

MIL-STD-1423

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# MILITARY STANDARD

THIN LAYER CHROMATOGRAPHY  
PRECOATED PLATES AND SHEETS



FSC 6630

MIL-STD-1423

DEPARTMENT OF DEFENSE  
Washington, DC 20301

Thin Layer Chromatography Precoated Plates and Sheets

MIL-STD-1423

1. This Military Standard is approved for use by all Departments and Agencies of the Department of Defense.
2. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, US Army Armament Research and Development Command, Attn: DRDAR-TSC-S, Aberdeen Proving Ground, MD 21010, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

## FOREWORD

This book format standard, covering thin layer chromatography precoated plates and sheets under FSC 6630, is mandatory for use by all departments and agencies of the Department of Defense in the selection of items for application. It is intended to prevent the entry of unnecessary items (sizes, types, varieties) into the Department of Defense logistics system. This document is not intended to restrict any service in selecting new items resulting from state-of-the art changes. This standard is divided into two parts.

Part 1 - Precoated Glass Plates

Part 2 - Precoated Plastic Sheets

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## 1. SCOPE

1.1 Coverage. This standard is a presentation of nomenclature, symbols, physical and chemical properties and requirements, military and typical commercial uses, packaging data, labeling, general safety precautions, storage information and waste disposal instructions for military standard precoated glass plates and plastic sheets for thin layer chromatography. This standard does not include all classifications of the items represented by the title or all those which are commercially available. It does contain items preferred for use in the selection of thin layer precoated glass plates and plastic sheets. This standard is divided into two parts:

- Part 1 - Precoated Glass Plates
- Part 2 - Precoated Plastic Sheets

1.2 Application. Items listed herein accommodate essential requirements of United States Government Agencies.

## 2. REFERENCED DOCUMENTS

### Military Standards

MIL-STD-129	Marking for Shipment and Storage
MIL-STD-1188	Commercial Packaging of Supplies and Equipment

## 3. GLOSSARY

### 3.1 Definitions.

Acid or Acidic - A general term for compounds which give hydrogen ions ( $H^+$ ) in aqueous solution.

Adsorption - A physical attraction between molecules of a compound in solution and a solid surface at the liquid-solid phase boundary.

Angstrom - One ten-thousandth of a micron.

Base or Basic - A general term for compounds which give hydroxyl ions ( $OH^-$ ) in aqueous solution.

Centimeter - One-hundredth of a meter.

Micron - Micrometer; one-millionth of a meter.

Millimeter - One-thousandth of a meter.

Nanometer - One-billionth of a meter.

Partition - The distribution of a compound in two immiscible solvents in contact with each other.

Partition Chromatography - Distribution of a compound between the moving solvent phase and the stationary phase, which is an aqueous liquid film surrounding the sorbent particles.

Polar Compounds - Compounds with a strong permanent dipole moment.

Reversed-phase chromatography - Partition chromatography with polarity of the phases reversed, the developing solvent being aqueous and the sorbent surface hydrophobic.

3.2 Abbreviations. The same abbreviation is used for all tenses, the possessive case, and the singular and plural forms of a given word.

cm - centimeter

MIL-STD - Military Standard

mm - millimeter

nm - nanometer

#### 4. GENERAL REQUIREMENTS

4.1 Chemical and physical requirements. All values given for chemical and physical requirements are in maximum percent by weight unless otherwise indicated.

4.2 Nomenclature. The Department of Defense basic names, as used throughout this standard, are in capital letters. The DOD item name is the basic name.

4.3 Packaging data and labeling. All items included in this standard shall be packaged in accordance with MIL-STD-1188. All items included in this standard shall be marked for shipment and storage in accordance with MIL-STD-129.

4.4 Safety. General laboratory safety measures should be exercised in the handling and use of any of these items. General safety measures applicable to the handling of laboratory glassware and plastic ware should be followed. For more specific information the responsible safety and medical authorities must be consulted to determine safe operating procedures, personnel protective measures and environmental controls.

4.5 Shelf life. Factors such as moisture, temperature, type and condition of container, exposure to sunlight and the atmosphere cause variations in shelf life. Ideal storage conditions are outlined for each item. An approximate period of time after which this material will no longer be suitable for its intended use is also presented where applicable. The term "cool" denotes temperatures from above freezing up to 110°F (43.3°C) but not consistently over 100°F (37.8°C) when stored out of direct sunlight. The term "dry" is used to denote an area where condensation does not come in contact with the package or contents (for example, storing on pallets away from walls in an enclosure or building). Periodic examination of the container or material should be made more frequently when storage conditions vary from the ideal. Shelf life is dated from the date of manufacture.

4.6 Temperature. If the temperature at which a property was determined is not specified it is understood to be room temperature (20° to 25°C or 68° to 77°F).

4.7 Pollution potential. The items described in this MIL-STD have no pollution potential.

4.8 Disposal data. To minimize disposal problems, it is recommended that no more than a one-year supply of each item listed in this MIL-STD be stocked. Should excess or unserviceable material occur, dispose of the material as outlined in the Defense Utilization Manual, DOD 4140.34-M or the Defense Disposal Manual DOD 4160.21-M. Prior to initiating disposal procedures

the items should be reported to the local Property Disposal Office (PDO) as outlined in DOD 4160.21-M. The local PDO will not accept physical custody of these stocks; however, the PDO will accept forms which are required to initiate property disposal action. The reporting activity will be responsible for providing physical custody and security of excess items. Disposal of glass plates and plastic sheets, after use or breakage, shall be accomplished in accordance with approved local procedures for the disposal of laboratory glassware and plastic ware.

