

Bell Nozzle Rocket Engine Calculations

Ben Calow

August 6, 2025

Contents

1	Introduction	3
2	Calculations	4
2.1	Gasses	4
2.1.1	Propellant	4
2.1.2	Ratio of Specific Heats of a Multi-Compound Gas .	4

Nomenclature

P	Pressure
T	Temperature
γ	Ratio of specific heats
$mol\%$	Mole percentage

Subscripts

c	Chamber
t	Throat
e	Exit
a	Ambient

1 Introduction

Documentation of calculations for a bell nozzle rocket engine

2 Calculations

2.1 Gasses

2.1.1 Propellant

2.1.1.1 Propellant Stoichiometry

2.1.2 Exhaust

2.1.2.1 Ratio of Specific Heats of a Multi-Compound Gas