

O-T-620c

September 13, 1967

SUPERSEDING

Int. Fed. Spec. O-T-00620b (GSA-FSS)

November 30, 1965 and

Fed. Spec. O-T-620a

July 3, 1957

(See 6.4)

FEDERAL SPECIFICATION

1,1,1-TRICHLOROETHANE, TECHNICAL

INHIBITED (METHYL CHLOROFORM)

This specification was approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers inhibited technical 1,1,1-trichloroethane (methyl chloroform) (see 6.1).

1.2 Classification.

1.2.1 Grade and types. The material covered by this specification shall be of one grade and the following types as specified:

Type I - Regular.
Type II - With dauber.
Type III - Aerosol.

2. APPLICABLE DOCUMENTS

2.1 Specifications and standards. The following specifications and standards, of the issues in effect on date of invitation for bids or request for proposal, form a part of the specification to the extent specified herein.

Federal Specifications:

BB-C-310	- Chlorofluoro Hydrocarbons (Halogenated Hydrocarbons).
QQ-A-250/4	- Aluminum Alloy 2024, Plate and Sheet.
PPP-B-566	- Boxes, Folding, Paperboard.
PPP-B-591	- Boxes, Fiberboard, Wood-Cleated.
PPP-B-601	- Boxes, Wood, Cleated-Plywood.
PPP-B-621	- Boxes, Wood, Nailed and Lock-Corner.
PPP-B-636	- Box, Fiberboard.

Federal Standards:

Fed. Std. No. 123 - Marking for Domestic Shipment (Civilian Agencies).

(Activities outside the Federal Government may obtain copies of Federal Specifications, Standards, and Handbooks as outlined under General Information in the Index of Federal Specifications and Standards and at the prices indicated in the Index. The Index, which includes cumulative monthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., 20402.

(Single copies of this specification and other product specifications required by activities outside the Federal Government for bidding purposes are available without charge at the General Services Administration Regional Offices in Boston, New York, Washington, D. C., Atlanta, Chicago, Kansas City, Mo., Fort Worth, Denver, San Francisco, Los Angeles, and Seattle, Wash.

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(Federal Government activities may obtain copies of Federal Specifications, Standards, and Handbooks and the Index of Federal Specifications and Standards from established distribution points in their agencies.)

Military Specification:

MIL-L-10547 - Liners, Case, & Sheet, Overwrap, Water-Vaporproof or Waterproof, Flexible.

Military Standards:

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
 MIL-STD-129 - Marking for Shipment and Storage.
 MIL-STD-147 - Skids, Runner, or Pallet Type Base. Palletized and Containerized with Loads 40" X 48" 4-Way (Partial) Pallet.
 MIL-STD-290 - Packaging, Packing and Marking of Petroleum and Related Products.

(Copies of Military Specifications and Standards required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.

Standard Methods for the Examination of Water Sewage:

(Standard Methods for the Examination of Water Sewage is published by the American Public Health Association, 1790 Broadway, New York 19, New York.)

American Society for Testing and Materials:

D 1078 - Test for Distillation Range of Volatile Organic Liquid.
 D 1364 - Test for Water in Volatile Solvents (Fischer Reagents Titration Method).
 D 2108 - Method of Test for Color of Halogenated Organic Solvents and Their Admixtures (Platinum-Cobalt Scale).
 D 2109 - Methods of Test for Nonvolatile Matter in Halogenated Organic Solvents and Their Admixtures.
 D 2111 - Test for Specific Gravity of Halogenated Organic Solvents and Their Admixtures.

(Copies of the ASTM Stands may be obtained from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania, 19103.)

3. REQUIREMENTS

3.1 Material. The material shall consist of 1,1,1-trichloroethane, inhibited against the corrosive attack of aluminum alloys, containing not less than 90.0 percent 1,1,1-trichloroethane by volume, when tested as specified in 4.5.12. The inhibitors and impurities shall consist of materials such that the toxicity of the solvent mixture shall not exceed that of the uninhibited 1,1,1-trichloroethane as demonstrated by acute and chronic toxicity studies. The material shall not contain any individual halogenated constituent, other than 1,1,1-trichloroethane, in excess of 0.5 percent by volume, when tested as specified in 4.5.12. In addition, the sum total of all halogenated constituents, other than 1,1,1-trichloroethane, shall not exceed 2 percent by volume, when tested as specified in 4.5.12. The material shall be homogeneous. The propellant in the type III aerosol mixture shall be excluded when computations are made for percentage of 1,1,1-trichloroethane and other halogen constituents. Its utility shall not be adversely affected by storage up to 6 months in the original shipping containers under any climatic condition.