4.9 DISCLAIMER. RECOMMENDED DISPOSAL INSTRUCTIONS IN SECTION 5 ARE FORMULATED FOR USE BY ELEMENTS OF THE DEPARTMENT OF DEFENSE. THE UNITED STATES OF AMERICA IN NO MANNER WHATSOEVER EITHER EXPRESSLY OR IMPLIEDLY WARRANTS, STATES, OR INTENDS SAID INSTRUCTION, TO HAVE ANY APPLICATION, USE OR VIABILITY BY OR TO ANY PERSON OR PERSONS OUTSIDE THE DEPARTMENT OF DEFENSE OR ANY PERSON OR PERSONS CONTRACTING WITH ANY INSTRUMENTALITY OF THE UNITED STATES OF AMERICA AND DISCLAIMS ALL LIABILITY FOR SUCH USE. ANY PERSON USING THESE INSTRUCTIONS WHO IS NOT A MILITARY OR CIVILIAN EMPLOYEE OF THE UNITED STATES OF AMERICA SHOULD SEEK COMPETENT PROFESSIONAL ADVICE TO VERIFY AND ASSUME RESPONSIBILITY FOR THE SUITABILITY OF THESE INSTRUCTIONS TO THEIR PARTICULAR SITUATION REGARDLESS OF SIMILARITY TO A CORRESPONDING DEPARTMENT OF DEFENSE OR OTHER GOVERNMENT SITUATION.



## PRECOATED GLASS PLATES

## 5. DETAIL REQUIREMENTS

## 5.1 Name. PLATE, SILICA GEL, ANALYTICAL LAYER

## 5.1.1 Specifications. None.

5.1.2 Technical description. Glass plates with bevelled edges, 1 mm thick, shall be coated with a silica gel layer 0.25 mm thick. The silica gel shall have a particle size of about 37 microns, and a mean pore diameter of about 60 angstrom. Only activated fine particles of the same material are used as a binding agent. Plate dimensions are 5 by 20 cm, 10 by 20 cm, and 20 by 20 cm.

5.1.3 Use data. Analytical layer silica gel plates are intended for use in adsorption and partition thin layer chromatography with neutral or acidic compounds.

5.1.4 Packaging data and labeling. Plates of 5 by 20 cm dimensions shall be packaged in a quantity of 100. Plates of 10 by 20 cm in dimensions shall be packaged in a quantity of 50. Plates of 20 by 20 cm in dimensions shall be packaged in a quantity of 25. Packaging shall be in accordance with MIL-STD-1188. Packages shall be marked in accordance with MIL-STD-129.

5.1.5 Safety precautions. Refer to paragraph 4.4.

5.1.6 Storage data. Refer to paragraph 4.5.

5.1.7 Disposal data. Refer to paragraph 4.8.

## 5.2 Name. PLATE, SILICA GEL, FLUORESCENT INDICATOR, ANALYTICAL LAYER

## 5.2.1 Specifications. None.

5.2.2 Technical description. Glass plates with bevelled edges, 1 mm thick, shall be coated with a silica gel layer 0.25 mm thick. The silica gel shall have a particle size of about 37 microns, and a mean pore diameter of about 60 angstrom. The silica gel shall contain 2 to 3% of a manganese-activated zinc silicate as a fluorescent ultra-violet indicator with an activation peak at 254 nm, for visualization. Only activated fine particles of silica gel are used as a binding agent. Plate dimensions are 5 by 20 cm, 10 by 20 cm, and 20 by 20 cm.

5.2.3 Use data. Analytical layer silica gel plates, with fluorescent indicator, are intended for use in adsorption and partition thin layer chromatography with neutral or acidic compounds that show a quenching effect under ultra-violet light, enabling their visualization against a fluorescent background.

5.2.4 Packaging data and labeling. Plates of 5 by 20 cm dimensions shall be packaged in a quantity of 100. Plates of 10 by 20 cm in dimensions shall be packaged in a quantity of 50. Plates of 20 by 20 cm in dimensions shall be packaged in a quantity of 25. Packaging shall be in accordance with MIL-STD-1188. Packages shall be marked in accordance with MIL-STD-129.

5.2.5 Safety precautions. Refer to paragraph 4.4.

5.2.6 Storage data. Refer to paragraph 4.5.

5.2.7 Disposal data. Refer to paragraph 4.8.

5.3 Name. PLATE, SILICA GEL, INORGANIC BINDER, ANALYTICAL LAYER

5.3.1 Specifications. None.

5.3.2 Technical description. Glass plates with bevelled edges, 1 mm thick, shall be coated with a silica gel layer 0.25 mm thick. The silica gel shall have a particle size of about 37 microns, and a mean pore diameter of about 60 angstrom. The silica gel shall contain about 10 to 15% by weight of gypsum as an inorganic binder. Plate dimensions are 5 by 20 cm, 10 by 20 cm, 15 by 20 cm, and 20 by 20 cm.

5.3.3 Use data. Analytical layer silica gel plates, with gypsum binder, are intended for use in adsorption and partition thin layer chromatography with compounds that are acidic.

5.3.4 Packaging data and labeling. Plates of 5 by 20 cm shall be packaged in a quantity of 100. Plates of 10 by 20 cm shall be packaged in a quantity of 50. Plates of 15 by 20 shall be packaged in a quantity of 25. Plates of 20 by 20 cm shall be packaged in a quantity of 25. Packaging shall be in accordance with MIL-STD-1188. Packages shall be marked in accordance with MIL-STD-129.

