

DEPARTMENT OF THE ARMY SUPPLY BULLETIN

IMPREGNATING SET, CLOTHING, FIELD, M3
STORAGE SERVICEABILITY STANDARD

Headquarters, Department of the Army, Washington, D.C.
25 October 1972

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1. Purpose and Scope. a. Purpose. This bulletin used in conjunction with SB 3-30 provides method for determining the serviceability of Impregnating Set, Clothing, Field, M3.

b. Scope. The provisions of this bulletin are mandatory for use in conducting surveillance Impregnating Set, Clothing, Field, M3. This bulletin is not intended for use by organizations 5 stocks in basic loads.

2. Applicable Documents. The following documents, of the issue in effect on date of surveillance, form a part of this bulletin to the ex specified herein.

- SB 3-30.....Serviceability Standard for CB Materiel
- TM 3-215.Military Chemistry and Chemical Agents
- TM 3-250Storage, Shipment and Handling Chemical Agents and Hazardous Chemicals..

3. Safety Provisions. Refer to SB 3-30, TM 3-215, TM 3-250 and approved operating procedures

4. Surveillance. a. *Surveillance Interval.*
(1) Initial receipt and prestorage inspection.

Initial receipt and prestorage inspection will be conducted in accordance with SB 3-30.

(2) Periodic cycle. Surveillance will be performed at periodic cycles of 2 years.

(3) Preissue inspection. Preissue inspection of the subject item will be performed in accordance with SB 3-30 and the provisions of paragraphs 5 and 6 of this bulletin when one half or less of the periodic cycle remains. A visual examination will be performed (in accordance with para 5 of this bulletin) on the subject item if more than one half of the periodic cycle remains prior to shipment of the item. If no initial cycle examination has been performed, a complete examination as specified in paragraphs 5 and 6 of this bulletin will be performed prior to shipment.

b. *Basis of Surveillance.* Surveillance for the subject item will be conducted on the basis of depot, manufacturer's, miscellaneous, or mixed lots.

c. *Formation of Surveillance Lots.*

(1) Depot lots. A depot lot is created by grouping all items regardless of manufacturer or

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age into a large single lot for the purpose economy in surveillance.

(a) *Kind and type.* All items must be the same kind and type; i.e., Impregnating Set Clothing, Field, M3.

(b) *Storage.* All items must be stored under similar conditions at the same depot.

(c) *Serviceability lot status.* All lots must possess the same serviceability lot status; i.e., serviceability known (based upon prior surveillance) or serviceability unknown. However, when new procurement is involved, serviceability will be based upon acceptance in lieu of prior surveillance.

(2) *Manufacturer's lot.* A manufacturer's consists of those items manufactured or assembled by one manufacturing or reconditioning activity and bearing the same manufacturing or reconditioning agency's lot identification number.

(a) *Packing.* All items must have the same: type packing and identification marking.

(b) *Storage.* All items must be stored under similar conditions at the same depot.

(c) *Serviceability lot status.* All lots must possess the same serviceability lot status; i.e., serviceability known (based upon prior surveillance) or serviceability unknown. However, when new procurement is involved, serviceability will be based upon acceptance inspection in lieu prior surveillance.

(3) *Miscellaneous lot.* A miscellaneous containing not more than 500 items, will be created by combining small manufacturer's lots lot fragments possessing the same technical history; i.e., manufactured by the same technical procedure (indicated by the same lot series number).

(a) *Kind, type and model.* All items must be of the same kind, type and model; i.e., Impregnating Set, Clothing, Field, M3.

(b) *Manufacturer.* Each small lot or fragment must be the product of the same manufacturing or reconditioning agency.

(c) *Time of fabrication.* All items must have been manufactured, fabricated, or reconditioned within a period of two years.

(d) *Packing.* All items must have the same type packing and identification marking.

(e) *Storage.* All items must be stored under similar conditions at the same depot.

