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Distinctive Features of Country-Made Ammunition

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Abstract: ***Regular ammunition is manufactured under strict factory specifications to ensure uniformity in design, performance, and safety. It consists of a cartridge case, percussion cap, primer, propellant, and bullet, functioning through a controlled ignition sequence that propels the bullet forward. However, forensic laboratories frequently encounter ammunition that deviates from these standards, commonly referred to as country-made ammunition. This study examines the distinguishing features of country-made ammunition in comparison to regular 7.65mm cartridges. Country-made ammunition, despite outward resemblance to factory rounds, is characterised by dimensional irregularity, weight variation, crude headstamps, poor finishing, unreliable percussion caps, and flat-base bullet design. These features are characteristic in nature and can be used for differentiating country made ammunition from regular ammunition. This study aims to highlight the characteristic features of country-made ammunition that enable its clear distinction from regular factory-produced cartridges.***
Keywords: Country-made ammunition, Headstamp, Percussion cap, Propellant, Bullet design, Dimensional variation, Microscopic examination, Firearm identification.

I. INTRODUCTION

Regular ammunition is composed of a cartridge case, percussion cap, primer, propellant, and bullet. When the firearm's firing pin strikes the percussion cap, the primer compound is crushed and ignited, producing a flash. This flash ignites the propellant inside the cartridge case, causing rapid combustion. As the propellant burns, high-pressure gases build up behind the bullet. The resulting pressure forces the bullet forward through the barrel, initiating its motion toward the target.

In many cases, the laboratory has received ammunition that does not conform to factory specifications. Although the physical dimensions of such cartridges are comparatively similar to those of regular factory-made ammunition, careful examination reveals substantial differences in their characteristic features. These differences may include non-uniform primer construction, crude headstamp, variability in bullet weight and inconsistencies in the type and quantity of propellant used. As a result, while the cartridges may outwardly resemble standard ammunition, their features and characteristics deviate significantly, underscoring the importance of meticulous forensic analysis for accurate identification and classification of such **country-made ammunition**.

II. OBSERVATION

Regular ammunition shows consistent rim, base, body, and neck diameters, along with uniform cartridge weights around 7.65 g, and typically carries standardised headstamps and primers.

In contrast, the country-made ammunition displays fluctuating diameters, and inconsistent weights ranging from 7.0 g to 7.48 g. Many of these cartridges lack headstamps altogether and are fitted with improvised percussion caps of silver colour, grey colour and sometimes the percussion cap is not seated properly. Propellant colour is also inconsistent, unlike the controlled factory standards. The colour of propellant varies from pink to greyish; sometimes, along with the powder charge, cotton is also found.

Details of Cartridge	RimDia(inch)	BaseDia (inch)	BodyDia (inch)	NeckDia (inch)	Length of the cartridge (inch)	Weight of the cartridge (gram)
Regular 7.65mm	0.354	0.334	0.332	0.332	0.983	7.652
Regular 7.65mm	0.353	0.333	0.331	0.332	0.981	7.657
Regular 7.65mm	0.354	0.333	0.332	0.331	0.985	7.648
Country made	0.359	0.310	0.310	0.313	0.988	7.024

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7.65mm						
Country made 7.65mm	0.350	0.336	0.333	0.333	0.978	7.483
Country made 7.65mm	0.351	0.327	0.328	0.325	0.964	7.006
Country made 7.65mm	0.343	0.325	0.334	0.337	0.979	7.184
Country made 7.65mm	0.353	0.329	0.331	0.332	0.964	7.487

The examination of the dataset reveals that while country-made ammunition often mimics the external dimensions of regular factory-produced cartridges, it diverges significantly in its finer details.

The details of the features observed on country-made ammunition based on physical examination and microscopic examination are given below:

1) Dimensional Inconsistency

Country-made ammunition shows greater variability. Rim diameters range from 0.343 to 0.359, base diameters from 0.310 to 0.336, body diameters from 0.310 to 0.334, and neck diameters from 0.313 to 0.337. Cartridge lengths fluctuate between 0.964 and 0.988. While the average length of country-made cartridges overlaps with factory-made ones, the broader variation highlights their non-uniform construction. Even small differences in cartridge length can affect chamber fit, headspace, and ultimately create problems when chambering the cartridge into a firearm.

Regular ammunition demonstrates dimensional uniformity, while country-made ammunition exhibits irregular and inconsistent measurements.



