABLE 5.5 *Laminate property summary table.*

Type	Property	Type	Property
Physical	density	Electrical	resistivity
	thickness/ply		dielectric constant
Tension	ultimate strength		loss tangent
	Young's modulus	Other	processing data
	strain to failure		fiber volume
	Poisson's ratio		resin content
Compression	ultimate strength		moisture expansion
	Young's modulus		vacuum stability
	strain to failure		oxidation exposure, aging
	Poisson's ratio		chemical resistance
Shear	ultimate strength		chemical resistance
	shear modulus		flammability
	strain to failure		fracture toughness
Interlaminar shear	ultimate strength		compression after impact
	normal stress		notch effects -- tension
Thermal	expansion		notch effects -- fatigue
	conductivity		interlaminar tension -- ultimate
	specific heat		bearing -- ultimate strength, strain at failure
	glass transition temperature		damping characteristics
	emissivity		

6. Worksheets

Four worksheets are attached. The first is a data documentation checklist for lamina/laminate mechanical properties that corresponds to CMH-17G. The second worksheet is the list of information needed for each batch and/or panel. The third worksheet is a list of columns for data for each individual specimen. The fourth worksheet is a blank letter including data distribution limitation information.

Material: _____
Engineer: _____

Date to be Submitted: _____ Date: _____

Material identification - required for all composite materials
● material identification ● material class (e.g., C/EP) ● material procurement specification
Matrix material - required for all composite materials
● commercial designation ● manufacturer ● date of manufacture, earliest and latest ● lot number for each lot ● nominal density and test method
Reinforcement - required for all composite materials
● precursor type (i.e., PAN, Rayon) ● commercial designation ● manufacturer ● date of manufacture, minimum and maximum ● lot number for each lot ● surface treatment (Y/N) ↔ surface treatment type ● surface finish (sizing) identification and amount ● density (average per lot) and test method ● nominal filament count ● twist
Preform
● preform architecture ● preform identifier ● preform manufacturer ● preform method of manufacture - molded, stitched, RFI, etc. ● number of preform layers 2-D Fabric ↔ fabric manufacturer/weaver ● fabric family (weave pattern) ● fabric standard style number (particularly for glass fabrics) ● fabric sizing identification ● fabric sizing content ● fabric warp and fill tow count per inch ● fiber areal weight per batch[1] ● fabric fill fiber (if different) 3-D Woven Materials (including triaxial fabric) ● interlock description ● warp fiber filament count ● weft fiber filament count ● angle fiber filament count ● weaver yarn filament count ● percentage of warp yarn ● percentage of weft yarn

[1] See Part Description, fiber areal weight

- angle of angle yarn (positive with respect to axial yarn)
- percentage of angle yarn
- percentage of weaver yarn

- percentage of through-thickness yarn
- pitch length
- warp end count
- weft end count

Stitching Information

- stitch type
- stitch thread
- stitch axial pitch
- stitch row spacing
- ↔ stitch denier
- stitch filament count
- bias yarn end count
- bias yarn angle

Braiding Information

- braid description
- axial fiber type
- braid fiber type
- axial fiber filament count
- braid fiber filament count
- braid angle
- percentage of axial yarn
- percentage of braid yarn
- ↔ axial yarn spacing in braids

Winding Description

- winding description

Prepreg

- ply manufacturer
- date of manufacture
- material lot number
- commercial designation
- material form - tape/fabric
- fiber areal weight per batch[2]
- total resin content per lot
- ↔ volatile content
- scrim material class
- scrim fabric style

Processing - required for all composite materials

- process specification
- lay-up schematic (including bagging, scrim, bleeder, etc.)
- ⊗ part manufacturer
- date of manufacture (date completed)
- reinforcement application process (how the fiber/preform was put together) - see Volume 2, Table 1.4.2(b)
- cure process type (how the part was cured/molded) - see Volume 2, Table 1.4.2(b)
- ↔ tackifier common name
- ↔ tackifier material class (e.g., epoxy)
- ↔ tackifier form - aerosol/liquid

