

# Manual on Flash Point Standards and Their Use

Methods and Regulations

HARRY A. WRAY, Editor



# **Manual on Flash Point Standards and Their Use: Methods and Regulations**

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**Harry A. Wray, Editor**

ASTM Manual Series: MNL 9  
ASTM Publication Code Number (PCN)  
28-009092-31



1916 Race Street ■ Philadelphia, PA 19103

## **Library of Congress Cataloging in Publication Data**

Manual on flash point standards and their use : methods and regulations / Harry A. Wray, editor. -- 1st ed.

(ASTM manual series : MNL 9)

"ASTM publication code number (PCN) 28-009092-31."

Includes bibliographical references and index.

ISBN 0-8031-1410-0

1. Inflammable liquids--Flammability--Standards. I. Wray, Harry

A., 1909- . II. American Society for Testing and Materials.

III. Series: Manual (American Society for Testing and Materials) ;

9.

TP363.M246 1992

628.9'222'021873--dc20

91-45892

CIP

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NOTE: This manual does not purport to address (all of) the safety problems associated with its use. It is the responsibility of the user of this manual to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

Printed in Baltimore, MD

Sept. 1992

# Foreword

The ASTM Manual on Flash Point Standards and Their Use: Methods and Regulations (MNL 9) is sponsored by the ASTM Coordinating Committee for Flash Point. Harry A. Wray, Chairman Emeritus of the Committee, is editor of the publication.

# Acknowledgments

The editor acknowledges the help provided by the ASTM staff, especially Brent Backus, Dorothy Savini, and the editorial and word processing departments. The U.S. National Institute of Standards and Technology, National Center for Standards and Certification Information helped in providing lists of flash point standards of U.S. and other national standards organizations. Information obtained from U.S. standards, code, and tariff organizations, such as the National Fire Protection Association, the Underwriters Laboratories, United Parcel Service, and the Hazardous Materials Systems of the Association of American Railroads is appreciated.

The information obtained from the U.S. Regulatory Agencies and from international regulatory bodies regarding the control of flammable liquids was helpful in making this guide a source of information on international regulations.

Finally, the editor wishes to thank the members, past and present, of the ASTM Coordinating Committee for Flash Point and Related Properties, especially the present chairman and vice chairman, Mr. E. M. (Bud) Nesvig and Mr. John E. Rogerson for making available a forum for obtaining the information that provided the background for this manual.

*Harry A. Wray*  
Editor

# Contents

## PART I: ASTM FLASH POINT STANDARDS

<b>Chapter 1: Flash Point History</b>	<b>3</b>
1. History of Flash Point Testing	3
2. History of ASTM Flash Point Standards	3
3. Flash Point Basics	4
<b>Chapter 2: ASTM Basic Flash Point Standards</b>	<b>5</b>
1. Reprints of the Eight Basic ASTM Flash Point Standards Methods	6
D 56: Test Method for Flash Point by Tag Closed Tester	6
D 92: Test Method for Flash and Fire Points by Cleveland Open Cup	12
D 93: Test Methods for Flash Point by Pensky-Martens Closed Tester	17
D 1310: Test Method for Flash Point and Fire Point of Liquids by Tag Open-Cup Apparatus	30
D 3278: Test Methods for Flash Point of Liquids by Setaflash Closed-Cup Apparatus	37
D 3828: Test Methods for Flash Point by Setaflash Closed Tester	44
D 3934: Test Method for Flash/No Flash Test—Equilibrium Method by a Closed-Cup Apparatus	50
D 3941: Test Method for Flash Point by the Equilibrium Method With a Closed-Cup Apparatus	53
<b>Chapter 3: ASTM Flash Point Standards for Specific Products (Excerpts)</b>	<b>56</b>
1. D 115: Methods of Testing Varnishes Used for Electrical Insulation	56
2. D 117: Guide to Test Methods and Specifications for Electrical Insulating Oils of Petroleum Origin	57
3. D 154: Methods of Testing Varnishes	57
4. D 176: Methods of Solid Filling and Treating Compounds Used for Electrical Insulation	57
5. D 268: Methods of Sampling and Testing Volatile Solvents and Chemical Intermediates for Use in Paint and Related Coatings and Materials	57
6. D 333: Method for Clear and Pigmented Laquers	58
7. D 555: Guide for Testing Drying Oils	58
8. D 801: Methods of Sampling and Testing Dipentene	58
9. D 803: Methods of Testing Tall Oil	58
10. D 901: Methods of Testing Askarels	58
11. D 1131: Methods of Testing Rosin Oils	59
12. D 1168: Methods of Testing Hydrocarbon Waxes for Electrical Insulation	59