(Country Made Ammunition)

2) Weight Variation

Factory rounds have stable weights around 7.65 g with minimal deviation, while country-made rounds weights vary significantly between 7.0 g and 7.48 g.

3) Headstamp

Country-made ammunition sometimes bears a headstamp (refer to Figure-1) and sometimes does not (refer to Figure-2). When present, the headstamp can be distinguished from regular factory ammunition by its irregular font, inconsistent size, and unusual inscriptions. As given in the figure-1, 'KF' found to be stamped both at the 12 o'clock and 6 o'clock positions, unlike the standardised markings found on factory-produced rounds.



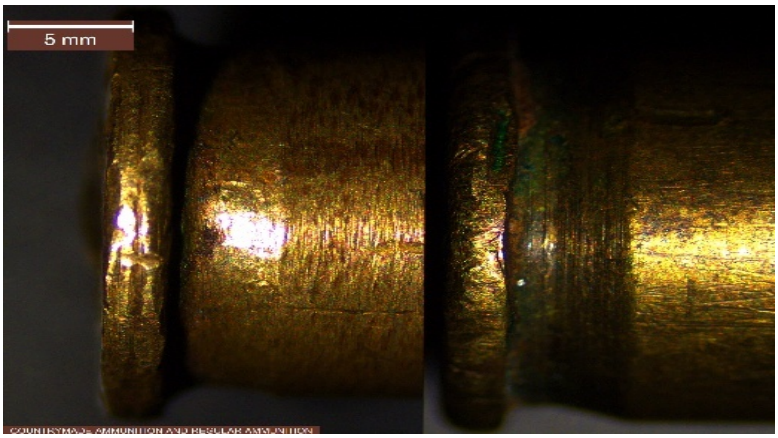
(withheadstamp) Figure 1



(without Headstamp) Figure 2

4) Structural & Manufacturing Features

Country-made ammunition generally lacks the fine finishing seen in regular factory-produced rounds. Irregular tool marks are often visible on the body of the cartridge case, likely resulting from crude manufacturing processes. The groove portion of the cartridge, in particular, tends to display poor finishing quality, as illustrated in the figure 3.



(Country -made ammunition & Regular ammunition)
Figure 3

5) Percussion Cap:

Test firing of Country-made ammunition wasconductedthrough a pistol/firearm capable of chambering the 7.65mm cartridge. Post-firing analysis revealed that the percussion cap often failed to remain intact, unlike the consistent condition observed in regular factory ammunition. In several cases, the percussion cap appeared distorted in its structure, as illustrated in the figure 4, further indicating the inferior quality used in country-made ammunition manufacturing.



Regular Ammunition p-cap & Country Made Ammunition p-cap
(Figure 4)

A distorted percussion cap can hinder the process of linking a cartridge to its firearm, since the deformation often prevents the retention of distinct firing pin impressions necessary for firearm identification.

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6) Bullet

The bullet of country-made ammunition differs in both length and weight when compared to regular factory-produced rounds. A key structural distinction found in the base of the country-made bullets, which typically have a flat base, whereas the bullet of standard 7.65mm ammunition has no flat base (see figure 5).

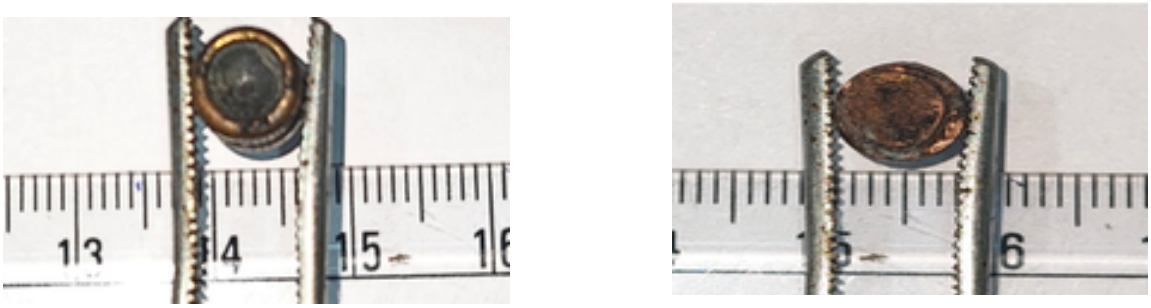


Figure5 shows the base of bullet of a regular 7.65 mm cartridge and base of bullet of a country-made cartridge.

