User Data:

Date:9-Apr-2015 **Time:18:16:01** **File: xpert 8 x 57mm 153gr.dat**

Cartridge / Caliber	**8 x 57 IS (8 mm Mauser CIP)**		**Bullet**	**.323, 153GR XPERT TARGET**	
Maximum Average Pressure, allowed	56565 psi.	3900 bar (Piezo CIP)		with flatbase	
Groove Caliber	0.323 in.	8.2 mm	Bullet Weight	153.0 gr.	9.91 gm
Case Capacity, overflow	63.01 gr. H2O	4.091 cm³	Bullet Length	1.299 in.	33.0 mm
Case Length	2.244 in.	57.0 mm	Bullet Seating Depth	0.591 in.	15.0 mm
Cartridge O.A. Length	2.953 in.	75.0 mm	Barrel/Tube Length	24.0 in.	609.6 mm
Shot Start / Init Pressure	3625 psi.	249.94 bar	Cross Section Area of Bore	0.08026 in.²	0.5178 cm²
Propellant type	**Somchem S321**				
Charge Weight	45.0 gr.	2.916 gm	Load Density	223.6 gr./in.³	0.884 gm/cm³
Heat of Explosion, Potential	259.8 J/gr.	4010 J/gm	Energy Density of Charge	58125 J/in.³	3547 J/cm³
Propellant Solid Density	409.68 gr./in.³	1.62 gm/cm³	Used Ratio of Specific Heats cp/cv	1.221	
Burning Rate Factor Ba	0.56 1/s		Weighting Factor	0.5	
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/cm³

Calculated and Estimated Data:

Bullet Shank Seating Depth	0.591 in.	15.0 mm	Capacity Displaced by Seated Bullet	0.0484 in.³	0.794 cm³
Useable Case Capacity	0.2012 in.³	3.297 cm³	Bullet Travel at Muzzle Exit	22.35 in.	567.6 mm
Loading Ratio("Density") / Filling	89.3 %		Charge Fraction Burnt at Shot Start	1.45 %	
Predicted Data:					
Maximum Chamber Pressure	41791 psi.	2881 bar	Bullet Travel at Pmax	1.47 in.	37.3 mm
at Muzzle Exit:					
Bullet Velocity	2660 fps.	810.9 m/s	Pressure at Muzzle	6706 psi.	462 bar
Bullet Energy	2404 ft.lbs.	3260 Joule	Bullet Barrel Time	1.238 ms	
Propellant Burnt	95.3 %		Ballistic Efficiency	27.9 %	

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.