(f) *Serviceability lot status.* All items must possess the same serviceability lot status i.e., serviceability known (based upon prior serviceability)

or serviceability unknown. However, when new procurement is involved, serviceability will be based upon acceptance inspection in lieu of prior surveillance.

(4) *Mixed lot.* A mixed lot is created by combining those items wherein identification with regard to manufacturer, lot number, or the time of manufacture are incomplete. 100 items or less may be combined to form a mixed lot of not more than 500 items. All items must possess the same technical history; i.e., kind, type and model.

(a) *Kind, type and model.* All items must be of the same kind, type and model, i.e., Impregnating Set, Clothing, Field, M3.

(b) *Packing.* All items must have the same type packing.

(c) *Storage.* All items must be stored under similar conditions at the same depot.

(d) *Serviceability lot status.* All lots must possess the same serviceability lot status; i.e., serviceability known (based upon prior surveillance) or serviceability unknown. However, when new procurement is involved, serviceability will be based upon acceptance inspection in lieu of prior surveillance.

d. *Sampling.* Sampling will be conducted as follows:

(1) *Container's.* A sample quantity of containers will be randomly selected as indicated in table 1 and a visual examination will be performed for packaging, packing, marking and preservation as specified in table 3.

(2) *End item.* A sample quantity of Impregnating sets will be randomly selected as indicated in table 1 and subjected to a visual examination. In addition, the sample, or portion thereof as specified in table 1, "will be subjected to the test (s) specified in section 6. Those containers of impregnite XXCC₃ selected for test will be sampled as follows:

(a) By inserting a sampling thief into the impregnite in the container, obtain 2 cores of impregnite, one from the center axis of the container and the other from one-eighth to one-sixth of the diameter away from the side of the container. A suitable sampling thief may be made from a 3 1/2 foot piece of 1-inch pipe by cutting from the lower 2 1/2 feet, a section about one-third of the circumference in width, parallel to the axis of the pipe. The end of the pipe is rounded so that it readily passes through the material.

(b) The 2 cores of impregnite will be mixed thoroughly and placed in a clean dry sample jar which should be glass-stoppered, or one with a plastic cap.

(c) The sample jar will be marked so as to identify the lot and container represented.

Table 1. Sampling plan.

| Lot size | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---------------|----|---|----|----|-----|---|----|---|---|
| 0 to 100 | 24 | 0 | 2 | 24 | 48 | 1 | 3 | 8 | 0 |
| 101 to 500 | 38 | 1 | 3 | 38 | 76 | 2 | 10 | 8 | 0 |
| 501 to 1000 | 52 | 2 | 5 | 52 | 104 | 3 | 15 | 8 | 0 |
| 1001 to 5000 | 65 | 3 | 8 | 65 | 130 | 4 | 19 | 8 | 0 |
| 5001 and over | 78 | 4 | 10 | 78 | 156 | 5 | 23 | 8 | 0 |

Explanation of columns and symbols:

- 1 First sample size-visual.
- 2 Acceptance number-major defectives (first sample).
- 3 Acceptance number-minor defectives (first sample).
- 4 Second sample size-visual.
- 5 Combined sample size-visual.
- 6 Acceptance number-major defectives (combined samples).
- 7 Acceptance number-minor defectives (combined samples).
- 8 Sample size-test
- 9 Acceptance number-test.

(3) *Second sample size.* When the number of major defectives exceeds the quantity spec: in column 2, but does not exceed the quantity specified in column 6, 'a second sample in size to that specified in column 4, will be taken and the acceptance number specified in column will be used for acceptance. A second sample never taken for minor defectives alone. When number of minor defectives exceeds that of column 3, but does not exceed that of column 7 lot will be considered serviceable. However, should a second sample be required due to major defectives, the minor defectives will be counted reported in accordance with Section 7. Column will be the acceptance number for minor defectives.

