



Home About Us Contact Us View Cart My Account FAQ

username

LOGIN

New Account »
Forgot Password?

Type your search term here

GO

Advanced Search »

Ads by Google

[Free Military Records @](#)

Lookup Free Military Records On Anyone Right Now. Takes 5 Seconds!

[Military.GovMilitaryRecor](#)

[US Army - Official Site](#)

Earn \$2,000 when you refer someone to the Army. Details inside!

[www.army.mil](#)

[US Army Degree Benefits](#)

Take advantage of US Army benefits and earn your degree online

[Online-Education.net/Arm](#)

[Ask a Military Lawyer Now](#)

19 Military Lawyers Are Online! Ask a Question, Get an Answer ASAP.

[Military-Law.JustAnswer.](#)

Guns and Ordnance Ammunition and Explosives

Plastic Propellant: Aluminized Compositions

Authors: [B. H. Newman](#); [G. J. Spickernell](#); [MINISTRY OF SUPPLY LONDON \(UNITED KINGDOM\) DIRECTORATE OF MATERIALS AND EXPLOSIVES RESEARCH AND DEVELOPMENT](#)

Abstract: The addition of aluminium to plastic propellants has resulted in a marked improvement in performance over the whole range of burning rates, 0.1 to 1.65 inch/sec. (at 1000 p.s.i.). In particular, high measured specific impulses (at least 245 lb.sec/lb) and high thrust efficiencies have been obtained with propellants burning at rates above 0.6 inch/sec. at 1000 p.s.i. and containing up to 18 per cent aluminium. Lower burning rates have been achieved by replacing oxidizer by ammonium picrate, but this was accompanied by a reduction in measured impulse and thrust efficiency. The thrust efficiency of aluminized propellants is influenced by the three parameters: matrix energy (the energy of the binder/oxidizer part of the propellant) the propellant burning rate and the rocket motor size. The thrust efficiency of the fast-burning, high-matrix-energy propellant, is probably unaffected by motor size until more than 20 per cent aluminium is present. The aluminium particle size has no effect on combustion efficiency although it affects burning rate, pressure dependence and temperature coefficient of burning rate. The addition of aluminium to plastic propellant has presented no additional hazard or new manufacturing problem, and the chemical stability has been unaffected.

Limitations: APPROVED FOR PUBLIC RELEASE
Pages: 35
Report Date: 25 MAR 1961
Report Number: A110474

Keywords relating to this report:

- ▷ [ALUMINIZED PROPELLANTS](#)
- ▷ [AMMONIUM PICRATE](#)
- ▷ [BALLISTICS](#)
- ▷ [BINDERS](#)
- ▷ [BURNING RATE](#)
- ▷ [CHEMICAL COMPOSITION](#)
- ▷ [CHEMICAL STABILITY](#)
- ▷ [COMBUSTION](#)
- ▷ [EFFICIENCY](#)
- ▷ [HAZARDS](#)
- ▷ [MOTORS](#)
- ▷ [OXIDIZERS](#)
- ▷ [PARAMETERS](#)
- ▷ [PARTICLE SIZE](#)
- ▷ [PLASTICS](#)
- ▷ [PRESSURE](#)
- ▷ [PROPELLANTS](#)
- ▷ [ROCKET ENGINES](#)
- ▷ [SIZES\(DIMENSIONS\)](#)
- ▷ [SOLID ROCKET PROPELLANTS](#)
- ▷ [TEMPERATURE COEFFICIENTS](#)
- ▷ [THRUST](#)
- ▷ [UNITED KINGDOM](#)

Adobe PDF - \$19.95

Printed Format - \$22.95

ADD TO CART

Please check the box for the format you wish to order.

[Shipping Terms](#)
[About Electronic Delivery](#)

[Email This Abstract](#)