



THERMO-MECHANICAL PROCESSING FACILITY

Purpose:

To develop heat treatment and thermo-mechanical processing procedures for advanced aerospace materials to improve properties.

Thermo-mechanical treatments have the potential to improve material properties significantly. Advanced materials development requires optimization of both heat treatment and mechanical processing. The thermomechanical facilities are capable of performing nearly all standard heat treat procedures, which include artificial aging, annealing, austenitizing, densification (sintering), hardening, normalizing, quenching, stress relief annealing and tempering under atmospheric and vacuum conditions. Mechanical processing procedures involve both hot and cold rolling, hot and cold isostatic pressing, and isothermal and drop forging.



HOT ISOSTATIC PRESS (HIP):

- Pressures up to 30,000 psi
- Molybdenum furnace heating to temperatures up to 2500°F
- Maximum size of part – 13”diameter by 30” tall

ISOTHERMAL FORGING PRESS:

- Accommodates sizes up to 11” diameter
- Temperatures up to 2300°F
- Variable strain rates

HEAT TREAT FURNACES:

- Several furnaces that provide vacuum and ambient pressure (convective, high temperature air)
- Rated up to 3000 °F
- Fluidized bed for rapid heating and cooling

SUPPORT EQUIPMENT:

- Fenn 2-high rolling mill
- United forging hammer

POINT-OF-CONTACT:

Billyar Bhatt / ED33
(256) 544-2596
billyar.bhat@msfc.nasa.gov