(4) *Combined sample size.* When the surveillance interval has been exceeded by 25-percent or when the approximate date of the last inspection is unknown, the combined sample plan specified in columns 5, 6 and 7 will be used. The combined sample plan may also be used when additional assurance of quality is desired, e.g., a rework of an item where component quality unknown.

(5) *Visual examination.* Only a visual examination of packing for a new or reprocessed upon receipt at a depot storage area is required If used units are received unprocessed at a storage area, a complete visual and functional examination shall be performed in accordance with instructions contained in this bulletin when processing and repacking.

(6) *Testing.* Overseas commands and installations other than depots need not perform test(s) specified in section 6. Depots that do possess testing and/or laboratory facilities will report material in accordance with the requirements of paragraph 7b.

5. Inspection. a. *Visual Examination.* The sample will be examined for defects listed in 5b.

b. *Classification of Defects.* Refer to tables 2 and 3 for classification of defects. Defects other than those listed in these tables will be reported. Serviceability will be withheld pending investigation by Commander, Edgewood Arsenal, ATTN: SMUEA-PA-PQ, to determine proper defect category into which the unlisted defect belongs.

Table 2. Impregnating Set, Clothing, Field, M3.

| Categories | Defects | Inspection method |
|-------------------------|---|-------------------|
| Critical: None defined. | | |
| Major: | | |
| 101 | Component missing. (See Note 1) | Visual |
| 102 | Chlorinated paraffin, dark honey or charcoal colored. | Visual |
| Minor: None defined. | | |

NOTE 1.

Impregnating Set, Clothing, Field, M3 consists of the following components: one container of XXCC3; one container of chlorinated paraffin; one container of dye, olive drab, impregnating; one container of Santromerse "80"; one bag containing instruction card; one wooden packing box.

Table 3. Packaging, Packing, Marking and Preservation

| Categories | Defects | Inspection methods |
|-------------------------|---|--------------------|
| Critical: None defined. | | |
| Major: | | |
| 101 | Wooden boxes damaged or deteriorated to the extent that inner containers are not protected or handling is affected. | Visual |
| 102 | Inner containers damaged or deteriorated to the extent that seal is affected. | Visual |
| 103 | Inner container leaking | Visual |
| 104 | Precautionary marking missing or illegible on wooden box or inner containers. | Visual |
| Minor: | | |
| 201 | Straps broken or missing | Visual |
| 202 | Marking incorrect, missing or illegible | Visual |

6. Tests. a. *Impregnite, XXCC3 Test.*

(1) *Requirements.* The active chlorine content of the Impregnite XXCC3 shall not be less than 10.0 percent.

(2) *Equipment required.* Standard chemical laboratory equipment as specified in "Procedure".

(3) *Procedure.* Determine the active chlorine in the impregnite as follows:

(a) *Chloroform* used as a solvent will U.S.P. or C.P. grade and purified on the same day it is to be used as follows: Place 1 liter the chloroform in a 2-liter separatory funnel 2 shake with four changes of distilled water, 500 each. Filter the washed chloroform through two thicknesses of dry filter paper. To 50 ml of chloroform add a freshly prepared potassium iodide solution, consisting of 45 ml of distilled water, 2 grams of potassium iodide, and 5 ml 1:1 hydrochloric acid. (Dissolve the potassium iodide in the distilled water and then add hydrochloric acid.) Add starch indicator X shake vigorously for 5 minutes. After shaking blue or faint blue color should appear. Failure of the color to appear reveals presence of reducing agent which indicates the chloroform unsuitable as a solvent and must not be used. If the desired blue color is obtained titrate with 0.1N sodium thiosulfate solution. If a blank greater than 0.20 ml of 0.1N sodium thiosulfate is obtained, repurify the chloroform as above adding 10 grams of potassium iodide to the first wash water.

