Resonant Acoustic® Mixing

Mixing Energetic

Background

Resodyn Acoustic Mixers, Inc. has developed a novel mixer product line that uses low-frequency, high-intensity sound energy for mixing. The mixer technology, trademarked as ResonantAcoustic® Mixing, is applicable for a broad range of mixing regimes that include liquid-gas, liquid-liquid, liquid-solid and powder-powder systems. Highlighted in this bulletin is: **Mixing Energetic Materials**. This bulletin demonstrates the use of Resonant Acoustics® for mixing solid propellants.

Blending Energetics

A formulation of simulant rocket propellants was mixed.

The image on the left depicts the starting materials, while the image on the right shows the solid propellant in the mixing container after mixing.

The starting materials were 50g of Aluminum, 78g of course KCl, 42g of fine KCl, and 30g of R45-HT. The Al and R45-HT was mixed for one minute. The KCL (coarse & fine) was then added and mixed for 5 minutes. Vacuum was applied and the contents were mixed for one minute to degas the mixture. Final mix viscosity was 12.5 Kpoise at 85˚F and 5 Kpoise at 120˚F.

The use of RAM® technology is well suited for blending of gas generants, propellants, or explosive fills. Mixing in the end-use container allows for quick batch cycle and no clean up of the mixing equipment.

RAM® technology has been used in lab scale and at production scale for mixing energetics.

Starting Materials

After Mixing

RAM5 Mixer for production and process development.

ResonantAcoustic® Mixer Benefits

- Remote operation
- Blends dissimilar powders
- Fast mixing times
- Can mix in the shipping container
- Active & inert energetic mixing
- Solids, liquids, & gels
- Can mix hazardous materials
- Successful in mixing DoD class 1.1 & 1.3 materials

LabRAM Mixer for lab use and small volume production batches.

Made in USA

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