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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:21:57:34	File: xpert 223 rem 42gr.dat	
Cartridge / Caliber	.223 Rem. (SAAMI)		Bullet	.224 42GR XPERT
Maximum Average Pressure, allowed	55000 psi.	3792 bar (Piezo SAAMI)	with flatbase	
Groove Caliber	0.224 in.	5.69 mm	Bullet Weight	42.0 gr. 2.72 gm
Case Capacity, overflow	28.8 gr. H2O	1.87 cm ³	Bullet Length	0.772 in. 19.6 mm
Case Length	1.759 in.	44.68 mm	Bullet Seating Depth	0.287 in. 7.28 mm
Cartridge O.A. Length	2.244 in.	57.0 mm	Barrel/Tube Length	24.0 in. 609.6 mm
Shot Start / Init Pressure	3625 psi.	249.94 bar	Cross Section Area of Bore	0.0388 in. ² 0.2503 cm ²
Propellant type	Somchem S321			
Charge Weight	25.5 gr.	1.652 gm	Load Density	247.8 gr./in. ³ 0.980 gm/cm ³
Heat of Explosion, Potential	259.8 J/gr.	4010 J/gm	Energy Density of Charge	64418 J/in. ³ 3931 J/cm ³
Propellant Solid Density	409.68 gr./in. ³	1.62 gm/cm ³	Used Ratio of Specific Heats cp/cv	1.221
Burning Rate Factor Ba	0.56 1/s		Weighting Factor	0.6
Burning Function Limit Z1	0.39		Prog.-/ Degressivity Factor a0	1.649
Factor b	1.641		Bulk Density	250.4 gr./in. ³ 0.990 gm/cm ³

Calculated and Estimated Data:

Bullet Shank Seating Depth	0.287 in.	7.28 mm	Capacity Displaced by Seated Bullet	0.0113 in. ³	0.185 cm ³
Useable Case Capacity	0.1028 in. ³	1.685 cm ³	Bullet Travel at Muzzle Exit	22.53 in.	572.2 mm
Loading Ratio("Density") / Filling	99.0 %		Charge Fraction Burnt at Shot Start	1.13 %	

Predicted Data:

Maximum Chamber Pressure	40616 psi.	2800 bar	Bullet Travel at Pmax	1.47 in.	37.3 mm
at Muzzle Exit:					
Bullet Velocity	3290 fps.	1002.7 m/s	Pressure at Muzzle	6151 psi.	424 bar
Bullet Energy	1009 ft.lbs.	1369 Joule	Bullet Barrel Time	1.017 ms	
Propellant Burnt	87.3 %		Ballistic Efficiency	20.7 %	

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.

