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The Aleppo Codex



Embattled



- *Rare silver ingots of Pidyon HaBen*
- *2014 Medal honors first U.S. Jewish military chaplain*
- *Tel Aviv's Euro League hoop champions*
- *Hurva Synagogue graces new 20 NS gold coin*

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IDF HAT MEDALS SHOW THEIR METTLE



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Historically, all hat badges of the Israel Defense Forces (IDF) were made of either struck or cast metal, except for the first cap badge, which was made from fabric by the American firm "Hitelmacher" in 1948.

Generally, manufacturer's marks were not put on the badges, with the exception being that of Milman Mihsafa on an early Air Force cap badge. At present, many badges are made in the Far East, particularly in China.

In order to determine the correlation between the manufacture period hat and the alloy composi-

*All photos provided by authors
An Israel Defense Force medical service
cockade of nickel, above left, and above
right, a copper and aluminum old police
cap badge.*

tion of IDF badges, we carried out measurements to determine the material from which they were made.

The measurements were performed by the X-Ray Fluorescence (XRF) ED instrument NITON XL 3TM 900 - for the analyses we used a beam size 3 mm in diameter, which has a rather high precision for metal samples. We checked this preci-

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ALLOYS OF HAT BADGES SIMILAR TO COINS



Above left: A General staff hat badge of the IDF made of brass with a nickel sword, and above right: An old Civil Defense hat badge of brass with nickel-silver overhead panel.

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sion using several certified alloys similar to the studied objects.

In all cases, the absolute errors were determined to be not higher than about one percent for concentration regions of 30 to 50 percent.

For the study, we used specially selected samples from the personal collections of Guy Shapiro, Roman Lubman, and Vladimir Bernshtam. The total number of analyzed badges is 400 and the results of these measurements are summarized below.

Most IDF hat badges are made of brass (a copper alloy containing from 10 to 50 percent zinc). With increasing zinc concentration the color of brass changes from red to

light yellow. Many of the alloys used are similar to alloys used in coin planchets.

In addition to brass for hat badges, several alloys of copper are sometimes used: nickel silver (German silver), cunife (an alloy of copper with nickel and iron), etc. In rare cases, almost pure iron is used (tactical intelligence cockades, the education service, and other recent issues), nickel (medical service cockade, copper and aluminum (and old police badge). The authors also know of a cast artillery-badge made of an alloy of lead and tin.

Basically, badges are made from a single metal or alloy, but there are a few bimetallic hat badges.

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IDF CAP BADGE DESIGNS CHANGE LITTLE



At left: A brass hat-badge of the arms of ordinance corps with a nickel silver bomb. Above: The first Air Force hat-badge was made of brass and was silver coated.

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There is a General Staff badge of brass with a nickel silver sword, the old civil defense badge of brass with a nickel silver overhead panel and also a brass badge of the arms of ordinance corps with a nickel silver bomb.

There is also an old civil defense brass badge with a shield made of the same brass as the badge.

Brass IDF badges are usually painted, but some do not have any cover and maintain the natural color of brass. Navy badges, are or gilded or have a natural yellow color of the alloy.

The first Air Force badge was made of brass and was silver-coated. Subsequently, the Air Force badges were made of nickel-copper alloys, and have a natural silver-like color.

The precise manufacture date of most IDF cap badges is not known, but these items are typically used for decades. A change in the phrasing of the forces name on cockade, which occurred in 1990, provides an opportunity to distinguish "old" (pre-1990) from "new" (post-1990) badges. Prior to 1990, the Hebrew definite article ("ha-") was not used (Fig. 7), but appears in later issues (Fig. 8) [3].

Air Force ("Heil ha-Avir") and Navy ("Heil Ha-Yam") cockades always employ the definite article. However, in the old version of the Air Force badge the name of the corps is written with a single letter "vav", while the new version has a double letter. This change allows an easy differentiation between

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ALLOY CONTENT OF BADGES DID CHANGE



A change in the phrasing of the force's name on the hat cockade, which occurred in 1990, provides an opportunity to distinguish "old" (pre-1990) from "new" (post-1990) badges. Prior to 1990, the Hebrew definite article ("ha-") was not used, above left, but appears on later issues, above right.

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badges made before and after 1990.

In order to determine the correlation between the manufacture period and their material alloy, we carried out an analysis the metal contents of different hat badges.

It was found that the average zinc content in brass cap badges is 34.2 percent for "old" issues and 30.5 percent for "new" versions.

In the results for "new" cap badges, we excluded the measurements of cap badges with a zinc content of 37 to 39 percent with a similar black coating, which were, in all appearances, produced recently by the same manufacturer.

The estimated time of issuance of these cap badges can be defined as the years 2005 to 2012. This date range relies on the fact that

cap badges of military chaplaincy only went into production in 2005.

In addition, a military chaplaincy cap badge containing 72 percent zinc was excluded from consideration. After the aforementioned cap badges were excluded, the measurement results of the remaining 105 "new" cap badges were processed.

The statistical analysis was improved by carrying out measurements on externally identical cap badges, which did not always turn out made of the same alloy. We also investigated 53 pieces of "old" cap badges.

Analysis of the distribution of badges' zinc content reveals the statistical likelihood of finding an "old" badge made from an alloy with 34 percent or more of zinc or more is 0.65 and for "new" badges

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ALLOY CHANGES USEFUL IN NUMISMATICS



Medals of the Jerusalem marches have the exact date of manufacture, allowing the authors to conduct detailed analyses of the changing alloy content used over time.

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is 0.15. Separately, we analyzed badges made between 1948 and 1970 (a total of 60 pieces). The analysis of the measurements showed that only in one badge was the zinc content less than 30 percent and that exception was at 29 percent.

More than half of the cap badges of the investigated period contain 35 to 37 percent zinc.

In addition, medals of the Jerusalem marches, which have the exact date of manufacture, were put at our disposal. Between 1973 to 1978 these were made of brass with a zinc content of 36 to 37 percent.

In our opinion, this is another argument in favor of concluding

that the "old" brass products, ordered by the IDF, used brass with a higher content of zinc.

Thus, some relations between content and time of production are established for badges. These relations are typical for studies of archaeological objects and coins.

In conclusion: There is no unique relationship between the date of manufacture of hat badges and the composition of the alloy (brass); and the "old" badges, in most cases, were made of brass, with a zinc percentage higher than the "new" badges. □

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