How to Make a Table

Where does it fit? – A table is often included in results and discussion sections to convey specific data in a meaningful way, though they can be included in other sections as appropriate.

Before writing – Determine whether a table is the best method to convey data and its intended message; this requires thoughtful examination of the data and the purpose of presenting the data. Reasons for selecting a table might be: 1. To highlight numerical information, 2. To convey information precisely. 3. When a set of numbers all have different units 4. The data are not numerical. Sometimes data can be presented in a single sentence or two, in which case neither a table nor figure is necessary. If you want to show a trend or compare the magnitudes of data, a figure is often more appropriate. Only on rare occasions should the same data be shown in both a table and a figure. This would be done when it is desirable to show a trend and provide precision that cannot be read off of a graph.

It is often best to create a table before attempting to write about it. First, collect all the data that may be presented in a table. Second, identify the common variables and dataset identifiers and determine how many columns and rows will be in the table. Organize the data into columns with appropriate column headers such that the reader can easily discern the intended message. Study the data in the table and determine what message is being given by the data. Determine a title or heading for the table.

While writing – Integrating the text and table is an iterative process. Begin the paragraph by referring the reader to the table by the table number and by referring the reader to the data in the table. Place the table after it is first referenced in the text, not before. You might start by making a list of bullet points for the information contained in the table. Transform the bullet points into complete sentences with discussion. If the discussion reveals additional information is needed, modify the table accordingly. For example, uncertainty might be added to the table after the discussion suggests it is important to interpret the data. The text and table should work together to convey the intended message. Do not discuss all of the data and at the end of the discussion write, "see Fig. 1". The data are not an afterthought, they are the focus. Check to make sure the table has the following.

- **Title**, or table caption, above the table. This should start with the word Table, followed by a table number that references the order in which the table appears, as referenced from the main text. This should be followed by a descriptive statement that aids in the interpretation of the data in the table.
- **Column Titles/Headings** that are descriptive and directly above each column of data. Note units for each column here if possible.
- **Table Body**: List the data in the table, where rows and column titles/headings clearly describe or denote uniqueness of the individual entries.
  o Footnotes to clarify data as necessary (data source, difference in measurement, etc.)
- **Footnotes**: include this section if the data requires it. Each footnote in the table must be referenced immediately below the table in the same order in which they are referenced in the table.
- **Format** the table. The label or caption is always above the table. Otherwise follow the requirements prescribed by the venue. Most venues require formatting similar to the following:

- o Horizontal lines separating each of the table components listed above (e.g. between the title and column headings, column headings and table body, etc., but NOT between individual rows in the table).
- o Align text inside each table cell consistently throughout the table (left, center, right justified).

After writing – Check to make sure that the text and table work together to convey the intended message. Make sure the text agrees with the data in the table. Check to see that the table conveys the message as clearly and simply as possible; do not unnecessarily complicate the table or include data that is not needed. Check to make sure the table is referenced in the main text; tables should not be included if they are not referenced in the text. Place the table in a location in the document that is near the first time it is referenced. Consider your reader and the readability of the document; be careful about interrupting the flow of your document.

Example from Hardin TJ, et. al., Int J Plasticity. 50 (2013) 146–157.

Table 2
Average relative error for the nine terms of α, calculated both in the sample plane only, and throughout the whole grain volume. This relative error is calculated with respect to the greatest value of α in the sample plane. The synthetic validation sample shown here is columnar Tungsten with dimensions $10\ \mu m \times 10\ \mu m \times 25\ \mu m$. Note that since α_{13}, α_{23}, and α_{33} are experimentally accessible they have no recovery error in-plane.

Type	α_{11}	α_{21}	α_{31}	α_{12}	α_{22}	α_{32}	α_{13}	α_{23}	α_{33}
Planar	2.1%	1.6%	1.4%	1.6%	2.9%	0.8%	–	–	–
Volumetric	6.4%	1.2%	1.6%	3.6%	4.3%	1.4%	2.6%	2.6%	5.0%

Example table from Fu XL, et. al., J Mater Res. 22 (2007) 1564–1573.

TABLE II. Experimental estimates of the average size of the shear transformation zones of some metallic glasses.

Composition	STZ volume (nm^3)	Type of data	Mode of loading	References
$La_{62}Al_{14}Cu_{12}Ni_{12}$	1.9	Steady state flow stress	Compression	This paper
$La_{55}Al_{25}Ni_{20}$[a]	~3.1[b]	Steady state flow stress	Tension	58
$Zr_{49}Cu_{45}Al_6$	~1.7	Steady state flow stress	Compression	23, 47
$Zr_{41.2}Ti_{13.8}Cu_{12.5}Ni_{10}Be_{22.5}$	~0.8	Steady state flow stress	Compression	37, 55
$Zr_{52.5}Cu_{22}Ni_{13}Al_{10}Ti_{2.5}$	0.8	Steady state flow stress	Compression	35
$Zr_{55}Cu_{30}Al_{10}Ni_5$	0.5	Steady state flow stress	Compression	56
$Pd_{40}Ni_{40}P_{20}$[a]	~1.4[b]	Steady state flow stress	Tension	41
$Pd_{40}Ni_{40}P_{20}$[a]	~3.7[b]	Steady state flow stress	Tension	54
$Pd_{41}Ni_{10}Cu_{29}P_{20}$	1.1	Steady state flow stress	Compression	42
$Pd_{40}Ni_{10}Cu_{30}P_{20}$	~0.9[b]	Steady state flow stress	Compression	33
$Pd_{40}Ni_{40}P_{20}$	0.5	Inhomogeneous to homogeneous transition	Indentation	43
$Pd_{80}Si_{20}$[a]	0.8	Recovery creep and strain rate change	Torsion[59] and tension[60]	52

[a]Data acquired on rapidly quenched ribbon materials.
[b]Original experimental data were refitted using Eq. (1) to obtain the STZ volume.