User Data:

Date:8-Apr-2015 **Time:21:53:00** **File: xpert 22-250 rem 42gr.dat**

Cartridge / Caliber	**.22-250 Rem. (CIP)**		**Bullet**	**.224 42GR XPERT**	
Maximum Average Pressure, allowed	58740 psi.	4050 bar (Piezo CIP)		with flatbase	
Groove Caliber	0.224 in.	5.69 mm	Bullet Weight	42.0 gr.	2.72 gm
Case Capacity, overflow	43.49 gr. H2O	2.824 cm³	Bullet Length	0.772 in.	19.6 mm
Case Length	1.912 in.	48.56 mm	Bullet Seating Depth	0.282 in.	7.16 mm
Cartridge O.A. Length	2.402 in.	61.0 mm	Barrel/Tube Length	24.0 in.	609.6 mm
Shot Start / Init Pressure	3625 psi.	249.94 bar	Cross Section Area of Bore	0.03889 in.²	0.2509 cm²
Propellant type	**Somchem S341**				
Charge Weight	36.5 gr.	2.365 gm	Load Density	226.3 gr./in.³	0.895 gm/cm³
Heat of Explosion, Potential	237.2 J/gr.	3660 J/gm	Energy Density of Charge	53717 J/in.³	3278 J/cm³
Propellant Solid Density	409.68 gr./in.³	1.62 gm/cm³	Used Ratio of Specific Heats cp/cv	1.242	
Burning Rate Factor Ba	0.56 1/s		Weighting Factor	0.5	
Burning Function Limit Z1	0.45		Prog.-/ Degressivity Factor a0	0.74	
Factor b	1.557		Bulk Density	250.4 gr./in.³	0.990 gm/cm³

Calculated and Estimated Data:

Bullet Shank Seating Depth	0.282 in.	7.16 mm	Capacity Displaced by Seated Bullet	0.0111 in.³	0.183 cm³
Useable Case Capacity	0.1612 in.³	2.641 cm³	Bullet Travel at Muzzle Exit	22.37 in.	568.2 mm
Loading Ratio("Density") / Filling	90.5 %		Charge Fraction Burnt at Shot Start	1.41 %	
Predicted Data:					
Maximum Chamber Pressure	44437 psi.	3064 bar	Bullet Travel at Pmax	2.36 in.	60.0 mm
at Muzzle Exit:					
Bullet Velocity	3681 fps.	1122.1 m/s	Pressure at Muzzle	8752 psi.	603 bar
Bullet Energy	1264 ft.lbs.	1714 Joule	Bullet Barrel Time	0.986 ms	
Propellant Burnt	92.1 %		Ballistic Efficiency	19.8 %	

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.