5.3.5 Safety precautions. Refer to paragraph 4.4.

5.3.6 Storage data. Refer to paragraph 4.5.

5.3.7 Disposal data. Refer to paragraph 4.8.

5.4 Name. PLATE, SILICA GEL, INORGANIC BINDER, FLUORESCENT INDICATOR, ANALYTICAL LAYER

5.4.1 Specifications. None.

5.4.2 Technical description. Glass plates with bevelled edges, 1 mm thick, shall be coated with a silica gel layer 0.25 mm thick. The silica gel shall have a particle size of about 37 microns, and a mean pore diameter of about 60 angstrom. The silica gel shall contain about 10 to 15% by weight of gypsum as an inorganic binder. The silica gel shall contain 2 to 3% of a manganese-activated zinc silicate as a fluorescent ultra-violet indicator, with an activation peak at 254 nm, for visualization. Plate dimensions are 5 by 20 cm, 10 by 20 cm, 15 by 20 cm, and 20 by 20 cm.

5.4.3 Use data. Analytical layer silica gel plates, with gypsum binder and fluorescent indicator, are intended for use in adsorption and partition thin layer chromatography with compounds that are acidic and show a quenching effect under ultra-violet light, enabling their visualization against a fluorescent background.

5.4.4 Packaging data and labeling. Plates of 5 by 20 cm shall be packaged in a quantity of 100. Plates of 10 by 20 cm shall be packaged in a quantity of 50. Plates of 15 by 20 cm shall be packaged in a quantity of 25. Plates of 20 by 20 cm shall be packaged in a quantity of 25. Packaging shall be in accordance with MIL-STD-1188. Packages shall be marked in accordance with MIL-STD-129.

5.4.5 Safety precautions. Refer to paragraph 4.4.

5.4.6 Storage. Refer to paragraph 4.5.

5.4.7 Disposal data. Refer to paragraph 4.8.

5.5 Name. PLATE, ALUMINUM OXIDE, ANALYTICAL LAYER

5.5.1 Specifications. None.

5.5.2 Technical description. Glass plates with bevelled edges, 1 mm thick, shall be coated with an aluminum oxide layer 0.25 mm thick. The aluminum oxide shall have a specific surface area of 60 to 90 square meters per gram, and may contain a small amount of an inert inorganic binder. Plate dimensions are 5 by 20 cm, and 20 by 20 cm.

5.5.3 Use data. Analytical layer aluminum oxide plates are intended for use in adsorption thin layer chromatography with basic compounds.

5.5.4 Packaging data and labeling. Plates of 5 by 20 cm shall be packaged in a quantity of 100. Plates of 20 by 20 cm shall be packaged in a quantity of 25. Packaging shall be in accordance with MIL-STD-1188. Packages shall be marked in accordance with MIL-STD-129.

5.5.5 Safety precautions. Refer to paragraph 4.4.

5.5.6 Storage data. Refer to paragraph 4.5.

5.5.7 Disposal data. Refer to paragraph 4.8.

5.6 Name. PLATE, ALUMINUM OXIDE, FLUORESCENT INDICATOR, ANALYTICAL LAYER

5.6.1 Specifications. None.

5.6.2 Technical description. Glass plates with bevelled edges, 1 mm thick, shall be coated with an aluminum oxide layer 0.25 mm thick. The aluminum oxide shall have a specific surface area of 60 to 90 square meters per gram, and may contain a small amount of an inert inorganic binder. The aluminum oxide shall contain 2% of a manganese-activated zinc silicate as a fluorescent ultra-violet indicator, with an activation peak at 254 nm, for visualization. Plate dimensions are 5 by 20 cm and 20 by 20 cm.

5.6.3 Use data. Analytical layer aluminum oxide plates, with fluorescent indicator, are intended for use in adsorption thin layer chromatography with

basic compounds that show a quenching effect under ultra-violet light, enabling their visualization against a fluorescent background.

5.6.4 Packaging data and labeling. Plates of 5 by 20 cm shall be packaged in a quantity of 100. Plates of 20 by 20 cm shall be packaged in a quantity of 25. Packaging shall be in accordance with MIL-STD-1188. Packages shall be marked in accordance with MIL-STD-129.

5.6.5 Safety precautions. Refer to paragraph 4.4.

5.6.6 Storage data. Refer to paragraph 4.5.

5.6.7 Disposal data. Refer to paragraph 4.8.

5.7. Name. PLATE, CELLULOSE, ANALYTICAL LAYER

5.7.1 Specifications. None.

5.7.2 Technical description. Glass plates with bevelled edges, 1 mm thick, shall be coated with a fibrous cellulose layer 0.10 mm thick. The cellulose shall have a fiber length of 2 to 20 microns for at least 95%, and a specific surface area of approximately 15,000 square centimeters per gram. Plate dimensions are 5 by 20 cm, and 20 by 20 cm.

5.7.3 Use data. Analytical layer cellulose plates are intended for use in normal partition thin layer chromatography with polar compounds.

5.7.4 Packaging data and labeling. Plates of 5 by 20 cm shall be packaged in a quantity of 100. Plates of 20 by 20 cm shall be packaged in a quantity of 25. Packaging shall be in accordance with MIL-STD-1188. Packages shall be marked in accordance with MIL-STD-129.

5.7.5 Safety precautions. Refer to paragraph 4.4.

5.7.6 Storage data. Refer to paragraph 4.5.

5.7.7 Disposal data. Refer to paragraph 4.8.

5.8 Name. PLATE, CELLULOSE, FLUORESCENT INDICATOR, ANALYTICAL LAYER

5.8.1 Specifications. None.

5.8.2 Technical description. Glass plates with bevelled edges, 1 mm thick, shall be coated with a fibrous cellulose layer 0.01 mm thick. The cellulose shall have a fiber length of 2 to 20 microns for at least 95%, and shall have a specific surface area of approximately 15,000 square centimeters per gram. The cellulose shall contain 2 to 3% of a manganese-activated zinc silicate as a fluorescent ultra-violet indicator, with an activation peak at 254 nm, for visualization. Plate dimensions are 10 by 20 cm and 20 by 20 cm.