[2] See Part Description, fiber areal weight

↔	tackifier manufacturer

Process Description - appropriate group required for all composite materials
Autoclave/oven/press cure ● near-net or extra resin process ● temperature for putting uncured part into autoclave/oven/press (including range) ● ramp rate to cure conditions ● cure conditions - temperature, pressure, duration, ● ramp rate to postcure ● postcure conditions - temperature, pressure, duration, ● cooling rate ● part removal temperature ● other critical control parameters RTM (not applicable to RFI) ● degas steps on the resin prior to injection ● initial tool temperature ● preform insertion temperature ● heat-up rate, soak time and temperature before injection ● vacuum used (Y/N) and inches Hg ● injection rate (cm^3/min), temperature, and pressure ● cure temperature, pressure, and duration ● cooling rate and part removal temperature ● additional postcure (Y/N) - temperature, duration, in-tool/free-standing
Part Description- required for all composite materials
● form (panel, tube, etc.) ● ply count ● lay-up code ● fiber areal weight[3], nominal, by batch or part, and test method ● nominal fiber volume[3] and test method ↔ resin content (weight or volume), nominal and test method ⊗ void content, nominal, by batch or part, and test method ● density, nominal, by batch or part, and test method ● ply thickness, nominal, by batch or part, and test method ● glass transition temperature (wet and dry, nominal) and test method
Specimen preparation- required for all composite materials
● specimen orientation ⊗ tab adhesive curing temperature (nominal)
Mechanical testing- required for mechanical testing of all composite materials
● number of specimens ● test procedure (citing *all* deviations from standard procedures including reporting requirements. It is assumed that, other than the deviations reported, the test method was followed.) ● date of applicable standard ● date of testing ● specimen thickness for each specimen ● specimen conditioning standard method ● conditioning temperature[4] ● conditioning humidity ● conditioning time ● conditioning environment (if not lab air), standard designation of fluids if available

[3] Fiber volume or fiber areal weight (FAW) for each batch or panel is required. For prepregs, batch or roll average FAW is acceptable. For other materials, lot or roll average FAW of the assembled reinforcement (fabric, braid, or preform) is acceptable. If additional out-of-plane reinforcement, such as stitching is used, the lot or roll average FAW can be obtained for the reinforcement assembly prior to the out-of-plane reinforcement (e.g., unstitched fabric).

[4] If multi-step conditioning method was used, provide conditioning information for each step.

●	equilibrium (Y/N)
⊗	moisture content, specify whether moisture content or uptake
●	test temperature
●	soak time at test conditions prior to load initiation
●	fastener type and torque-up conditions (bearing, mechanically fastened joint (MFJ), filled-hole)
●	hole diameter (open/filled-hole, bearing, MFJ)
↔	hole clearance, countersink angle and depth (filled-hole, bearing, MFJ)
●	nominal thickness, width, and material for each member (bearing, MFJ)
●	edge distance (bearing, MFJ)
●	fixture torque-up (e.g., SACMA RM-1)
●	shear strain at which test was truncated (shear)
●	failure mode identification and location
●	all non-normalized (raw) data
●	method of calculating modulus and Poisson's ratio
●	method of finding offset strength (bearing)
●	method of finding proportional limit (bearing
●	method of calculating fracture toughness (fracture toughness)
●	method of finding proportional limit (bearing)
●	method of calculating fracture toughness (fracture toughness)

● Required for submission to Secretariat
⊗ Required submission to the Secretariat for B and A data classes
↔ Requested for submission to the Secretariat, presented if available

BATCH/PANEL INFORMATION

The following information is included for each batch and/or panel.

Material Name	Lay-Up Code (Ply Sequence)
Batch/Lot Identification	Specific Gravity
Fiber Areal Weight (g/m2)	Resin Content (%wt)
Fiber Density (g/cm3)	Fiber Content (%vol)
Resin Density (g/cm3)	Void Content (%vol)
Panel Number	Cured Ply Thickness (inch)
Type of Specimen (Test)	Panel Thickness (inch)
Number of Plies	

The lay-out and example data in a sample batch worksheet are shown below.