3.1.1 The supplier shall certify, for each shipment, that the material meets all requirements of this specification. The method specified in 4.5.12, or a similar gas chromatographic procedure of at least equal sensitivity and accuracy, shall be used for referee purposes if any doubt exists of the quality of the material.

3.1.2 The 1,1,1-trichloroethane covered by this specification shall meet the physical and chemical requirements specified in table I.

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TABLE I. Physical and chemical requirements

	Requirement	Test method paragraph no.
Appearance	Clear, free from sediment and suspended matter	4.5.1
Color (maximum)	15 Platinum Cobalt Units	4.5.2
Distillation range:		4.5.5
Initial boiling point, minimum	70° C.	
Dry point, maximum	88° C.	
Odor	Characteristic mild sweet No residual odor	4.5.3
Water content, parts per million, maximum	100	4.5.6
Acidity calculated as HCl, per cent, maximum	0.001	4.5.7
Nonvolatile matter, percent, maximum	0.001	4.5.8
Corrosion of aluminum alloy	No evidence of pitting, etching or discoloration	4.5.9
Specific gravity at 25°/25° C. (77°/77° R)	1.284 to 1.324	4.5.4

3.2 Leakage test (types II and III). The samples, as received, shall pass the leakage tests as specified in 4.5.10.

3.3 Type II.

3.3.1 Dauber. The dauber shall consist of a cleaning pad, a holder made of wire commercially acceptable for the purpose, and either a screw cap having a suitable liner, or a high-grade cork stopper having an extension cap. The pad shall be made of absorbent, firm pad felt (weighing not less than 5 pounds per square yard per one-half inch thickness) that shall not disintegrate in the liquid and shall be so constructed and held by the wire that no disintegration or rupture shall occur in the cleaning of type. The wire shall be attached in such a manner that it shall not come in contact with the type face. The wire shall be fastened firmly to the cap or stopper. The free surfaces of the pad (i.e., unobstructed by the wire) shall total not less than one square inch (for example, 2 surfaces 1/2 by 1 inch each). The dauber shall be of such length that, when fully inserted in the bottle, with the cap screwed on or cork stoppered, it shall be not less than 1/4 inch nor more than 1/2 inch from the bottom.

3.4 Type III.

3.4.1 Aerosol type cleaner. The aerosol type cleaner shall be a mixture of the cleaner and propellant, contained in a pressurized dispenser. The active ingredient shall conform to the requirements of table I and shall be not less than 61 percent by weight of 1,1,1-trichloroethane.

3.4.2 Propellant. The propellant portion of the dispenser shall be chlorofluoro hydrocarbons of the methane and ethane series conforming to BB-C-310, or equivalent materials sufficient to maintain delivery requirements as specified (see 3.4.3.1). The propellant shall be not less than 32 percent by weight of the finished product.

3.4.3 Dispenser. The dispenser shall hold not less than six (6) ounces avoirdupois of aerosol type cleaner and propellant. It shall consist of a metal shell, which shall have a finger-pressure type dispensing device to produce the desired aerosol, so designed that it will automatically shut off when the dispensing valve is released. The valve shall be protected against activation by use of a snug-fitting metal protective cap which will provide a clearance of 1/8 inch directly above the entire valve. The discharge orifice shall be round, symmetrical and free of all obstructions which will affect the flow and discharge pattern of the solvent-propellant mixture.

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3.4.3.1 Valve performance (type III). The filled dispenser shall meet the following performance requirements (4.5.11):

Delivery rate at 80° F.

0.75 g./sec (min.)

1.35 g./sec (max.)

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own facilities or any commercial laboratory acceptable to the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure that supplies and services conform to prescribed requirements.

4.2 Sampling for lot acceptance.

4.2.1 Inspection lot. For purposes of sampling, a lot shall consist of all 1,1,1-trichloroethane manufactured as one batch and offered for delivery at one time.