5.8.3 Use data. Analytical layer cellulose plates, with fluorescent indicator, are intended for use in normal partition thin layer chromatography with polar

compounds that show a quenching effect under ultra-violet light, enabling their visualization against a fluorescent background.

5.8.4 Packaging data and labeling. Plates of 10 by 20 cm shall be packaged in a quantity of 100. Plates of 20 by 20 cm shall be packaged in a quantity of 25. Packaging shall be in accordance with MIL-STD-1188. Packages shall be marked in accordance with MIL-STD-129.

5.8.5 Safety precautions. Refer to paragraph 4.4.

5.8.6 Storage data. Refer to paragraph 4.5.

5.8.7 Disposal data. Refer to paragraph 4.8.

5.9 Name. PLATE, CELLULOSE, MICROCRYSTALLINE, ANALYTICAL LAYER

5.9.1 Specifications. None.

5.9.2 Technical description. Glass plates with bevelled edges, 1 mm thick, shall be coated with a microcrystalline cellulose layer 0.10 mm thick. The cellulose shall have a particle size of about 20 microns. Plate dimensions are 5 by 20 cm, 10 by 20 cm, and 20 by 20 cm.

5.9.3 Use data. Analytical layer microcrystalline cellulose plates are intended for use in normal partition thin layer chromatography with polar compounds.

5.9.4 Packaging data and labeling. Plates of 5 by 20 cm shall be packaged in a quantity of 100. Plates of 10 by 20 cm shall be packaged in a quantity of 50. Plates of 20 by 20 cm shall be packaged in a quantity of 25. Packaging shall be in accordance with MIL-STD-1188. Packages shall be marked in accordance with MIL-STD-129.

5.9.5 Safety precautions. Refer to paragraph 4.4.

5.9.6 Storage data. Refer to paragraph 4.5.

5.9.7 Disposal data. Refer to paragraph 4.8.

5.10 Name. PLATE, CELLULOSE, MICROCRYSTALLINE, FLUORESCENT INDICATOR, ANALYTICAL LAYER

5.10.1 Specifications. None.

5.10.2 Technical description. Glass plates with bevelled edges, 1 mm thick, shall be coated with a microcrystalline cellulose layer 0.10 mm thick. The microcrystalline cellulose shall contain 2 to 3% of a manganese-activated zinc silicate as a fluorescent ultra-violet indicator, with an activation peak at 254 nm, for visualization. Plate dimensions are 5 by 20 cm, 10 by 20 cm, and 20 by 20 cm.

5.10.3 Use data. Analytical layer microcrystalline cellulose plates, with fluorescent indicator, are intended for use in normal partition thin layer chromatography with polar compounds that show a quenching effect under ultra-violet light, enabling their visualization against a fluorescent background.

5.10.4 Packaging data and labeling. Plates of 5 by 20 cm shall be packaged in a quantity of 100. Plates of 10 by 20 cm shall be packaged in a quantity of 50. Plates of 20 by 20 cm shall be packaged in a quantity of 25. Packaging shall be in accordance with MIL-STD-1188. Packages shall be marked in accordance with MIL-STD-129.

5.10.5 Safety precautions. Refer to paragraph 4.4.

5.10.6 Storage data. Refer to paragraph 4.5.

5.10.7 Disposal data. Refer to paragraph 4.8.

5.11 Name. PLATE, SILICA GEL, PREPARATIVE LAYER

5.11.1 Specifications. None.

5.11.2 Technical description. Glass plates with bevelled edges, 1 mm thick, shall be coated with silica gel layers 0.50 and 2.00 mm thick. The silica gel shall have a particle size of about 37 microns, and a mean pore diameter of about 60 angstrom. Only activated fine particles of the same material are used as a binding agent. Plate dimensions are 20 by 20 cm.

5.11.3 Use data. Preparative layer silica gel plates are intended for use in adsorption and partition thin layer chromatography for the separation of neutral or acidic compounds.

5.11.4 Packaging data and labeling. Plates of 20 by 20 cm, 0.50 mm thick shall be packaged in a quantity of 25. Plates of 20 by 20 cm, 2.00 mm thick, shall be packaged in a quantity of 12. Packaging shall be in accordance with MIL-STD-1188. Packages shall be marked in accordance with MIL-STD-129.

5.11.5 Safety precautions. Refer to paragraph 4.4.

5.11.6 Storage data. Refer to paragraph 4.5.

5.11.7 Disposal data. Refer to paragraph 4.8.

5.12 Name. PLATE, SILICA GEL, FLUORESCENT INDICATOR, PREPARATIVE LAYER

5.12.1 Specifications. None.

5.12.2 Technical description. Glass plates with bevelled edges, 1 mm thick, shall be coated with silica gel layers 0.50 and 2.00 mm thick. The silica gel shall have a particle size of about 37 microns, and a mean pore diameter of about 60 angstrom. The silica gel shall contain 2 to 3% of a manganese-activated zinc silicate as a fluorescent ultra-violet indicator, with an activation peak at 254 nm, for visualization. Only activated fine particles of silica gel are used as a binding agent. Plate dimensions are 20 by 20 cm for both layers, and also 20 by 40 cm for the 2.00 mm layer.

5.12.3 Use data. Preparative layer silica gel plates, with fluorescent indicator, are intended for use in adsorption and partition thin layer chromatography for the separation of neutral or acidic compounds that show a quenching effect under ultra-violet light, enabling their visualization against a fluorescent background.

