

REPUBLIC OF SLOVENIA
MINISTRY OF DEFENCE
Development Administration

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Number: 801-5860/95
Date: 12th October 1995

*REPUBLIC OF SLOVENIA
MINISTRY OF DEFENCE
LOGISTICS ADMINISTRATION*

SUBJECT: TEST OF AIRGUN PELLETS CALIBRE 4.5 mm

1 SUBJECT OF TEST

- 1.1 Airgun pellets (diabolo shots) »White Pellets«, producer: COAL Ltd., Petišovci, Lendava
- 1.2 Airgun pellets (diabolo shots) »Special Competing«, producer: SUVENIR, Makedonski brod, Macedonia

2 TEST PURPOSE

- 2.1 Determining the suitability of airgun pellets for airgun training in the Slovenian army.
- 2.2 Comparison with competitive pellets, such as:
 - diabolo pellets «Special«, Jelen, Zagreb, Croatia
 - pellets »Club 10«, RWS, Toisdorf, Germany

3 DESCRIPTION OF TESTED AND COMPARED MEANS

3.1 Coal White Pellets

- Classic »diabolo« shaped lead pellets, flat head plate with slightly raised edge, extended skirt ribbed along. Length of pellet approx. 5.8 mm, weight 0.50g.

500 pcs. package: metal tin Φ 69.3 and 22.5 mm high. Silver tin with light blue label on the cover. Inscription: White pellets, 500 WP cal 4,5 mm/.177 airgun pellets.

3.2 Suvenir Special Competing

- Classic »diabolo« shaped lead pellets, flat and smooth head plate, extended skirt also smooth. Length of pellet approx. 5.2 mm, weight 0.45 g.

500 pcs. package: metal tin Φ 67 and 22 mm high. Dark olive tin and black tin cover. Inscription: Suvenir makedonski brod, diabolo cal. 4,5 .177 special competing, match 500 pes.

3.3 Jelen Special

- Classic »diabolo« shaped lead pellets, lightly rounded head plate, with slightly raised edge, extended skirt slightly ribbed. Length of pellet approx. 5,5 mm, weight 0,47 g.

500 pcs. package: metal tin Φ 69 and 23 mm high. Green tin with black and green tin cover. Inscription: 500 special diabolo pellets 4.5, Jelen Zagreb.

3.4 RWS Club 10

- Classic »diabolo« shaped lead pellets, flat and smooth head plate, extended skirt also smooth with a slight reinforcement at the end. Length of pellet approx. 5.3 mm, weight 0.51 g.

500 pcs. package: metal tin Φ 66 and 20.5 mm high. Silver tin and blue tin cover. Inscription: 500 luftgewehrkugeln club 10, cal.4,5 mm .177, RWS Dynamit Nobel.

4 VISUAL EXAMINATION OF MEANS

4.1 Coal White Pellets

At the visual examination of a 500-piece sample, no visible faults were found on the pellets' exteriors. The shape of the pellets is consistent; the skirt end is perfectly round and equally thick.

Package without particularities.

4.2 Suvenir Special Competing

At the visual examination of a 500-piece sample, a lack of consistency in the making of end edges was found, two pellets were completely deformed: one was without a skirt, and the skirt span of the second pellet was 17 mm. There were more lead scarps in the tin.

The tin was rusty inside on several places.

4.3 Jelen Special

At the visual examination of a 500-piece sample, a lack of consistency in the making of pellets was found, particularly the end edges differ in shape and thickness.

Package without particularities.

4.4 RWS Club 10

At the visual examination of a 500-piece sample, no visible faults were found on the pellets' exteriors. The shape of the pellets is consistent; the skirt end is perfectly round and equally thick. Several lead scarps were found in the tin.

The tin does not close well – it opens when lifting by holding the cover or when tilting.

5 PELLETS WEIGHING

The precision balance Exacta 300 FB, measuring range 300 g, precision 0.001 g, was used. 30 random samples of each tested type of pellets were weighed.

5.1 Coal White Pellets

Pellets weigh from 0.496 to 0.502 g, arithmetic mean is 0.499 g, standard deviation 0.0016 g. Weight of the pellets is extraordinarily consistent. Our tests coincide with the results of Expert findings of MI, where the range from 0.4968 to 0.5040 g was determined by weighing 50 pieces of pellets.

5.2 Suvenir Special Competing

Pellets weigh from 0.402 to 0.512 g, arithmetic mean is 0.119 g, standard deviation 0.0346 g. Weight of the pellets is extraordinarily inconsistent, and more pellets are found in the both extremes, therefore the standard deviation is significantly higher as at competitive pellets.

5.3 Jelen Special

Pellets weigh from 0.454 to 0.476 g, arithmetical mean is 0.468 g, standard deviation 0.0045 g. Weight of the pellets is quite consistent.

5.4 RWS Club 10

Pellets weigh from 0.496 to 0.516 g, arithmetical mean is 0.507 g, standard deviation 0.0051 g. Weight of the pellets is quite consistent.

6 MUZZLE VELOCITY MEASUREMENTS

Velocity measurer Weinlich VM25 with a measuring range from 10 to 999 m/s and three airguns in faultless condition were used:

- pneumatic air rifle Diana,
- spring air rifle Weichrauch HW 30,
- spring air pistol Tex.