4.2.2 Sampling for inspection of filled container. A random sample of filled containers shall be selected from each lot offered for inspection in accordance with MIL-STD-105 at inspection level I, and acceptable quality level (AQL) = 2.5 percent defective to verify compliance with this specification regarding fill, closure, marking and other requirements not involving tests.

4.2.3 Sampling for tests. From each inspection lot of types I and II material, two quarts will be taken for testing and placed in separate clean dry containers of glass or metal. The containers will be carefully sealed, marked, and forwarded to the testing laboratory. From each lot of type III material, 12 aerosol cans will be selected at random, marked, packed and forwarded to the testing laboratory. Samples will be obtained from aerosol cans by cooling the cans to dry ice temperatures and cutting them open.

4.3 Inspection of filled containers. Each sample filled container selected in accordance with 4.2.2 shall be examined for defects of the container and the closure, for evidence of leakage, and for unsatisfactory marking; each sample filled container shall also be weighed to determine the amount of contents. Any container in the sample, having one or more defects, or under required fill, shall be rejected and if the number of defective containers in any sample exceeds the acceptance number for the applicable sampling plan of MIL-STD-105, the lot represented by the sample shall be rejected.

4.4 Lot acceptance tests. The sample specimens selected in accordance with 4.2.3 shall be subjected separately to the tests specified in 4.5. If any specimen fails one or more of these tests, the lot shall be rejected.

4.5 Test methods.

4.5.1 Appearance. Twenty ml. of the sample shall be poured into a test tube and allowed to stand stoppered and undisturbed until bubbles have entirely disappeared. The sample, at room temperature (20° to 30° C.) shall be examined for clarity and sediment.

4.5.2 Color. The color shall be tested in accordance with ASTM method D 2108.

4.5.3 Odor. A representative sample shall be examined for characteristic odor of 1,1,1-trichloroethane. Strips of heavy filter paper of uniform shape and size shall be dipped in the sample, removed and allowed to dry for 2 hours in a well ventilated room at 20° to 30° C., and examined for residual odor.

4.5.4 Specific gravity. The specific gravity shall be tested in accordance with ASTM method D 2111, procedure B, to determine conformance with table I.

4.5.5 Distillation. The distillation range shall be tested as specified in ASTM method D 1078, to determine conformance with table I.

4.5.6 Water content. Water content shall be determined in accordance with ASTM method D 1364, to determine conformance with table I.

4.5.7 Acidity. A 100 gram sample shall be weighed to the nearest 0.01 gram and titrated with standard 0.02 normal alcoholic sodium hydroxide using bromothymol blue as an indicator. The acidity shall be calculated as hydrochloric acid to determine conformance with table I.

4.5.8 Nonvolatile matter. Nonvolatile matter shall be determined by method A of ASTM method D 2109 to determine conformance with table I.

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4.5.9 Aluminum alloy corrosion. Prepare a 1/2 by 3 inch panel of aluminum alloy conforming to temper T4 of QQ-A-250/4. Polish the specimen with No. 1 emery cloth until the entire metal area is bright, shiny, and free from any oxide film or tarnish. The specimen should not be handled with bare hands after polishing until completion of the test. Wash with soap and water and rinse thoroughly with distilled water. Wash with acetone and allow to dry in air. Place the dry panel in a 125 ml. Erlenmeyer flask which has a 24/40 ground glass neck. Add 50 ml. of 1,1,1-trichloroethane, inhibited, attach a reflux condenser and reflux this sample for 5 hours. Allow to cool and examine the panels. There shall be no evidence of corrosion of the aluminum alloy.

4.5.10 Leakage test.

4.5.10.1 Type II. Mark the fill line of two samples of type cleaner in the "as received" condition. Store these samples in a circulating oven held at 120° F. for 24 hours. When placed in the oven, one bottle shall be upright and the other inverted. Examine the bottles after the storage period and, if any loss is detected, the shipment represented by the sample shall be rejected.

4.5.10.2 Type III. The filled aerosol dispenser valve shall be tested for leakage by inverting a graduated one ounce wide mouth vial calibrated to read in milliliters full of water over the valve of the container and allowing it to stand for 48 hours.