EXAMPLE WORKSHEET FOR BATCH INFORMATION

MATERIAL	Material Name
BATCH/LOT	A1
FIBER AREAL WEIGHT (g/m2)	376.4
FIBER DENSITY (g/cm3)	1.79
RESIN DENSITY (g/cm3)	1.24

Panel Number	Type of Specimens	Number of Plies	Ply Sequence	Density (g/cm3)	Resin Content (%wt)	Fiber Volume (%vol)	Void Content (%vol)
1	Tension	4	[0/90]:4	1.55	35.46	54.29	0
2	Tension	4	[0/90]:4	1.53	36.68	53.41	0.35
3	Compression	6	[0/90]:6	1.54	36.4	53.99	0.3
4	Tension	4	[0/90]:4	1.55	35.16	53.41	0.02
5	Compression	6	[0/90]:6	1.54	36.72	53.99	0.01
6	In-Plane	8	[45]:8	1.53	37.35	53.41	0.09
9	Tension	4	[0/90]:4	1.55	35.05	53.41	0
12	CAI	16	[45/0/-45/90]:3s	1.54	37.01	54.51	0

1. These are example data. Please replace them with your own data.
2. Other units can be used, if identified.
3. This is intended as a guide representing one possibility. If any other configuration makes your submission of data easier, feel free to use it.

DATA FORMAT

The format that is easiest for the Secretariat to pull into the database is any delimited text or columns of text in the order below. Thus ASCII text with tab or comma delimiters, Word text with tab or any other delimiters, or spreadsheet file accessible in Excel.

With each datum, we need the following information:

Batch/lot
Panel
Specimen identification
Specimen thickness (in)
Strength (ksi)
Strain-to-failure (microstrain)
Modulus (Msi)

Poisson's ratio
Failure mode
Notes, including strain gage failure, loss of tabs, etc.

The most convenient form is to include the above information in columns, in the order listed. However, if any other form makes your data submission easier, please feel free to use it. Other units can be used as long as they are identified.

With each data set, we need the documentation listed in Volume 1, Section 2.5.6, for lamina/laminate mechanical properties or equivalent for other properties (these requirements are under development) in order to begin statistical analysis. This information also needs to be available before the data will be considered by the Data Review working group. There have been times when we try to perform the technical review of the data without this information, and this is very difficult.

To load the data into the database and perform the statistical analysis promptly we need:

For each data set:

Type of test and direction — Example: Longitudinal tension
Lay-up
Test temperature
Moisture content/conditioning

For each panel:

Panel fiber volumes or areal weights

Please call the Secretariat with any questions.

The layout and example data in for individual specimens are shown below.

EXAMPLE WORKSHEET FOR INDIVIDUAL SPECIMENS

MATERIAL:

TEST TYPE AND DIRECTION: Longitudinal Tension

LAY-UP: [0/90]:4

TEST TEMPERATURE: 75 F

MOISTURE CONTENT: dry

CONDITIONING:

Batch/ Lot	Panel	Spec ID	Thickness (inch)	Fiber Volume (%vol)	Strength (ksi)	Strain-to-Failure (microstrain)	Modulus (Msi)	Poisson's Ratio	Failure Mode *	Notes
A1	9	8	0.059	53.41	128.5	10896	11.5	0.23		
A1	9	7	0.060	53.41	135.5	11820	11.3	0.21		
A1	9	6	0.060	53.41	117.8	10212	11.5	0.22		
A1	1	-3	0.061	54.29	120.1	10860	11	0.23		
A1	2	-3	0.063	53.41	119.9	11040	10.7	0.22		
B2	3	2	0.061	55.13	126.1	11052	11.2	0.23		
B2	3	1	0.061	55.13	115.3	10110	11.2	0.21		
B2	3	0	0.061	55.13	126.1	11340	11.3	0.21		
B2	3	-1	0.061	55.13	127.1	11448	11.1	0.2		
B2	4	2	0.058	55.13	119.1	9936	11.8	0.23		

*Failure modes can be provided as test method codes, e.g., ASTM D 3039 "LGM", descriptions for each specimen, or descriptions for each data set with exceptions noted.

1. These are example data. Please replace these entries with your own.

1. These are example data. Please replace these entries with your own.

2. Other units can be used, if identified.
3. This is intended as a guide representing one possibility. If any other configuration makes your submission of data easier, feel free to use it.

Please complete and submit with the data package:

DISTRIBUTION LIMITATIONS ON CMH-17 DATA

The data set identified as *material designation*, submitted for inclusion in CMH-17 "Polymer Matrix Composites", on *date* has the following limitations on distribution (Please check all that are applicable):

☐ The data have unlimited distribution.

☐ The data are in the public domain published in _____

_____.

☐ The data are subject to the following limitation: _____

_____.

based on:

☐ COCOM ☐ ITAR

☐ EAR ☐ MCTL

☐ Other (Explanation Required) _____

_____

Name: _____

Organization: _____

_____ _____
Signature Date