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Burning Characteristics of Individual Aluminum/Aluminum Oxide Particles

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Abstract: An experimental investigation was conducted in which the burning characteristics of individual **aluminum**/**aluminum oxide** particles were measured using a windowed combustion bomb at atmospheric pressure and under gravity-fall conditions. A scanning electron microscope (SEM) was used to measure the size distribution of the initial **aluminum** particles and the **aluminum oxide** residue. Analysis of the residue indicated that the mass of **aluminum oxide** contained in particles larger than 12 microns was less than 25 percent, in good agreement with data reported from aluminized solid propellant. The measured particle size distributions and photomicrographs implied that the burning **aluminum** particles periodically expel **aluminum oxide** fragments with sizes between 14 and 36 microns.

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