4.5.11 Delivery rate of dispenser (type III).

4.5.11.1 Material and apparatus.

- (1) Timing device.
- (2) Water bath. Temperature controlled to vary not more than $\pm 0.5^\circ \text{F}$.
- (3) Balance. Any balance accurate to 0.1 gram and having a capacity greater than 500 grams.
- (4) Tongs for removing dispensers from water bath.
- (5) Cloth gloves or towel for handling dispensers during test.

4.5.11.2 Procedure.

- (1) Holding dispenser upright, spray for 2 seconds to fill reduction tube.
- (2) Weigh dispenser.
- (3) Submerge dispenser in water bath ($80^\circ \pm 0.5^\circ \text{F}$) at least 1 inch below water surface for 15 minutes.
- (4) Using tongs, remove dispenser from water bath and immediately dry container with towel.
- (5) Spray dispenser in one continuous burst for 10 seconds.
- (6) Reweigh dispenser.
- (7) Calculate delivery rate to 0.1 gram per second.

$$\text{Delivery weight in grams per second} = \frac{\text{Initial weight} - \text{final weight}}{\text{Number of seconds}}$$

- (8) Repeat procedure, recording average of three tests. The difference between maximum and minimum delivery rates must not exceed 0.2 gram per second.

4.5.12 Impurities. The impurity content of 1,1,1-trichloroethane, inhibited, shall be assayed in accordance with the following gas chromatographic procedure:

(a) Apparatus — A gas chromatograph having the following minimum capabilities is required:

- (1) Temperature control systems capable of maintaining the chromatographic column at prescribed temperature $\pm 1^\circ \text{C}$. and the detector at the prescribed temperature $\pm 0.5^\circ \text{C}$.
- (2) Heated sample inlet.
- (3) A differential kathatometer (hot wire) or thermistor-type thermal conductivity detector.

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(b) Materials - The following materials shall be required:

(1) Chromatographic column - A tubular column constructed of annealed copper or stainless steel tubing, 12 feet long by 1/8 inch outside diameter (0.055 inch inside diameter). The column is to be uniformly packed with acid washed calcined pink firebrick (Chromosorb P), 30 to 60 U. S. Standard mesh, which has been evenly coated with 15 percent by weight of UNCON LB 1800X liquid phase. The completed column is to be conditioned prior to use at 125° C. with helium gas flowing through it for 24 hours at a rate of 15 ml. per minute.

(2) Carrier gas - to be dry helium of 99.95 mole percent purity.

(3) Standards - Standards shall be prepared by the quantitative addition (on a volumetric basis) of C. P. grade halogenated compounds to uncontaminated 1,1,1-trichloroethane, inhibited solvent.

(c) Analysis conditions - The following analysis conditions are recommended:

(1) Column temperature - 60° C. isothermal.

(2) Detector temperature - 225° C.

(3) Sample inlet temperature - 200° C.

(4) Sample size - 5 microliters (to be injected by means of a precision 10 µl syringe via a heated inlet).

(5) Carrier gas flow - 15 ml. per minute.

(6) Detector current - sufficient to easily meet the 0.5 percent detection requirements set forth in 3.1.

Employing the operating conditions specified, all constituents of methylchloroform solvents should elute from the column in approximately 30 minutes.

(d) Constituent identification - Individual constituents contained in a sample of 1,1,1-trichloroethane, inhibited solvent are to be identified by their adjusted retention times (RT) on the chromatographic column previously specified. The adjusted RT is defined as the time elapsed from the appearance on the chromatogram of the air peak to the appearance of the peak maximum for the constituent being identified. A constituent is identified by comparing its adjusted RT with those of known compounds obtained under the same operating conditions. It has been found useful to report RT data on a relative basis rather than on an absolute basis. This is done in order to minimize the effect of small differences in operating conditions which exist in different laboratories. For purposes of this analysis, the relative RT of a compound is defined as follows:

$$\text{Relative RT} = \frac{\text{Adjusted RT of compound}}{\text{Adjusted RT of 1,1,1-trichloroethane}}$$

The following tabulation lists possible constituents of 1,1,1-trichloroethane, inhibited solvent and their relative RT using the specified chromatographic column and operating conditions:

Relative RT of possible constituents in 1,1,1-trichloroethane, inhibited solvent

Constituents	Relative RT
Vinylidene chloride	0.29
Inhibitor P-7 1/	2.54
Methylene chloride	0.60
1, 1 Dichloroethane	0.60
Inhibitor P2, D1 1/	0.61
Trans-1, 2 Dichloroethylene	0.61
Inhibitor P8 1/	0.78
Methyl chloroform	1.00
Carbon Tetrachloride	1.04
Cis 1, 2 Dichloroethylene	1.06
Inhibitor D2, P4 1/	1.35
Chloroform	1.46
1, 2 Dichloroethylene (ethylene dichloride)	1.50
Inhibitor P9 1/	2.76
Trichloroethylene	1.72
1, 2 Dichloropropane	1.83
Inhibitor D3 1/	2.10
Tetrachloroethylene	2.98

1/ P2, P4, P7, P8, P9, D1, D2 and D3 are proprietary inhibitors.

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(e) Quantitative measurement. Quantitative measurement of the concentration of a constituent in the sample depends upon a determination of the peak area or peak height of the constituent's chromatographic peak. Peak height measurements are recommended when small peaks are to be measured or when the bandwidth is narrow, as in the case of early peaks. Peak areas may be measured by any accepted method (planimeter, ball and disc integrator, electronic digital integrator, etc.) or may be approximated by multiplying the height of the peak by the width of the peak at the half height. To obtain the percent concentration of a constituent in the sample, a direct comparison is made of its peak area or height with that of a standard solution containing a known amount of the pure constituent. Both sample and standard solutions must be analyzed under identical operating conditions. Dal Nogare and Juvet ^{1/} discuss the effects of the various operating conditions on the accuracy of the results obtained: Equation (1) may be used to obtain the volume percent of a constituent in the sample:

$$\text{Volume percent of constituent} = \frac{\text{Constituent's peak area or height in sample}}{\text{Constituent's peak area or height in standard}}$$

$$\times \text{Volume percent of constituent in standard} \dots\dots\dots (1)$$

5. PREPARATION FOR DELIVERY

5.1 Packaging. Packaging shall be level A, or C, as specified in the contract or order (see 6.2).

5.1.1 Level A.

5.1.1.1 Type I. The solvent shall be packaged in one pint, one quart or one gallon cans, five gallon pails or 55 gallon drums, as specified in the contract or order (see 6.2), in accordance with the unit container requirements for level A packaging of solvents as specified in MIL-STD-290, except that the electrolytic tin plate specified for the cans shall be increased to 0.50 pound.

5.1.1.2 Type II. Type cleaner shall be furnished in 4 ounce capacity narrow mouth dark type glass bottles. The neck of the bottle shall be sufficiently wide to permit the easy insertion and removal of the dauber pad without the necessity for squeezing the pad and causing the saturated pad to spatter liquid (3.3). Closure shall be either metal or plastic continuous-thread screw cap. The screw cap shall have a nonabsorbent lining material which must remain in the cap when removed from the bottle. Caps shall be tightened to prevent leakage. An additional screw cap or high grade cork, equipped with a dauber attachment, shall be furnished with each bottle of cleaner. The sealed bottles shall be individually packaged in a folding box conforming to PPP-B-566 of sufficient size to contain the type cleaner and the auxiliary closure equipped with dauber.

5.1.1.3 Type III. The type cleaner shall be packaged in an aerosol container in accordance with the unit container requirements for level A packaging of solvents in type IX cans as specified in MIL-STD-290, except that the can capacity shall be six instead of twelve ounces (see 3.4).

5.1.2 Level C. The solvent shall be packaged in accordance with the suppliers commercial practice.

5.2 Packing. Packing shall be level A, B, or C, as specified in the contract or order (see 6.2).

5.2.1 Level A.

5.2.1.1 Type I. Solvent shall be packed for shipment in packs, consisting of packages of one pint, one quart or one gallon cans, or five gallon pails or 55 gallon drums, as specified in the contract or order (see 6.2).

5.2.1.1.1 Cans. The solvent packaged in one pint, one quart or one gallon cans, as specified in 5.2.1.1, shall be packed for shipment in accordance with the applicable requirements for level A packing of solvents as specified in MIL-STD-290, except that when specified in the contract or order, the shipping containers shall be either a cleated plywood box conforming to the requirements for overseas type, style optional for a type 2 average load of PPP-B-601; or a nailed wood box conforming to the requirements for class 2 overseas, style 2, 2-1/2, 4 or 4-1/2 for a type 2 average load of PPP-B-621. Boxes shall be closed and reinforced by strapping in accordance with the applicable requirements as specified in the appendix to the box specification.