(b) Break up all lumps present in impregnite and pass the entire sample through No. 30 U.S. standard sieve. Return the sample to the bottle. Weigh from 0.55 to 0.60 grams the uniform sample and wash it through a fun into a 300-ml glass stoppered iodine flask w 50 ml of purified chloroform. Stopper the flask and agitate gently to dissolve the sample. As soon as the sample has dissolved, add a freshly p pared potassium iodide solution consisting of ml of distilled water, 2 grams of potassium iodide and 5 ml of 1:1 hydrochloric acid. (Dissolve potassium iodide, in the distilled water and t) add the hydrochloric acid.) Stopper the flask E shake vigorously for 5 minutes. Cool the flask cold water, open, and wash the stopper and walls of the flask with distilled water. Titrate the liberated iodide with 0.1N sodium thiosulfate solution. During the titration, swirl the contents the flask continuously and vigorously, so there will always be an excess of iodine in the acid-acqueous layer, until the final end point is reach Near the end point, stopper and shake the flask vigorously after each addition of thiosulfate. When the iodine color has almost disappeared, a starch indicator and titrate to the disappears of the blue color. Determine a blank on 50 ml the chloroform by the same procedure gin above. Subtract the ml of sodium thiosulfate solution used in titration of the blank from ml

used in titration of the impregnite sample. Calculate the percentage active chlorine as follows:

$$\frac{M1 \text{ Na}_2 \text{ S}_2 \text{ O}_3 \times \text{Normality Factor} \times 1.773}{\text{Weight of sample}} = \text{percent active chlorine}$$

b. *Chlorinated Paraffin Test.*

(1) Requirement. HC1 (hydrochloric acid) content in the chlorinated paraffin shall not be greater than 0.10 percent when tested.

(2) Equipment required. Standard chemical laboratory equipment as described in "Procedure".

(3) Procedure.

(a) Weigh 20 grams of the sample and transfer to a 250 ml separatory funnel. Add 50 ml of benzine and shake thoroughly. Add 30 ml of 95 percent ethyl alcohol, shake, add 100 ml of water and shake thoroughly. Allow mixture to stand until layers separate.

(b) Separate alcohol-water solution and add a few drops of mixed indicator solution. The indicator consists of 0.030 grams of methyl red and 0.075 grams of bromcresol green (tetrabromo-m-cresol-sulfonphthalein) dissolved on 100 ml of 95 percent ethyl alcohol.

(c) Titrate with 0.02 normal Na_2OH (sodium hydroxide) to the intermediate purple end point.

(d) Run a blank using the same procedure, with the same volumes of benzine, alcohol, and water, but no chlorinated paraffin and titrate as above.

(e) Calculate the HC1 (hydrochloric acid) content as follows: % HC1 (hydrochloric acid) =

$$\frac{M \times N \times 3.65}{W}$$

Where: M = Number of ml Na_2OH less correction for blank

N = Normality of Na_2OH

W = Weight of chlorinated paraffin in grams

7. Documentation. a. *Report Forms.* When reporting data, the following forms will be used:

DA Form 984Munitions Surveillance Report.

DA Form 985Data Sheet for Grand Lots, Miscellaneous Lots or Depot Lots.

DA Form 2028 ...Recommended Changes to DA Publications.

b. *Reporting.*

(1) *Data.* When reporting data, forms specified in 7a will be prepared in accordance with instructions contained in SB 3-30, SB 742-1 and TM 38-750.

(2) *Submission.* Original and two copies reports that are required by this document will be forwarded to Commander, US Army Ammunition Procurement and Supply Agency, ATTN SMUAP-PA-S, Joliet, IL 60436.

8. Special Instructions. *a. Equipment Calibration.* Prior to an inspection operation or test, all measuring devices that require calibration will be inspected to verify that the calibration interval and equipment limits have not been exceeded.

b. Errors or Omissions. Comments regarding errors or omissions will be forwarded on DA Form 2028 to Commander, Edgewood Arsenal, ATTN: SMUEA-PA-PQ, Edgewood Arsenal, MD 21010 and an information copy to the Commander, US Army Ammunition Procurement and Supply Agency, ATTN: SMUAP-PA-S, Joliet, IL 60436.

