



Block II SRM Conceptual Design Studies Final Report

**Conceptual Design Package
Volume I, Book 1**

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Table 32 . Propellant Performance

<u>Property</u>	<u>Spec and Goal</u>	<u>TP-H1148</u>	<u>TP-H3340</u>	<u>DL-H396</u>
Internal Ballistics				
Burn Rate (r_b) (in./sec) 1000 psi	0.42-0.47	0.42-0.47 (w/Fe ₂ O ₃)	0.27-0.31 (w/o Fe ₂ O ₃) 0.42-0.46 (w/Fe ₂ O ₃)	0.34-0.38 (w/o Fe ₂ O ₃) 0.42-0.46 (w/Fe ₂ O ₃)
Burn Rate Exponent (n)	0.35	0.35	0.31 0.36 (w/Fe ₂ O ₃)	0.36 0.38 (w/Fe ₂ O ₃)
Burn Rate Temp (π_k) %/°F	≤ 0.11	0.11	0.11	0.11*
Density (lb/in. ³)	0.0641	0.0641	0.0656	0.0651
Impulse (Isp) lbf-sec/lbm	278.14	278.14	280.11	280.04
Mechanical Properties				
Stress (σ_m) psi	80	110	96	>150
Strain (ϵ_m) %	>30	36	65	>40
Hazards	0 Cards, Class 1.3	0 Cards, Class 1.3	0 Cards, Class 1.3	0 Cards, Class 1.3
Aging	Maintain in- tegrity for 5 years	Exceeds spec	Exceeds spec	Exceeds spec*

*Exceeds spec by analogy