User Data:

Date:9-Apr-2015 **Time:14:30:04** **File: xpert 7 x 57mm 108gr.dat**

Cartridge / Caliber	**7 x 57 mm Mauser**		**Bullet**	**.284, 108, XPERT TARGET M**	
Maximum Average Pressure, allowed	56565 psi.	3900 bar (Piezo CIP)		with flatbase	
Groove Caliber	0.285 in.	7.24 mm	Bullet Weight	108.0 gr.	7.0 gm
Case Capacity, overflow	59.5 gr. H2O	3.863 cm³	Bullet Length	1.189 in.	30.2 mm
Case Length	2.244 in.	57.0 mm	Bullet Seating Depth	0.520 in.	13.21 mm
Cartridge O.A. Length	2.913 in.	73.99 mm	Barrel/Tube Length	24.0 in.	609.6 mm
Shot Start / Init Pressure	3625 psi.	249.94 bar	Cross Section Area of Bore	0.06264 in.²	0.4041 cm²
Propellant type	**Somchem S321**				
Charge Weight	43.0 gr.	2.786 gm	Load Density	212.4 gr./in.³	0.840 gm/cm³
Heat of Explosion, Potential	259.8 J/gr.	4010 J/gm	Energy Density of Charge	55175 J/in.³	3367 J/cm³
Propellant Solid Density	409.68 gr./in.³	1.62 gm/cm³	Used Ratio of Specific Heats cp/cv	1.221	
Burning Rate Factor Ba	0.56 1/s		Weighting Factor	0.5	
Burning Function Limit Z1	0.39		Prog.-/ Degressivity Factor a0	1.649	
Factor b	1.641		Bulk Density	250.4 gr./in.³	0.990 gm/cm³

Calculated and Estimated Data:

Bullet Shank Seating Depth	0.52 in.	13.21 mm	Capacity Displaced by Seated Bullet	0.0333 in.³	0.545 cm³
Useable Case Capacity	0.2025 in.³	3.318 cm³	Bullet Travel at Muzzle Exit	22.28 in.	565.81 mm
Loading Ratio("Density") / Filling	84.8 %		Charge Fraction Burnt at Shot Start	1.62 %	
Predicted Data:					
Maximum Chamber Pressure	43612 psi.	3007 bar	Bullet Travel at Pmax	1.87 in.	47.6 mm
at Muzzle Exit:					
Bullet Velocity	2958 fps.	901.5 m/s	Pressure at Muzzle	8126 psi.	560 bar
Bullet Energy	2098 ft.lbs.	2844 Joule	Bullet Barrel Time	1.171 ms	
Propellant Burnt	97.0 %		Ballistic Efficiency	25.5 %	

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.