5.12.4 Packaging data and labeling. Plates of 20 by 20 cm, 0.50 mm layer thickness shall be packaged in a quantity of 20 or 25. Plates of 20 by 20 cm, 2.00 mm layer thickness, shall be packaged in a quantity of 12. Plates of 20 by 10 cm shall be packaged in a quantity of 10. Packaging shall be in accordance with MIL-STD-1188. Packages shall be marked in accordance with MIL-STD-129.

5.12.5 Safety precautions. Refer to paragraph 4.4.

5.12.6 Storage data. Refer to paragraph 4.5

5.12.7 Disposal data. Refer to paragraph 4.8.

5.13 Name. PLATE, SILICA GEL, INORGANIC BINDER, PREPARATIVE LAYER

5.13.1 Specifications. None.

5.13.2 Technical description. A glass plate with bevelled edges, 1mm thick, shall be coated with a silica gel layer 2.00 mm thick. The silica gel shall have a particle size of about 37 microns, and a mean pore diameter of about 60 angstrom. The silica gel shall contain some gypsum as an inorganic binder. Plate dimensions are 20 by 20 cm.

5.13.3 Use data. Preparative layer silica gel plates are intended for use in adsorption and partition thin layer chromatography for the separation of acidic compounds.

5.13.4 Packaging data and labeling. Plates of 20 by 20 cm shall be packaged in a quantity of 12. Packaging shall be in accordance with MIL-STD-1188. Packages shall be marked in accordance with MIL-STD-129.

5.13.5 Safety precautions. Refer to paragraph 4.4.

5.13.6 Storage data. Refer to paragraph 4.5.

5.13.7 Disposal data. Refer to paragraph 4.8

5.14 Name. PLATE, SILICA GEL, INORGANIC BINDER, FLUORESCENT INDICATOR  
PREPARATIVE LAYER

5.14.1 Specifications. None.

5.14.2 Technical description. Glass plates with bevelled edges, 1 mm thick, shall be coated with silica gel layers of 0.50, 1.00 and 2.00 mm thickness. The silica gel shall have a particle size of about 37 microns, and a mean pore diameter of about 60 angstrom. The silica gel shall contain some gypsum as an inorganic binder. The silica gel shall contain 2 to 3% of a manganese-activated zinc silicate as a fluorescent ultra-violet indicator, with an

activation peak at 254 nm, for visualization. Plate dimensions are 20 by 20 cm for each layer thickness, and also 20 by 40 cm for 1.00 and 2.00 mm layer thickness.

5.14.3 Use data. Preparative layer silica gel plates, with fluorescent indicator, are intended for use in adsorption and partition thin layer chromatography for the separation of neutral and acidic compounds that show a quenching effect under ultra-violet light, enabling their visualization against a fluorescent background.

5.14.4 Packaging data and labeling. Plates of 20 by 20 cm, 0.50 mm layer thickness, shall be packaged in a quantity of 20. Plates of 20 by 20 cm and 20 by 40 cm, 1.00 mm layer thickness, shall be packaged in a quantity of 15. Plates of 20 by 20 cm and 20 by 40 cm, 2.00 mm layer thickness, shall be packaged in a quantity of 12. Packaging shall be in accordance with MIL-STD-1188. Packages shall be marked in accordance with MIL-STD-129.

5.14.5 Safety precautions. Refer to paragraph 4.4.

5.14.6 Storage data. Refer to paragraph 4.5.

5.14.7 Disposal data. Refer to paragraph 4.8.

5.15 Name. PLATE, ALUMINUM OXIDE, FLUORESCENT INDICATOR, PREPARATIVE LAYER

5.15.1 Specifications. None.

5.15.2 Technical description. Glass plates with bevelled edges, 1 mm thick shall be coated with aluminum oxide layers 0.50 mm, 1.00 mm and 1.50 mm thick. The aluminum oxide shall have a specific surface area of 60 to 90 square meters per gram, and may contain a small amount of an inert inorganic binder. The aluminum oxide shall contain 2 to 3% of a manganese-activated zinc silicate as a fluorescent ultra-violet indicator, with an activation peak at 254 nm, for visualization. Plate dimensions are 20 by 20 cm.

5.15.3 Use data. Preparative layer aluminum oxide plates, with fluorescent indicator, are intended for use in adsorption thin layer chromatography for the separation of basic compounds that show a quenching effect under ultra-violet light, enabling their visualization against a fluorescent background.

5.15.4 Packaging data and labeling. Plates of 20 by 20 cm, 0.50 mm layer thickness, shall be packaged in a quantity of 25. Plates of 20 by 20 cm, 1.00 mm layer thickness shall be packaged in a quantity of 15. Plates of 20 by 20 cm, 1.50 mm layer thickness, shall be packaged in a quantity of 12. Packaging shall be in accordance with MIL-STD-1188. Packages shall be marked in accordance with MIL-STD-129.

5.15.5 Safety precautions. Refer to paragraph 4.4.

5.15.6 Storage data. Refer to paragraph 4.5.

5.15.7 Disposal data. Refer to paragraph 4.8.



## 5.16 Name. PLATE, CELLULOSE, PREPARATIVE LAYER

## 5.16.1 Specifications. None.

5.16.2 Technical description. Glass plates with bevelled edges, 1 mm thick, shall be coated with fibrous cellulose layers 0.25 mm, 0.50 mm, and 1.00 mm thick. The cellulose shall have a fiber length of 2 to 20 microns for at least 95%, and a specific surface area of approximately 15,000 square centimeters per gram. Plate dimensions are 20 by 20 cm.

