User Data:

Date:8-Apr-2015 **Time:21:37:57** **File: xpert 220 swift 42gr.dat**

Cartridge / Caliber	**.220 Swift**		**Bullet**	**.224 42GR XPERT**	
Maximum Average Pressure, allowed	62366 psi.	4300 bar (Piezo CIP)		with flatbase	
Groove Caliber	0.224 in.	5.69 mm	Bullet Weight	42.0 gr.	2.72 gm
Case Capacity, overflow	47.0 gr. H2O	3.052 cm³	Bullet Length	0.772 in.	19.6 mm
Case Length	2.205 in.	56.01 mm	Bullet Seating Depth	0.300 in.	7.62 mm
Cartridge O.A. Length	2.677 in.	68.0 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 cm²
Propellant type	**Somchem S341**				
Charge Weight	40.0 gr.	2.592 gm	Load Density	229.4 gr./in.³	0.907 gm/cm³
Heat of Explosion, Potential	237.2 J/gr.	3660 J/gm	Energy Density of Charge	54389 J/in.³	3319 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	0.4	
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	0.3 in.	7.62 mm	Capacity Displaced by Seated Bullet	0.0118 in.³	0.194 cm³
Useable Case Capacity	0.1744 in.³	2.858 cm³	Bullet Travel at Muzzle Exit	22.1 in.	561.21 mm
Loading Ratio("Density") / Filling	91.6 %		Charge Fraction Burnt at Shot Start	1.37 %	
Predicted Data:					
Maximum Chamber Pressure	48245 psi.	3326 bar	Bullet Travel at Pmax	2.43 in.	61.8 mm
at Muzzle Exit:					
Bullet Velocity	3923 fps.	1195.7 m/s	Pressure at Muzzle	10244 psi.	706 bar
Bullet Energy	1435 ft.lbs.	1946 Joule	Bullet Barrel Time	0.925 ms	
Propellant Burnt	93.3 %		Ballistic Efficiency	20.5 %	

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.