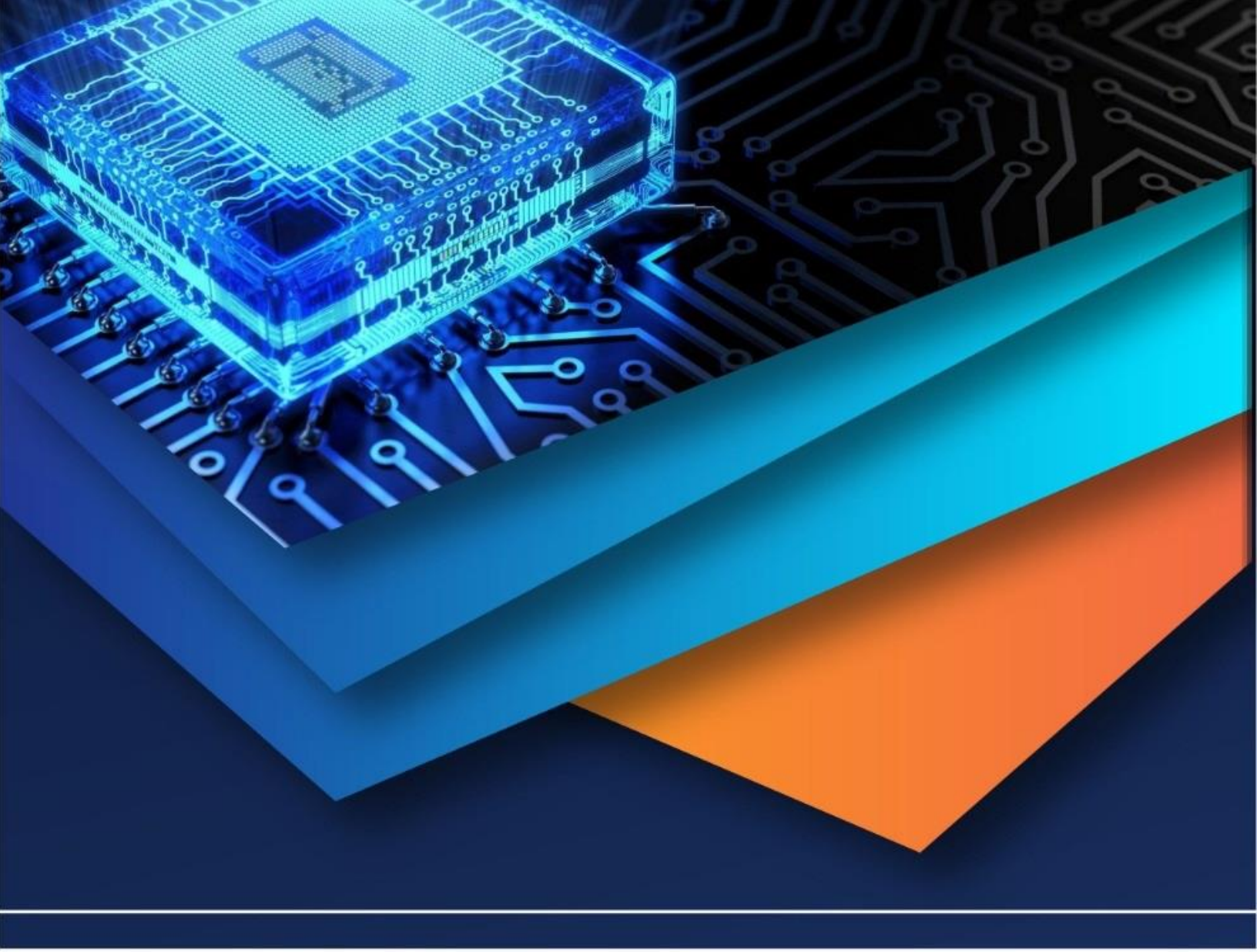
III. CONCLUSION

Country-made ammunition, though outwardly similar to factory-produced 7.65mm cartridges, demonstrates clear forensic differences. Variations indimensions and weight, irregular or absent headstamps, texture & colour of the propellant, poor finish, distorted percussion cap after firing, and flat-base bullet design distinguish them from regular factory rounds. It is important to highlight the importance of meticulous forensic examination for accurate identification and classification.

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