5.16.3 Use data. Preparative layer cellulose plates are intended for use in normal partition thin layer chromatography for the separation of polar compounds.

5.16.4 Packaging data and labeling. Plates of 20 by 20 cm, 0.25 mm layer thickness, shall be packaged in a quantity of 25. Plates of 20 by 20 cm, 0.50 mm layer thickness shall be packaged in a quantity of 20. Plates of 20 by 20 cm, 1.00 mm layer thickness shall be packaged in a quantity of 15. Packaging shall be in accordance with MIL-STD-1188. Packages shall be marked in accordance with MIL-STD-129.

5.16.6 Storage data. Refer to paragraph 4.5.

5.16.7 Disposal data. Refer to paragraph 4.8.

## 5.17 Name. PLATE, CELLULOSE, FLUORESCENT INDICATOR, PREPARATIVE LAYER

## 5.17.1 Specifications. None.

5.17.2 Technical description. Glass plates with bevelled edges, 1 mm thick, shall be coated with fibrous cellulose layers 0.25 mm and 0.50 mm thick. The cellulose shall have a fiber length of 2 to 20 microns for at least 95%, and shall have a specific surface area of approximately 15,000 square centimeters per gram. The cellulose shall contain 2 to 3% of a manganese-activated zinc silicate as a fluorescent ultra-violet indicator, with an activation peak at 254 nm, for visualization. Plate dimensions are 20 by 20 cm.

5.17.3 Use data. Preparative layer cellulose plates, with fluorescent indicator, are intended for use in normal partition thin layer chromatography with polar compounds that show a quenching effect under ultra-violet light, enabling their visualization against a fluorescent background.

5.17.4 Packaging data and labeling. Plates of 20 by 20 cm, 0.25 mm layer thickness, shall be packaged in a quantity of 25. Plates of 20 by 20 cm, 0.50 mm layer thickness shall be packaged in a quantity of 20. Packaging shall be in accordance with MIL-STD-1188. Packages shall be marked in accordance with MIL-STD-129.

5.17.5 Safety precautions. Refer to paragraph 4.4.

5.17.6 Storage data. Refer to paragraph 4.5.

5.17.7 Disposal data. Refer to paragraph 4.8.

## PRECOATED PLASTIC SHEETS

## 5. DETAIL REQUIREMENTS

## 5.1 Name. SHEET, SILICA GEL, ANALYTICAL LAYER

## 5.1.1 Specifications. None.

5.1.2 Technical description. Flexible plastic (polyethyleneterephthalate) sheets, 0.2 mm thick, shall be coated with a silica gel layer 0.20 mm thick. The silica gel shall have a particle size of about 37 microns and a mean pore diameter of about 60 angstrom. Only activated fine particles of the same material are used as a binding agent. Sheet dimensions are 5 by 20 cm and 20 by 20 cm.

5.1.3 Use data. Analytical layer silica gel sheets are intended for use in adsorption and partition thin layer chromatography with neutral or acidic compounds.

5.1.4 Packaging data and labeling. Sheets of 5 by 20 cm shall be packaged in a quantity of 50. Sheets of 20 by 20 cm shall be packaged in a quantity of 25. Packaging shall be in accordance with MIL-STD-1188. Packages shall be marked in accordance with MIL-STD-129.

5.1.5 Safety precautions. Refer to paragraph 4.4.

5.1.6 Storage data. Refer to paragraph 4.5.

5.1.7 Disposal data. Refer to paragraph 4.8.

## 5.2 Name. SHEET, SILICA GEL, FLUORESCENT INDICATOR, ANALYTICAL LAYER

## 5.2.1 Specifications. None.

5.2.2 Technical description. Flexible plastic (polyethyleneterephthalate) sheets, 0.2 mm thick, shall be coated with a silica gel layer 0.20 mm thick. The silica gel shall have a particle size of about 37 microns, and a mean pore diameter of about 60 angstrom. The silica gel shall contain 2 to 3% of a manganese-activated zinc silicate as a fluorescent ultra-violet indicator, with an activation peak at 254 nm, for visualization. Only activated fine particles of silica gel are used as a binding agent. Sheet dimensions are 5 by 20 cm and 20 by 20 cm.

5.2.3 Use data. Analytical layer silica gel sheets with fluorescent indicator, are intended for use in adsorption and partition thin layer chromatography, with neutral or acidic compounds that show a quenching effect under ultra-violet light, enabling their visualization against a fluorescent background.

5.2.4 Packaging data and labeling. Sheets of 5 by 20 cm shall be packaged in a quantity of 50. Sheets of 20 by 20 cm shall be packaged in a quantity of 25. Packaging shall be in accordance with MIL-STD-1188. Packages shall be marked in accordance with MIL-STD-129.

5.2.5 Safety precautions. Refer to paragraph 4.4.

5.2.6 Storage data. Refer to paragraph 4.5.

5.2.7 Disposal data. Refer to paragraph 4.8.

5.3 Name. SHEET, SILICA GEL, INORGANIC BINDER, ANALYTICAL LAYER

5.3.1 Specifications. None.

5.3.2 Technical description. Flexible plastic (polyethyleneterephthalate) sheets, 0.2 mm thick, shall be coated with a silica gel layer 0.25 mm thick. The silica gel shall have a particle size of about 37 microns, and a mean pore diameter of about 60 angstrom. The silica gel shall contain about 10 to 15% by weight of gypsum as an inorganic binder. Sheet dimensions are 5 by 20 cm and 20 by 20 cm.

5.3.3 Use data. Analytical layer silica gel sheets, with gypsum binder, are intended for use in adsorption and partition thin layer chromatography with compounds that are acidic.

