

4.6. TECHNICAL ANNEX TO THE STANDARD REGULATION FOR THE CARRYING OUT OF INDIVIDUAL PROOFS OF WEAPONS USING BLACK POWDER (ANNEX TO 4.5.) [XIX-7 Annex]

1. **Properties of the black powder** to be used for proofs.
Reference powder

A black powder with the following physico-chemical properties has been chosen as the reference powder for the study of pressures and to determine the quantities of the proof charges:

- | | |
|--------------------------------|--|
| a. Moisture content: | max. 1,3 % |
| b. Density: | 1,70 - 1,80 g/cm ³ |
| c. Granulometry: | 0,63 mm max. retained: 5 %
0,20 mm max. passed through: 5 % |
| d. Chemical composition: | |
| - percentage potassium nitrate | 75 ± 1,5 % |
| - percentage sulphur | 10 ± 1 % |
| - percentage charcoal | 15 ± 1 % |
| e. Ash: | max. 0,08 % |
| f. Hygroscopicity (12 h): | max. 1,8 % |
| g. Bulk density: | min 0,85 g/ml |

The above values are given for guidance, the pressure of the reference cartridge (Paragraph 2) being of principal importance.

2. 16-bore **reference cartridge**

The purpose of this cartridge, filled using charge components, is to enable the pressure developed by the reference powder to be measured.

The cartridge shall be filled using the following components:

- Case: 16-bore for smoothbore arms, length 67,5 to 70 mm, with 8 mm long metal head.
- Primer: "double strength" FIOCCI No 616 or equivalent.
- Black powder: 3 grammes.
In order to avoid any compression, the powder shall be put into and contained in a cardboard or plastic cylinder placed at the bottom of the case, of thickness of approximately 0,6 mm and a depth that takes account of the volume of powder.
- Wad: greased felt wad, 10 to 12 mm in depth.
- Shot: 33 grammes of 2,5 mm-diameter lead pellets.
- Crimping: round with a 1,5 mm thick cardboard sealing dis.
- Length of the made-up cartridge: approximately 64 mm.

The pressure developed by this cartridge shall be measured in a standard 16 x 70-bore pressure barrel manufactured in accordance with C.I.P. provisions.

Before the proof, the cartridges must be conditioned for at least 24 hours at a temperature of 21° ± 1°C and a relative humidity of 60% ± 5 %.

The above mentioned cartridge, filled with the reference powder, must give a pressure, measured electromechanically, of $P_n = 275 \pm 25$ bar.

The measuring system shall include a piezoelectric transducer capable of measuring up to 2.500 bar, with a natural frequency of 100 kHz, min., showing a maximum deviation from linearity of 1% and a sensitivity of 2,0 pC/bar min.

3. Proof charges

The prescribed charges are as follows:

Calibres	Pressures for guidance (bar)	Proof charges		Maximum service charge	
		Powder (g)	Shot or bullet	Powder (g)	Shot or bullet
10 12 14	750	13	65	6,5	36
16	800	12	60	5,5	32
20 24	850	10	55	5	25
28		9	40	4	22
32		8	30	3,5	17
36					
9	1200	6	10	2,5	6
.31 ca. 7,9 mm		7	12	3,5	8
.36 ca. 9,1 mm		8	16	5	12
.41 ca. 10,4 mm	1400				
.44 ca. 11,2 mm		9,5	19	6	15
.45 ca. 11,5 mm		10	19	6	16
.50 ca. 12,7 mm		13	24	8	20
.54 ca. 13,8 mm		14,5	28	9	28
.58 ca. 14,7 mm		16,5	31	10	31
.69 ca. 17,5 mm		20	45	12	40

4. Proof procedures

Smoothbore arms shall be loaded by placing a felt wad of at least 20 mm depth on top of the powder (without compression). The projectile shall consist of shot pellets of a diameter of 2,5 - 3 mm, held in place in the barrel by a felt wad of at least 10 mm depth placed over them.

In the case of firearms with a rifled barrel, loading shall follow the same procedure as that laid down for smoothbore arms, using a bullet instead of shot and without a wad.

5. Proof charges for pistols, revolvers and firearms of special design

In the case of pistols with one or more barrels, the proof firing of which in accordance with Paragraph 3 and 4 is not possible, the proof charge shall be determined, taking into account the length of the barrel(s), according to the maximum service charge laid down for that type of firearm. The quantity of proof powder must be twice the service charge.

In the case of revolvers and firearms of special design which have a powder chamber or primerless cartridge which cannot accommodate the proof charge provided for in Paragraph 3, the chambers shall be filled with the maximum amount of reference powder they can hold. The bullet shall be inserted and pushed in until flush.

6. Diameter of the touch holes

Firearms using black powder must be equipped with nipples having a touch hole with a maximum diameter in the direction of the chamber of 1 mm.