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WARNING: Since we have no control over equipment or data which may be used with this program, no responsibility is implied or assumed for results obtained through its use. Input data and results may be incorrect or wrong. Therefore the use of this data for loading ammunition can cause serious injury to personnel and material. The computer-results had to be checked against data available in current loading manuals.

**LOT-TO-LOT VARIATIONS OF POWDERS, PRIMER SUBSTITUTION AND COMPONENT CHANGE OFTEN RAISE PRESSURES TO UNSAFE LEVELS. THE USER MUST ASSUME THE ENTIRE RISK OF USING THIS DATA FOR LOADING PURPOSES.**

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**User Data:**

Date:8-Apr-2015

Time:21:46:12

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 cm <sup>3</sup>	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. <sup>2</sup> 0.2509 cm <sup>2</sup>

**Propellant type**

Somchem S355

Charge Weight	38.0 gr.	2.462 gm	Load Density	218.0 gr./in. <sup>3</sup>	0.862 gm/cm <sup>3</sup>
Heat of Explosion, Potential	253.4 J/gr.	3910 J/gm	Energy Density of Charge	55208 J/in. <sup>3</sup>	3369 J/cm <sup>3</sup>
Propellant Solid Density	404.63 gr./in. <sup>3</sup>	1.6 gm/cm <sup>3</sup>	Used Ratio of Specific Heats cp/cv	1.2291	
Burning Rate Factor Ba	0.5 1/s		Weighting Factor	0.5	
Burning Function Limit Z1	0.39		Prog.-/ Degressivity Factor a0	2.36	
Factor b	1.774		Bulk Density	227.6 gr./in. <sup>3</sup>	0.900 gm/cm <sup>3</sup>

**Calculated and Estimated Data:**

Bullet Shank Seating Depth	0.291 in.	7.39 mm	Capacity Displaced by Seated Bullet	0.0115 in. <sup>3</sup>	0.188 cm <sup>3</sup>
Useable Case Capacity	0.1743 in. <sup>3</sup>	2.857 cm <sup>3</sup>	Bullet Travel at Muzzle Exit	22.35 in.	567.71 mm
Loading Ratio("Density") / Filling	95.7 %		Charge Fraction Burnt at Shot Start	1.49 %	

**Predicted Data:**

Maximum Chamber Pressure	44292 psi.	3054 bar	Bullet Travel at Pmax	2.69 in.	68.2 mm
<b>at Muzzle Exit:</b>					
Bullet Velocity	3738 fps.	1139.4 m/s	Pressure at Muzzle	9526 psi.	657 bar
Bullet Energy	1304 ft.lbs.	1767 Joule	Bullet Barrel Time	1.010 ms	
Propellant Burnt	93.9 %		Ballistic Efficiency	18.4 %	

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.