5.3.4 Packaging data and labeling. Sheets of 5 by 20 cm shall be packaged in a quantity of 50. Sheets of 20 by 20 cm shall be packaged in a quantity of 25. Packaging shall be in accordance with MIL-STD-1188. Packages shall be marked in accordance with MIL-STD-129.

5.3.5 Safety precautions. Refer to paragraph 4.4.

5.3.6 Storage data. Refer to paragraph 4.5.

5.3.7 Disposal data. Refer to paragraph 4.8.

5.4 Name. SHEET, SILICA GEL, INORGANIC BINDER, FLUORESCENT INDICATOR, ANALYTICAL LAYER

5.4.1 Specifications. None.

5.4.2 Technical description. Flexible plastic (polyethyleneterephthalate) sheets, 0.2 mm thick, shall be coated with a silica gel layer 0.25 mm thick. The silica gel shall have a particle size of about 37 microns, and a mean pore diameter of about 60 angstrom. The silica gel shall contain about 10 to 15% by weight of gypsum as an inorganic binder; and 2 to 3% of a manganese-activated zinc silicate as a fluorescent ultra-violet indicator, with an activation peak at 254 nm, for visualization. Sheet dimensions are 5 by 20 cm and 20 by 20 cm.

5.4.3 Use data. Analytical layer silica gel sheets, with gypsum binder and fluorescent indicator, are intended for use in adsorption and partition thin layer chromatography with compounds that are acidic and show a quenching effect under ultra-violet light, enabling their visualization against a fluorescent background.

5.4.4 Packaging data and labeling. Sheets of 5 by 20 cm shall be packaged in a quantity of 50. Sheets of 20 by 20 cm shall be packaged in a quantity of 25.

Packaging shall be in accordance with MIL-STD-1188. Packages shall be marked in accordance with MIL-STD-129.

5.4.5 Safety precautions. Refer to paragraph 4.4

5.4.6 Storage data. Refer to paragraph 4.5.

5.4.7 Disposal data. Refer to paragraph 4.8.

#### 5.5 Name. SHEET, ALUMINUM OXIDE, ANALYTICAL LAYER

5.5.1 Specifications. None.

5.5.2 Technical description. Flexible plastic (polyethyleneterephthalate) sheets, 0.2 mm thick, shall be coated with an aluminum oxide layer, 0.20 mm thick. The aluminum oxide shall have a specific surface area of 60 to 90 square meters per gram, and may contain a small amount of an inert inorganic binder. Sheet dimensions are 5 by 20 cm and 20 by 20 cm.

5.5.3 Use data. Analytical layer aluminum oxide sheets are intended for use in adsorption thin layer chromatography with basic compounds.

5.5.4 Packaging data and labeling. Sheets of 5 by 20 cm shall be packaged in a quantity of 50. Sheets of 20 by 20 cm shall be packaged in a quantity of 25. Packaging shall be in accordance with MIL-STD-1188. Packages shall be marked in accordance with MIL-STD-129.

5.5.5 Safety precautions. Refer to paragraph 4.4.

5.5.6 Storage data. Refer to paragraph 4.5.

5.5.7 Disposal data. Refer to paragraph 4.8.

#### 5.6 Name. SHEET, ALUMINUM OXIDE, FLUORESCENT INDICATOR, ANALYTICAL LAYER

5.6.1 Specifications. None.

5.6.2 Technical description. Flexible plastic (polyethyleneterephthalate) sheets, 0.2 mm thick, shall be coated with an aluminum oxide layer, 0.20 mm thick. The aluminum oxide shall have a specific surface area of 60 to 90 square meters per gram, and may contain a small amount of an inorganic binder. The aluminum oxide shall contain 2 to 3% of a manganese-activated zinc silicate as a fluorescent ultra-violet indicator, with an activation peak at 254 nm, for visualization. Sheet dimensions are 5 by 20 cm and 20 by 20 cm.

5.6.3 Use data. Analytical layer aluminum oxide sheets, with fluorescent indicator, are intended for use in adsorption thin layer chromatography with basic compounds that show a quenching effect under ultra-violet light, enabling their visualization against a fluorescent background.

5.6.4 Packaging data and labeling. Sheets of 5 by 20 cm shall be packaged in a quantity of 50. Sheets of 20 by 20 cm shall be packaged in a quantity of 25.

Packaging shall be in accordance with MIL-STD-1188. Packages shall be marked in accordance with MIL-STD-129.

5.6.5 Safety precautions. Refer to paragraph 4.4.

5.6.6 Storage data. Refer to paragraph 4.5.

5.6.7 Disposal data. Refer to paragraph 4.8.

5.7 Name. SHEET, CELLULOSE, ANALYTICAL LAYER

5.7.1 Specifications. None.

5.7.2 Technical description. Flexible plastic (polyethyleneterephthalate) sheets, 0.2 mm thick, shall be coated with a fibrous cellulose layer 0.10 mm thick. The cellulose shall have a fiber length of 2 to 20 microns for at least 95%, and shall have a specific surface area of approximately 15,000 square centimeters per gram. Sheet dimensions are 5 by 20 cm and 20 by 20 cm.

5.7.3 Use data. Analytical layer cellulose sheets are intended for use in normal partition thin layer chromatography with polar compounds.

5.7.4 Packaging data and labeling. Sheets of 5 by 20 cm shall be packaged in a quantity of 50. Sheets of 20 by 20 cm shall be packaged in a quantity of 25. Packaging shall be in accordance with MIL-STD-1188. Packages shall be marked in accordance with MIL-STD-129.

