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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:22:04:39

File: xpert 243 win 68 gr.dat

Cartridge / Caliber

.243 Win.

Bullet

.243, 68, XPERT Bullet

Maximum Average Pressure, allowed	60191 psi.	4150 bar (Piezo CIP)	with flatbase	
Groove Caliber	0.243 in.	6.17 mm	Bullet Weight	68.0 gr. 4.41 gm
Case Capacity, overflow	54.0 gr. H2O	3.506 cm ³	Bullet Length	1.031 in. 26.2 mm
Case Length	2.044 in.	51.92 mm	Bullet Seating Depth	0.438 in. 11.13 mm
Cartridge O.A. Length	2.638 in.	67.0 mm	Barrel/Tube Length	24.0 in. 609.6 mm
Shot Start / Init Pressure	3625 psi.	249.94 bar	Cross Section Area of Bore	0.04534 in. ² 0.2925 cm ²

Propellant type

Somchem S355

Charge Weight	40.0 gr.	2.592 gm	Load Density	206.6 gr./in. ³	0.817 gm/cm ³
Heat of Explosion, Potential	253.4 J/gr.	3910 J/gm	Energy Density of Charge	52357 J/in. ³	3195 J/cm ³
Propellant Solid Density	404.63 gr./in. ³	1.6 gm/cm ³	Used Ratio of Specific Heats cp/cv	1.2291	
Burning Rate Factor Ba	0.5 1/s		Weighting Factor	0.65	
Burning Function Limit Z1	0.39		Prog.-/ Degressivity Factor a0	2.36	
Factor b	1.774		Bulk Density	227.6 gr./in. ³	0.900 gm/cm ³

Calculated and Estimated Data:

Bullet Shank Seating Depth	0.438 in.	11.13 mm	Capacity Displaced by Seated Bullet	0.0204 in. ³	0.334 cm ³
Useable Case Capacity	0.1936 in. ³	3.172 cm ³	Bullet Travel at Muzzle Exit	22.39 in.	568.81 mm
Loading Ratio("Density") / Filling	90.8 %		Charge Fraction Burnt at Shot Start	1.67 %	

Predicted Data:

Maximum Chamber Pressure	47471 psi.	3273 bar	Bullet Travel at Pmax	2.48 in.	62.9 mm
at Muzzle Exit:					
Bullet Velocity	3260 fps.	993.6 m/s	Pressure at Muzzle	9224 psi.	636 bar
Bullet Energy	1604 ft.lbs.	2175 Joule	Bullet Barrel Time	1.132 ms	
Propellant Burnt	98.5 %		Ballistic Efficiency	21.5 %	

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.