5.2.1.1.2 Pails and drums. The solvent shall be packed for shipment in either five gallon pails or 55 gallon drums in accordance with the applicable unit container requirements for level A packing of solvents as specified in MIL-STD-290.

^{1/} Theory and practice of Gas-Liquid chromatography by S. Dal Nogare and R. S. Juvet Interscience Publishers (1962) New York, New York.

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5.2.1.2 Type II. Thirty-six (36) or forty-eight (48) bottles of solvent, packaged as described in 5.1.1.2, shall be packed in wood-cleated fiberboard, cleated-plywood, nailed wood or fiberboard boxes conforming to FPP-B-591 (overseas type); FPP-B-601 (overseas type); FPP-B-621, class 2, style 2, 2-1/2, 3 or 4; and FPP-B-636, type I or II, class 2, grade 3, style RSC, respectively. Wood and wood-cleated boxes shall be provided with waterproof caseliners conforming to MIL-L-10547, class 2, and sealed in accordance with the appendix. The seams and closures of fiberboard boxes shall be sealed in accordance with the appendix to FPP-B-636.

5.2.1.3 Type III. The solvent packaged in aerosol dispensers, as specified in 5.1.1.3, shall be intermediately packaged and packed for shipment in accordance with the requirements for level A intermediate packaging and packing of solvents in type IX cans, as specified in MIL-STD-290, except that when specified in the contract or order (see 6.2) cleated plywood or nailed wood boxes as specified in 5.2.1.1.1, shall be required as shipping containers.

5.2.2 Level B.

5.2.2.1 Type I. Solvent shall be packed for shipment in packs, consisting of packages of one pint, one quart or one gallon cans, or five gallon pails or 55 gallon drums, as specified in the contract or order (see 6.2).

5.2.2.1.1 Cans. The solvent packaged in one pint, one quart or one gallon cans as specified in 5.1.2 shall be packed for shipment in accordance with the applicable requirements for level B packing of solvents as specified in MIL-STD-290.

5.2.2.1.2 Pails and drums. The solvent shall be packed for shipment in either five gallon pails or 55 gallon drums in accordance with the applicable unit container requirements for level A packing of solvents as specified in MIL-STD-290.

5.2.2.2 Type II. Thirty-six (36) bottles of the solvent packaged as described in 5.1.2.2 shall be packed in boxes conforming to FPP-B-636. Boxes shall be closed in accordance with the requirements for method I closure of class domestic boxes.

5.2.2.3 Type III. The solvent, packaged in aerosol dispensers as specified in 5.1.2.3, shall be intermediately packaged and packed for shipment in accordance with the requirements for level B intermediate packaging and packing of solvents which are packed in type IX cans, as specified in MIL-STD-290. The packaging arrangement of the six ounce cans shall be the same as that specified for the twelve ounce cans in MIL-STD-290.

5.2.3 Level C. The solvent packaged as specified in 5.1.3; or in pails or drums, shall be packed to insure carrier acceptance and safe delivery to the first domestic destination. Containers shall be in compliance with the rules and regulations for common carriers, applicable to the mode of transportation.

5.3 Pallets. When specified in the contract or order (see 6.2), shipping containers shall be palletized in accordance with the applicable requirements in MIL-STD-147.

5.4 Marking.

5.4.1 Civil agencies. In addition to any special marking required by the contract or order, interior packages and shipping containers shall be marked in accordance with Fed. Std. No. 123.

5.4.2 Military agencies. In addition to any special marking required by the contract or order, interior packages and shipping containers shall be marked in accordance with MIL-STD-129.

5.4.3 Labeling.

5.4.3.1 The following label shall appear prominently on each can, pail, or drum of type I material:

WARNING: VAPOR CAN BE FATAL

This solvent can be used without harm if precautions are strictly observed.

Adequate ventilation must be provided.

High concentration of vapors are anaesthetic and dangerous to life.

Eye irritation and dizziness are signs of inadequate ventilation and dangerous concentration.

