User Data:

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Cartridge / Caliber	**6 mm Musgrave**		**Bullet**	**.243, 68, XPERT Bullet**	
Maximum Average Pressure, allowed	49313 psi.	3400 bar (Piezo SABS)		with flatbase	
Groove Caliber	0.243 in.	6.17 mm	Bullet Weight	68.0 gr.	4.41 gm
Case Capacity, overflow	47.01 gr. H2O	3.052 cm³	Bullet Length	1.031 in.	26.2 mm
Case Length	2.192 in.	55.68 mm	Bullet Seating Depth	0.428 in.	10.87 mm
Cartridge O.A. Length	2.795 in.	70.99 mm	Barrel/Tube Length	24.0 in.	609.6 mm
Shot Start / Init Pressure	3625 psi.	249.94 bar	Cross Section Area of Bore	0.04573 in.²	0.295 cm²
Propellant type	**Somchem S365**				
Charge Weight	39.0 gr.	2.527 gm	Load Density	234.4 gr./in.³	0.927 gm/cm³
Heat of Explosion, Potential	238.8 J/gr.	3685 J/gm	Energy Density of Charge	55978 J/in.³	3416 J/cm³
Propellant Solid Density	404.63 gr./in.³	1.6 gm/cm³	Used Ratio of Specific Heats cp/cv	1.239	
Burning Rate Factor Ba	0.44 1/s		Weighting Factor	0.5	
Burning Function Limit Z1	0.605		Prog.-/ Degressivity Factor a0	1.715	
Factor b	2.271		Bulk Density	231.4 gr./in.³	0.915 gm/cm³

Calculated and Estimated Data:

Bullet Shank Seating Depth	0.428 in.	10.87 mm	Capacity Displaced by Seated Bullet	0.0199 in.³	0.326 cm³
Useable Case Capacity	0.1664 in.³	2.726 cm³	Bullet Travel at Muzzle Exit	22.24 in.	564.79 mm
Loading Ratio("Density") / Filling	101.3 % = compressed		Charge Fraction Burnt at Shot Start	1.29 %	
Predicted Data:					
Maximum Chamber Pressure	37465 psi.	2583 bar	Bullet Travel at Pmax	2.12 in.	53.8 mm
at Muzzle Exit:					
Bullet Velocity	3153 fps.	961.0 m/s	Pressure at Muzzle	9322 psi.	643 bar
Bullet Energy	1501 ft.lbs.	2035 Joule	Bullet Barrel Time	1.167 ms	
Propellant Burnt	94.2 %		Ballistic Efficiency	21.9 %	

Check Loading Manuals for Safe Minimum Charge Weight to Avoid Hazardous Ignition Conditions like Secondary Explosion Effects !
Real maximum (peak) of pressure is reached while bullet moves within barrel.
End of combustion occurs after the bullet's base passes muzzle.