6.1 Coal White Pellets

- rifle Diana: V_0 from 173.5 to 174.7 m/s (span 1.2 m/s), 10-shot average: 174.2 m/s;
- rifle Weichrauch: V_0 from 147.1 to 152.8 m/s (span 5.7 m/s), 10-shot average: 150.4 m/s;
- pistol Tex: V_0 from 100.3 to 104.7 m/s (span 4.3 m/s), 10-shot average: 102.6 m/s.

Muzzle velocities of shots with individual airguns are extraordinarily equal. Our results are confirmed by the expert findings of MI, which used the better air rifle Feinwerkbau mod. 601. 5 series of 10 shots resulted in V_0 from 173,9 to 174,3 m/s and the span between the lowest and the highest V_0 at 50 shots was only 2,2 m/s.

6.2 Suvenir Special Competing

- rifle Weichrauch: V_o from 124.0 to 168.8 m/s (span 44.8 m/s!), first 10-shot average 149.4 m/s;
and V_o from 128.2 to 170.2 m/s (span 42 m/s!), second 10-shot average 156.7 m/s;
- pistol Tex: V_o from 83.8 to 121.2 m/s (span 37.4 m/s!), first 10-shot average 110.7 m/s;
and V_o from 78.5 to 124.4 m/s (span 45.9 m/s!), second 10-shot average 112.2 m/s.

Muzzle velocities of shots with individual airguns are extraordinarily unequal. Therefore we took two additional measurements, but the results were equally bad again. The span between the lowest and the highest V_o is approx. 10x higher than at the two compared products.

6.3 Jelen Special

- rifle Diana: V_o from 174 to 176.4 m/s (span 4 m/s), 10-shot average 175.3 m/s;
- pistol Tex: V_o from 109.9 to 117.2 m/s (span 7.3 m/s), 10-shot average 114 m/s;

Muzzle velocities of shots with individual airguns are quite equal.

6.4 RWS Club 10

- rifle Diana: V_o from 170.4 to 174.4 m/s (span 4 m/s), 10-shot average 172.8 m/s;
- rifle Weichrauch: V_o from 118.3 to 133.4 m/s (span 15.1 m/s), 10-shot average 125.7 m/s;
- pistol Tex: V_o from 88.4 to 99.4 m/s (span 11 m/s), 10-shot average 94 m/s;

Muzzle velocities of shots with individual airguns are quite equal.

7 SHOT PRECISION TEST

Competition airguns Feinwerkbau were used: the pneumatic rifle M 601 and the spring pistol M 65 (with bolt amortization). Shooting distance 10m, weapon resting on soft support, sitting position of the shooter.

Smaller targets were used for the rifle and bigger targets for the pistol. 10 shots were fired into each target.

There were 3 shooters: A (a higher class competitor), B and C (both good shooters)

Achieved results – measured by the circle over the outer edge of the holes.

7.1 Coal White Pellets

dissemination of shots in Φ mm				
weapon	shooter A	shooter B	shooter C	weapon average
rifle	11,7	17,5	12,9	14,0
pistol	26,9	40,4	61,2	42,8
shooter average	19,3	29,0	37,1	

Generally the best results.

7.2 Suvenir Special Competing

dissemination of shots in Φ mm				
Weapon	shooter A	shooter B	shooter C	weapon average
Rifle	46,5	44	46	45,5
Pistol	72	89,8	98	86,6
shooter average	59,3	65,4	72,0	

The worst results in comparison with the other products.

7.3 Jelen Special

dissemination of shots in Φ mm				
weapon	shooter A	shooter B	shooter C	weapon average
rifle	11,4	17,1	25	17,8
pistol	34,1	46	70,4	50,2
shooter average	22,8	31,6	47,7	

Generally an average result.

7.4 RWS Club 10

dissemination of shots in Φ mm				
weapon	shooter A	shooter B	shooter C	weapon average
rifle	12,1	15,1	17,6	14,9
pistol	41,6	34,1	54,4	43,4
shooter average	26,9	24,6	36,0	

Generally an average result.

8 CONCLUSION

- 8.1 Coal White Pellets ammunition is suitable for exercise shooting with airguns in Slovenian Army. Adequate quality is unquestionable and confirmed by the tests described in this report.
- 8.2 Suvenir Special Competing ammunition is unsuitable for exercise shooting with airguns, because of extremely bad properties evident from all performed tests.
- 8.3 The test with the used weapons proves that there is a strong correlation between technical accuracy and weight consistency, dimensions and muzzle velocity of airgun pellets. This is shown not just by both extreme examples (Coal/Suvenir), but also by both compared products, which achieved average results.

9 DOCUMENTATION AND SAMPLES

Documents of individual tests, measures and ammunition samples are kept by the Development Administration.

Assessment given by:

Gorazd TOMIČ
Head of armaments
department
(signed)

Uroš KREK
DIRECTOR
(signed and stamped)

AIRGUN PELLETS WEIGHING

Airgun pellet No.	COAL
1	497
2	499
3	501
4	498
5	500
6	501
7	500
8	499
9	502
10	499
11	498
12	498
13	500
14	500
15	497
16	496
17	498
18	500
19	496
20	501
21	500
22	500
23	502
24	498
25	497
26	498
27	499
28	499
29	497
30	499
Arithmetic mean: <i>(30 pcs. pellets)</i>	498,97 <i>(milligrams)</i>