User Data:

Date:8-Apr-2015 **Time:21:48:40** **File: xpert 22-250 ackley 42gr .dat**

Cartridge / Caliber	**.22-250 Ackley Imp.**		**Bullet**	**.224 42GR XPERT**	
Maximum Average Pressure, allowed	57986 psi.	3998 bar (Wildcat)		with flatbase	
Groove Caliber	0.224 in.	5.69 mm	Bullet Weight	42.0 gr.	2.72 gm
Case Capacity, overflow	46.9 gr. H2O	3.045 cm³	Bullet Length	0.772 in.	19.6 mm
Case Length	1.940 in.	49.28 mm	Bullet Seating Depth	0.291 in.	7.39 mm
Cartridge O.A. Length	2.421 in.	61.49 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	38.0 gr.	2.462 gm	Load Density	218.0 gr./in.³	0.862 gm/cm³
Heat of Explosion, Potential	237.2 J/gr.	3660 J/gm	Energy Density of Charge	51685 J/in.³	3154 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	0.291 in.	7.39 mm	Capacity Displaced by Seated Bullet	0.0115 in.³	0.188 cm³
Useable Case Capacity	0.1743 in.³	2.857 cm³	Bullet Travel at Muzzle Exit	22.35 in.	567.71 mm
Loading Ratio("Density") / Filling	87.0 %		Charge Fraction Burnt at Shot Start	1.53 %	
Predicted Data:					
Maximum Chamber Pressure	43491 psi.	2999 bar	Bullet Travel at Pmax	2.54 in.	64.5 mm
at Muzzle Exit:					
Bullet Velocity	3687 fps.	1123.7 m/s	Pressure at Muzzle	9105 psi.	628 bar
Bullet Energy	1268 ft.lbs.	1719 Joule	Bullet Barrel Time	1.006 ms	
Propellant Burnt	92.8 %		Ballistic Efficiency	19.1 %	

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.