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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:23:09:55

File: xpert 270 win 105gr.dat

Cartridge / Caliber

.270 Win. (CIP)

Bullet

.277, 105 gr, XPERT

Maximum Average Pressure, allowed	62366 psi.	4300 bar (Piezo CIP)	with flatbase	
Groove Caliber	0.277 in.	7.04 mm	Bullet Weight	105.0 gr. 6.8 gm
Case Capacity, overflow	67.0 gr. H2O	4.35 cm ³	Bullet Length	1.189 in. 30.2 mm
Case Length	2.540 in.	64.52 mm	Bullet Seating Depth	0.540 in. 13.72 mm
Cartridge O.A. Length	3.189 in.	81.0 mm	Barrel/Tube Length	24.0 in. 609.6 mm
Shot Start / Init Pressure	3625 psi.	249.94 bar	Cross Section Area of Bore	0.05971 in. ² 0.3852 cm ²

Propellant type

Somchem S341

Charge Weight	49.0 gr.	3.175 gm	Load Density	210.4 gr./in. ³	0.832 gm/cm ³
Heat of Explosion, Potential	237.2 J/gr.	3660 J/gm	Energy Density of Charge	49899 J/in. ³	3045 J/cm ³
Propellant Solid Density	409.68 gr./in. ³	1.62 gm/cm ³	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/cm ³

Calculated and Estimated Data:

Bullet Shank Seating Depth	0.54 in.	13.72 mm	Capacity Displaced by Seated Bullet	0.0326 in. ³	0.534 cm ³
Useable Case Capacity	0.2329 in. ³	3.816 cm ³	Bullet Travel at Muzzle Exit	22.0 in.	558.8 mm
Loading Ratio("Density") / Filling	84.0 %		Charge Fraction Burnt at Shot Start	1.65 %	

Predicted Data:

Maximum Chamber Pressure	46744 psi.	3223 bar	Bullet Travel at Pmax	2.14 in.	54.4 mm
at Muzzle Exit:					
Bullet Velocity	3071 fps.	936.0 m/s	Pressure at Muzzle	9363 psi.	646 bar
Bullet Energy	2198 ft.lbs.	2981 Joule	Bullet Barrel Time	1.143 ms	
Propellant Burnt	97.8 %		Ballistic Efficiency	25.6 %	

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.