Respiratory protection must be provided in event of spillage in closed spaces.

Unprotected personnel must be evacuated immediately.

Avoid prolonged or repeated contact with skin.

Do not take internally.

Do not contaminate with water.

Do not use in oxygen systems.

Do not vaporize in presence of ignition sources.

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This solvent can be used without harm if precautions are strictly observed.

5.4.3.2 The following label shall appear prominently on each unit container and unit package of types II and III material:

1, 1, 1 - TRICHLOROETHANE

CAUTION

Use with adequate ventilation.
Avoid prolonged or repeated breathing of vapor.
Avoid prolonged or repeated contact with skin.
Do not take internally.

5.4.3.3 Each aerosol container in addition shall carry warning statements as required by ICC Regulations for pressurized containers.

5.4.3.4 Instruction for use.

5.4.3.4.1 All unit containers of type I material shall have the following use instructions prominently displayed.

DIRECTIONS FOR USE

This solvent is intended primarily for degreasing electrical equipment. Solvent attacks electrical insulating varnished on prolonged immersion. Apply by wiping, brushing or spraying. If sprayed, added ventilation is required since dangerous vapor concentrations can be generated quickly.

5.4.3.4.2 Each bottle of type II material shall be prominently labelled "Type cleaner" and the manufacturer's recommended instructions for use and any required use precautions.

5.4.3.4.3 Each container of type III material shall contain the manufacturer's recommended use instructions to cover the following area:

Typewriter cleaning.
Spot remover for clothing and furniture.
Cleaning assembled electronic equipment.

Instructions shall include required precautions for the above.

6. NOTES

6.1 Intended use. Type I material is intended as a solvent for cleaning operations and for cleaning and degreasing electrical equipment. Type II material is intended for removing residue from type faces of typewriters. Certain parts made from rubber and plastic are affected by this cleaner and should be cleaned sparingly. Type III material may be used for the same purposes as type II material and for cleaning assembled electronic equipment. In addition it may be use as a spot remover for clothing and fabric or plastic parts of furniture. Care should be exercised when used on synthetic materials as it may affect certain of such products.

6.2 Ordering data. Purchasers should select the preferred options permitted herein and include the following information in procurement documents.

- (a) Title, number, and date of this specification.
- (b) Grade and type of container required (see 1.2.1, 5.1 and 5.2).
- (c) Applicable levels of packaging and packing, and type of shipping container (see 5.1 and 5.2).
- (d) Palletization requirements (see 6.3).
- (e) Additional marking, if required (see 5.4).

6.3 Basis of purchase for type I material shall be net weight per unit of delivery at 25°/25° C. expressed in pounds.

6.4 Supersession data. This specification also supersedes P-T-936b, dated February 5, 1959 and P-T-00936a (GSA-FSS) dated November 22, 1963.

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MILITARY CUSTODIANS:

Army - MU
Navy - SH
Air Force - 68

Review activities:

Army - MU
Navy - SH, AS, MC
Air Force - 68

User activities:

Army - GL
Navy - OS

Preparing activity:

Navy - SH

Orders for this publication are to be placed with General Services Administration, acting as an agent for the Superintendent of Documents. See section 2 of this specification to obtain extra copies and other documents referenced herein. Price 10 cents each.

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions - Reverse Side)

1. DOCUMENT NUMBER		2. DOCUMENT TITLE	
3a. NAME OF SUBMITTING ORGANIZATION		4. TYPE OF ORGANIZATION (Mark one)	
b. ADDRESS (Street, City, State, ZIP Code)		<input type="checkbox"/> VENDOR	
		<input type="checkbox"/> USER	
		<input type="checkbox"/> MANUFACTURER	
		<input type="checkbox"/> OTHER (Specify): _____	
5. PROBLEM AREAS			
a. Paragraph Number and Wording:			
b. Recommended Wording:			
c. Reason/Rationale for Recommendation:			
6. REMARKS			
7a. NAME OF SUBMITTER (Last, First, MI) - Optional		b. WORK TELEPHONE NUMBER (Include Area Code) - Optional	
c. MAILING ADDRESS (Street, City, State, ZIP Code) - Optional		8. DATE OF SUBMISSION (YYMMDD)	

(TO DETACH THIS LINE, CUT ALONG THIS LINE.)