By Order of the Secretary of the Army:

CREIGHTON W. ABRAMS
General, United States Army
Chief of Staff

Official:

VERNE. L. BOWERS,
Major General, United States Army,
The Adjutant General.

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THE METRIC SYSTEM AND EQUIVALENTS

WEIGHT MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
 1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
 1 Kilometer = 1000 Meters = 0.621 Miles

WEIGHTS

1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
 1 Kilogram = 1000 Grams = 2.2 lb.
 1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
 1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

SQUARE MEASURE

1 Sq. Centimeter = 100 Sq. Millimeters = 0.155 Sq. Inches
 1 Sq. Meter = 10,000 Sq. Centimeters = 10.76 Sq. Feet
 1 Sq. Kilometer = 1,000,000 Sq. Meters = 0.386 Sq. Miles

CUBIC MEASURE

1 Cu. Centimeter = 1000 Cu. Millimeters = 0.06 Cu. Inches
 1 Cu. Meter = 1,000,000 Cu. Centimeters = 35.31 Cu. Feet

TEMPERATURE

$5/9(^{\circ}\text{F} - 32) = ^{\circ}\text{C}$
 212° Fahrenheit is equivalent to 100° Celsius
 90° Fahrenheit is equivalent to 32.2° Celsius
 32° Fahrenheit is equivalent to 0° Celsius
 $9/5^{\circ}\text{C} + 32 = ^{\circ}\text{F}$

APPROXIMATE CONVERSION FACTORS

| TO CHANGE | TO | MULTIPLY BY |
|------------------------|----------------------|-------------|
| Inches | Centimeters | 2.540 |
| Feet | Meters | 0.305 |
| Yards | Meters | 0.914 |
| Miles | Kilometers | 1.609 |
| Square Inches | Square Centimeters | 6.451 |
| Square Feet | Square Meters | 0.093 |
| Square Yards | Square Meters | 0.836 |
| Square Miles | Square Kilometers | 2.590 |
| Acres | Square Hectometers | 0.405 |
| Cubic Feet | Cubic Meters | 0.028 |
| Cubic Yards | Cubic Meters | 0.765 |
| Fluid Ounces | Milliliters | 29.573 |
| its | Liters | 0.473 |
| arts | Liters | 0.946 |
| allons | Liters | 3.785 |
| Ounces | Grams | 28.349 |
| Pounds | Kilograms | 0.454 |
| Short Tons | Metric Tons | 0.907 |
| Pound-Feet | Newton-Meters | 1.356 |
| Pounds per Square Inch | Kilopascals | 6.895 |
| Miles per Gallon | Kilometers per Liter | 0.425 |
| Miles per Hour | Kilometers per Hour | 1.609 |

| TO CHANGE | TO | MULTIPLY BY |
|--------------------|------------------------|-------------|
| Centimeters | Inches | 0.394 |
| Meters | Feet | 3.280 |
| Meters | Yards | 1.094 |
| Kilometers | Miles | 0.621 |
| Square Centimeters | Square Inches | 0.155 |
| Square Meters | Square Feet | 10.764 |
| Square Meters | Square Yards | 1.196 |
| Square Kilometers | Square Miles | 0.386 |
| Square Hectometers | Acres | 2.471 |
| Cubic Meters | Cubic Feet | 35.315 |
| Cubic Meters | Cubic Yards | 1.308 |
| Milliliters | Fluid Ounces | 0.034 |
| Liters | Pints | 2.113 |
| Liters | Quarts | 1.057 |
| ers | Gallons | 0.264 |
| ms | Ounces | 0.035 |
| ograms | Pounds | 2.205 |
| Metric Tons | Short Tons | 1.102 |
| Newton-Meters | Pounds-Feet | 0.738 |
| Kilopascals | Pounds per Square Inch | 0.145 |
| ometers per Liter | Miles per Gallon | 2.354 |
| ometers per Hour | Miles per Hour | 0.621 |



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