AF Global Logistics Support Center (AFGLSC)

Integrity - Service - Excellence

Ammo Label Test – Final Report

JOCG Briefing

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Executive Summary

The objective of this project was to test the performance of common off-the-shelf labels in various operational conditions.

Test Labels were attached to ammunition, weapons, alternate mission equipment (AME) and associated items, e.g. bomb racks, storage racks, pylons, storage containers, etc. for the US Air Force.

Executive Summary

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- The initial Request For Materials (RFM) resulted in thirty-seven (37) sample materials from sixteen (17) different label convertors.
- Six (6) materials were eliminated immediately:
  - One (1) was not an adhesive label and from an unknown source.
  - Four (4) were materials incompatible with the request.
    - Clear material – two (2)
    - Destructible vinyl
    - Paper only with no adhesive
  - One (1) had a ribbon incompatible with the specified Zebra printer and no substitute readily apparent.
  - One (1) had a ribbon incompatible with the specified Zebra printer, but the converter had provided multiple samples and requested we use the substitute ribbon of the same formulation
  - One (1) did not have sufficient labels to print the required quantity for testing; however, we printed and tested as many as possible
- The initial field tests resulted in two (2) labels being deemed unacceptable by users, i.e. these used over-laminate that was difficult to apply in the field (these are included in all of the field tests but were ineligible for Label Certification)

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Initial Field Testing

- The initial field testing was conducted with thirty-one (31) off-the-shelf labels.
- Labels were printed and installed on equipment deployed in the field.
- Field personnel collected label performance data using an industry standard bar code verifiers and data collection software.
- Testing was done in three locations:
  - Testing at Shaw AFB started on 18 August 2008 and concluding on 22 December 2008.
  - Testing at Luke AFB started on 20 October 2008 and concluding on 16 January 2009.
  - Testing Eielson AFB started on 12 January 2009 and concluding on 13 April 2009.
- After this data collection step, Evanhoe & Associates analyzed the data from all test sites and produced an interim findings report for the Air Force.
- The interim report formed the foundation for the next phase, Label Certification.

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Laboratory Label Certification Testing

- Label materials were selected based upon their performance in the field and were subjected to testing and analysis based upon ANSI MH10.8.7 and MIL-PRF-61002A.
- These label materials were sent to Allan Gilligan at A&N Associates for rigorous laboratory testing in accordance with procedures documented in ANS MH10.8.7 and MIL PRF 61002A standards.
- Fourteen (14) labels were above the minimums threshold.
- A Request For Materials was issued to the 14 convertors.
- Eleven (11) such label materials were submitted for testing.

Conclusion

- ***CAGE 06GF6 Part Number A22*** label type from General Data emerged as having the best adhesive properties, being the most durable and capable of retaining the Grade A Data Matrix ECC200 image.
- The only other label set to pass all tests and the null hypothesis at the 95% confidence level that the labels would equal or surpass the minimum adhesive and print quality requirements are the labels identified as ***DUNS 006073027 Part Number B484*** from Brady.
  - This later label type was found to become brittle after exposure to high temperatures which resulted in the label tearing during adhesive testing after high temperature exposure. It did however easily pass all adhesive and minimum print quality requirements.
- For this reason, the CAGE 06GF6 Part Number A22 labels are recommended for the ammunition labelling project with the DUNS 006073027 Part Number B484 label set being conditionally recommended.
- The results of the testing program also showed that the adhesion tests based on the ANS MH10.8.7 standard document are appropriate and will sufficiently identify limitations of some label materials for the US Air Force ammunition label application. Test data shows that the alternate adhesive testing methodology taken from MIL PRF 61002A does **not** correlate well with adhesive performance and therefore cannot be recommended for use in this application.

QUESTIONS?