

Tsiolkovski Formula Application	mf	Kgs/sec	M1	Kgs	M2	Kgs	Msat	M1/M2	Ln M1/M2	Satellite Payload Effect Lagrage		Fuel Mass	%M1	% Structure		
										m3	Ln M1/m3				Kgs.	Mass
V2 = V1*.Ln (M1 / M2) Where V1 > Velocity of Jet at nozzle M1> Mass Initial M2> Mass Final V2 > Final velocity of M2																
<b>Ariane 5</b> V160			469535		73735		4710	6,37	1,851		4710	4,60	391090	0,833	0,167	
Velocity after 2m 21s V=2062,5 m/s At hieght 68,4 Kms Terminal velocity Vt =8400 m/s POrbit S1 2297Kms + S2 4323Kms														83,29	16,71	
<b>Ariane 4</b> V159			486000		41990		4685	11,57	2,449		4685	4,64				
Fuel Mass Flowrate Velocity after 2m 29s V =1581m/s At hieght 43Kms Mass of fuel Terminal velocity Vt = 9720m/s POrbit 394 Kms		2000												439325	0,904	
														90,4	9,6	
<b>Water Rockets</b>																
<b>F2</b> Light Plastic Badoit 1L With parachute module ,shock plate			0,750		0,159			4,72	1,551					0,591	0,788	0,212
														78,8	21,2	
<b>F1</b> Light Plastic Badoit 1L Ballistic without parachute Fuel Mass Flowrate Mass of H2O			0,750		0,118			6,36	1,849							
		12,25												0,632	0,843	0,157
														84,3	15,7	
HeavyGlass Badoit 1L Note: Mass ratio (M1/M2) too small			1,183		0,592			2,00	0,692					0,591	0,500	0,500
														49,96	50,04	
Point at which mass ratio begins to have > a positive affect			0,432		0,159			2,7182	1,00					0,273	0,632	0,368
														63,21	36,79	
<b>F3</b> Light Plastic Badoit 0,35L			0,230		0,055			4,1818	1,43					0,175	0,761	0,239
M2 Mass Breakdown															76,09	23,91
Badoit 1L bottle plastic		0,043		0,043												
Individual 'Flyweight' fin		0,003		0,009												
Glue mass		0,005		0,005												
				0,057												
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