This data set includes the mechanical response measured using tensile testing (individual heat treatments) and microindentation testing (individual heat treatments and high throughput sample). The methods are described in "High throughput exploration of process-property linkages in Al-6061 using instrumented spherical microindentation and microstructurally graded samples" by J.S. Weaver, A. Khosravani, A. Castillo, and S.R. Kalidindi. (2016) IMMI **DOI:** 10.1186/s40192-016-0054-3.

Tensile Tests Individual Heat-treated Samples	Microindentation Individual Heat-treated Samples	Microindentation of High Throughput Sample
• force-displacement and stress-strain (.xls) • stress-strain curves (.png) • summary of results (.xls)	• force-displacement (.tra and .xls) • stress-strain analysis (.mat and .png) • optical micrographs of indentation sites (.png) • summary of results (.xls)	• force-displacement (.tra and .xls) • stress-strain analysis (.mat and .png) • optical micrographs of indentation sites (.png) • summary of results (.xls) • time-temperature-position data (.xls)

In the **Al-6061-Aged-Samples_Sumary_final.xls** spreadsheet the microindentation stress-strain results are summarized. The data is associated with the Zwick file name and test number. The condition of the sample being indented is listed along with the resultant indentation properties for each test. The averages are calculated at the bottom of the spreadsheet. Any test with a 0 in the Tag column was excluded.

The **Al-6061-HighThroughputSample_Sumary_final.xls** contains three sheets of information: the time and temperature data for the aging process (Time Vs Temp), the position of thermocouples and indents correlated with the temperature (Position Vs Temp), and the summary of microindentation results (Indentation Results). Similarly to the Aged Samples, the data is associated with the Zwick file name, test number, and estimated aging temperature. The position (temperature) averaged indentation properties are calculated in the adjacent columns. Any test with a 0 for indentation properties was excluded.

In both summary files, the Zwick file name is also the folder that contains the corresponding data. These folders contain the load-displacement (.tra or .xls) and indentation stress-strain data (.mat and .png) The subfolder Residual indents includes the optical images taken at the conclusion of each test. The scale bar for these images can be found in the image 1.5mm on 5x obj for which the circle diameter represents 1.5 mm.

The **Al-6061-Tensile-Results-Summary_final.xls** contains a summary of the tensile tests. The corresponding data is in the folder Tensile Tests.