

## Igniter Characteristics

Weight	.0324 gm
Impetus	.4982 MJ/kg
Gamma	1.2000
Flame Temperature	3400.00 deg. K

## Propellant Characteristics

## Propellant 1

Time Delay	(sec)	)	.0000
Weight	(gm)	)	2.6762
Impetus	(MJ/kg)	)	.9774
Gamma			1.2400
Covolume	(m^3/kg)	)	.0010
Flame Temperature	(degrees K)	)	2825.00
Density	(gm/cm^3)	)	1.5778
Burn Rate Exponent			.6900
Initial Burn Rate	(cm/sec/bar)	)	.09210
Final Burn Rate	(cm/sec/bar)	)	.25419
Slope	(cm/sec/bar/cm)		12.15530
Computed Prop. Deterent Level (%)			4.78259

## Propellant Grain Characteristics

## Propellant 1

Propellant Type		1 Perf
Grain/Ball Diam. (mm)		.9398
Grain Length (mm), If 0.0, NA		2.1336
Perf Diam. (mm), If 0.0, NA		.4064
Web (mm), If 0.0, NA		.2667
No. of Perforations , If 0.0, NA		1

## Projectile Characteristics

Weight	9.4876 gm
Band Density	8.3040 gm/cm^3

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## Gun Characteristics

Barrel Length	609.6000 mm
Chamber Volume	3.27761 cm^3
Bore Diameter	7.6200 mm
Bore Area	.46972 cm^2
Pidduck-Kent Constant	3.0500
Base Pressure "F" Constant	3.5000
Shot Start Pressure	11.4919 Mpa
Maximum Gun Pressure	1034.2000 Mpa

## Miscellaneous

Integration Time Step	.000025 sec
Estimated Muzzle Velocity	869.00 m/sec

## Barrel Resistance Profile:

Travel, mm	Pressure, Mpa
.000	11.492
1.706	81.708
6.822	81.708
8.528	54.702
12.792	38.498
34.111	22.294
85.278	14.193
255.834	11.492
511.668	8.791

17055.600

8.791

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## Summary of Interior Ballistics Results

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Muzzle Velocity 873.88 m/sec  
Muzzle Pressure 42.47 Mpa  
Maximum Acceleration 161409.30 G's

Maximum Breech Pressure 352.69 Mpa  
Travel at Max. Breech Pressure 37.60 mm  
Time at Max. Breech Pressure .57 Msec

Maximum Base Pressure 344.74 Mpa  
Travel at Max. Base Pressure 30.50 mm  
Time at Max. Base Pressure .55 Msec

Impulse at Projectile Exit 9.01 N-sec  
Impulse at 19 Milliseconds 10.70 N-sec

Mass Fraction at Projectile Exit  
Propellant 1 1.00

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## Interior Ballistics Results As Functions Of Time

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Time	Travel	Breech	Base	Velocity	Temp	Volume	Resist	Linear	Spin	Mass Fraction
msec	mm	Pressure	Pressure	m/sec	deg k	cm^3	Pressure	Accel	rad/sec	Prop1
		Mpa	Mpa				Mpa	G's		
.075	.006	18.8	18.8	1.	3140.	1.5759	11.77	3568.	11.36	.005
.150	.203	39.9	39.9	6.	2974.	1.5688	19.92	10074.	113.90	.017
.200	.611	61.2	61.2	11.	2921.	1.5707	36.67	12375.	225.94	.030
.250	1.307	90.1	90.1	17.	2891.	1.5805	65.33	12520.	348.89	.048
.275	1.767	108.2	108.1	20.	2883.	1.5881	81.71	13347.	409.46	.059
.300	2.312	128.9	128.9	24.	2877.	1.5971	81.71	23819.	499.70	.072
.325	3.001	152.5	152.4	31.	2870.	1.6091	81.71	35693.	645.85	.087
.350	3.903	178.6	178.5	41.	2862.	1.6268	81.71	48877.	854.64	.104
.375	5.100	207.0	206.8	55.	2851.	1.6532	81.71	63178.	1132.01	.124
.400	6.678	236.8	236.4	72.	2837.	1.6921	81.71	78122.	1482.30	.148
.425	8.738	266.6	265.9	94.	2819.	1.7471	53.85	107079.	1940.89	.175
.450	11.432	294.0	292.7	122.	2788.	1.8244	43.62	125767.	2519.12	.205
.475	14.882	316.9	314.8	154.	2747.	1.9303	36.90	140278.	3183.39	.240
.500	19.174	334.4	330.9	189.	2699.	2.0698	33.64	150082.	3903.79	.278
.525	24.365	345.9	340.8	226.	2648.	2.2462	29.69	157082.	4665.33	.320
.550	30.499	351.8	344.7	265.	2594.	2.4622	25.03	161409.	5454.49	.366
.600	45.674	349.7	338.0	342.	2486.	3.0191	20.46	160307.	7057.20	.466
.625	54.711	344.0	329.9	381.	2436.	3.3612	19.03	156934.	7842.84	.521
.650	64.689	334.9	318.4	418.	2388.	3.7478	17.45	151949.	8609.41	.577
.675	75.583	322.8	304.1	454.	2343.	4.1794	15.73	145582.	9349.81	.632
.700	87.356	308.9	288.3	488.	2299.	4.6548	14.16	138387.	10057.54	.684
.725	99.964	293.8	271.7	520.	2258.	5.1730	13.96	130104.	10726.73	.734
.750	113.359	278.6	255.1	551.	2220.	5.7318	13.75	121866.	11355.09	.782
.775	127.493	263.6	239.2	579.	2185.	6.3291	13.52	113929.	11943.46	.827
.800	142.317	249.2	224.1	606.	2154.	6.9623	13.29	106437.	12493.66	.870
.850	173.859	223.0	197.0	654.	2098.	8.3276	12.79	93022.	13489.19	.950
.900	207.662	193.9	168.6	697.	2035.	9.8351	12.25	78940.	14357.65	1.000
.925	225.308	175.5	151.5	715.	1989.	10.6529	11.98	70445.	14730.91	1.000
.950	243.382	159.7	137.0	731.	1947.	11.4921	11.69	63245.	15065.21	1.000
1.000	280.648	134.3	113.8	759.	1874.	13.2256	11.23	51765.	15638.91	1.000
1.050	319.179	114.8	96.3	782.	1812.	15.0216	10.82	43159.	16113.16	1.000
1.100	358.766	99.6	82.9	801.	1760.	16.8694	10.41	36583.	16512.15	1.000
1.175	419.783	82.4	67.8	825.	1695.	19.7211	9.76	29310.	17005.61	1.000
1.275	503.603	66.3	53.9	850.	1626.	23.6433	8.88	22721.	17524.36	1.000
1.398	609.600	52.9	42.5	874.	1562.	28.6080	8.79	17022.	18010.01	1.000