5.7.5 Safety precautions. Refer to paragraph 4.4.

5.7.6 Storage data. Refer to paragraph 4.6.

5.7.7 Disposal data. Refer to paragraph 4.8.

5.8 Name. SHEET, CELLULOSE, FLUORESCENT INDICATOR, ANALYTICAL LAYER

5.8.1 Specifications. None.

5.8.2 Technical description. Flexible plastic (polyethyleneterephthalate) sheets, 0.2 mm thick, shall be coated with a fibrous cellulose layer 0.10 mm thick. The cellulose shall have a fiber length of 2 to 20 microns for at least 95%, and shall have a specific surface area of approximately 15,000 square centimeters per gram. The cellulose shall contain 2 to 3% of a manganese-activated zinc silicate as a fluorescent ultra-violet indicator, with an activation peak at 254 nm, for visualization. Sheet dimensions are 5 by 20 cm and 20 by 20 cm.

5.8.3 Use data. Analytical layer cellulose sheets, with fluorescent indicator, are intended for use in normal partition thin layer chromatography with polar compounds that show a quenching effect under ultra-violet light, enabling their visualization against a fluorescent background.

5.8.4 Packaging data and labeling. Sheets of 5 by 20 cm shall be packaged in a quantity of 50. Sheets of 20 by 20 cm are packaged in a quantity of 25. Packaging shall be in accordance with MIL-STD-1188. Packages shall be marked in accordance with MIL-STD-129.

5.8.5 Safety precautions. Refer to paragraph 4.4.

5.8.6 Storage data. Refer to paragraph 4.5.

5.8.7 Disposal data. Refer to paragraph 4.8.

5.9 Name. SHEET, CELLULOSE, MICROCRYSTALLINE, ANALYTICAL LAYER

5.9.1 Specifications. None.

5.9.2 Technical description. Flexible plastic (polyethyleneterephthalate) sheets, 0.2 mm thick, shall be coated with a microcrystalline cellulose layer 0.10 mm thick. The cellulose shall have a particle size of about 20 microns. Sheet dimensions are 5 by 20 cm and 20 by 20 cm.

5.9.3 Use data. Analytical layer microcrystalline cellulose sheets are intended for use in normal partition thin layer chromatography with polar compounds.

5.9.4 Packaging data and labeling. Sheets of 5 by 20 cm shall be packaged in a quantity of 50. Sheets of 20 by 20 cm shall be packaged in a quantity of 25. Packaging shall be in accordance with MIL-STD-1188. Packages shall be marked in accordance with MIL-STD-129.

5.9.5 Safety precautions. Refer to paragraph 4.4.

5.9.6 Storage data. Refer to paragraph 4.5.

5.9.7 Disposal data. Refer to paragraph 4.8.

5.10 Name. SHEET, CELLULOSE, MICROCRYSTALLINE, FLUORESCENT INDICATOR, ANALYTICAL LAYER.

5.10.1 Specifications. None.

5.10.2 Technical description. Flexible plastic (polyethyleneterephthalate) sheets, 0.2 mm thick, shall be coated with a microcrystalline cellulose layer 0.10 mm thick. The cellulose shall have a particle size of about 20 microns. The microcrystalline cellulose shall contain 2 to 3% of a manganese-activated zinc silicate as a fluorescent ultra-violet indicator, with an activation peak at 254 nm, for visualization. Sheet dimensions are 5 by 20 cm and 20 by 20 cm.

5.10.3 Use data. Analytical layer microcrystalline cellulose sheets, with fluorescent indicator, are intended for use in partition thin layer chromatography with polar compounds that show a quenching effect under ultra-violet light, enabling their visualization against a fluorescent background.

5.10.4 Packaging data and labeling. Sheets of 5 by 20 cm shall be in a quantity of 50. Sheets of 20 by 20 cm shall be packaged in a quantity of 25. Packaging shall be in accordance with MIL-STD-1188. Packages shall be marked in accordance with MIL-STD-129.

5.10.5 Safety precautions. Refer to paragraph 4.4.

5.10.6 Storage data. Refer to paragraph 4.5.

5.10.7 Disposal data. Refer to paragraph 4.8.

5.11 Name SHEET, CELLULOSE, ACETYLATED, ANALYTICAL LAYER.

5.11.1 Specifications. None.

5.11.2 Technical description. Flexible plastic (polyethyleneterephthalate) sheets, 0.2 mm thick, shall be coated with an acetylated fibrous cellulose layer 0.10 mm thick. The cellulose shall have a fiber length of 2 to 20 microns for at least 95%, and shall have a specific surface area of approximately 15,000 square centimeters per gram. The particle size of the cellulose shall be about 20 microns. Acetylation of the cellulose shall be about 10% and 30%. Sheet dimensions are 5 by 20 cm and 20 by 20 cm for 10% acetylated cellulose, and 20 by 20 cm for 30% acetylated cellulose.

5.11.3 Use data. Analytical layer acetylated cellulose sheets are intended for use in reversed-phase partition thin layer chromatography with polar compounds, where the main composition of the developing solvents are aqueous or highly polar solvents.

5.11.4 Packaging data and labeling. Sheets of 5 by 20 cm shall be packaged in a quantity of 50. Sheets of 20 by 20 cm shall be packaged in a quantity of 25. Packaging shall be in accordance with MIL-STD-1188. Packages shall be marked in accordance with MIL-STD-129.

5.11.5 Safety precautions. Refer to paragraph 4.4.

5.11.6 Storage data. Refer to paragraph 4.6.

5.11.7 Disposal data. Refer to paragraph 4.8.

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Army - EA

Custodians:

Army - EA

Navy - MS

Air Force - 99

DOD/NASA - MB

Civil Agency Coordinating Interest:

GSA - FSS

Project Number 6630-0248

Review activities:

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Air Force - 03

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User activities:

GSA -



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