13. D 1569: Methods of Testing Detergent Alkylate	59
14. D 2071: Methods for Fatty Nitrogen Products	59
15. D 2225: Methods of Testing Silicone Fluids Used for Electrical Insulation	59
16. D 2554: Test for Flash Point of Dry Cleaning Detergents in Drycleaning Bath	59
17. D 2689: Recommended Practices for Testing Alkyd Resins	60
18. D 2833: Index of Methods for Testing Architectural Paints and Coatings	60
19. D 2939: Method of Testing Emulsified Bitumens Used as Protective Coatings	60
20. D 3065: Test Methods for Flammability of Aerosol Products	60
21. D 3105: Index of Methods for Testing Elastomeric and Plastomeric Roofing and Waterproofing Materials	60
22. D 3143: Test Method for Flash Point of Cutback Asphalt with Tag-Open Cup Apparatus	61
23. D 3288: Test Methods of Testing Magnet-Wire Enamels	62
24. D 3323: Guide for Testing Interior Solvent-Reducible Flat Wall Paints	62
25. D 3425: Guide for Testing Solvent-Reducible Interior Semigloss Wall and Trim Enamels	62
26. D 3436: Standard Practice for Sampling and Handling Aniline	62
27. D 3437: Standard Practice for Sampling and Handling Liquid Cyclic Products	62
28. D 3666: Practice for Evaluation of Inspection and Testing Agencies for Bituminous Paving Materials	63
29. D 3745: Practice for Installation of Prefabricated Asphalt Reservoir, Pond, Canal, and Ditch Liner (Exposed Type)	63
30. D 3757: Guide for Preparing Specifications for Solvent Floor Polishes	63
31. D 3809: Methods of Testing Synthetic Dielectric Fluids for Capacitors	63
32. D 4277: Guide for Testing Amino Resins	63
33. D 4712: Guide for Testing Industrial Water-Reducible Coatings	63
34. D 4733: Test Methods for Solventless Electrical Insulating Varnishes	63
35. E 502: Test Method for Selection and Use of ASTM Standards for the Determination of Flash Point of Chemicals by Closed Cup Methods	64
36. E 752: Safety and Health Requirements Relating to Occupational Exposure to Carbon Disulfide	64
<b>Chapter 4: ASTM Specifications with Flash Point Requirements (Excerpts)</b>	66
1. D 12: Raw Tung Oil	66
2. D 234: Raw Linseed Oil	66
3. D 235: Mineral Spirits (Petroleum Spirits) (Hydrocarbon Dry Cleaning Solvent)	67
4. D 312: Asphalt Used in Roofing	67
5. D 396: Fuel Oils	67
6. D 449: Asphalt Used for Dampproofing and Waterproofing	68

7. D 450: Coal-Tar Pitch Used in Roofing, Dampproofing, and Waterproofing	68
8. D 946: Penetration-Graded Asphalt Cement for Use in Pavement Construction	68
9. D 1227: Emulsified Asphalt Used as a Protective Coating	69
10. D 1655: Aviation Turbine Fuels	69
11. D 1786: Toluene Diisocyanate	69
12. D 1859: Petroleum for Blending with Creosote	70
13. D 2026: Cutback Asphalt (Slow-Curing Type)	70
14. D 2027: Cutback Asphalt (Medium-Curing Type)	70
15. D 2028: Cutback Asphalt (Rapid-Curing Type)	70
16. D 2233: Chlorinated Aromatic Hydrocarbons (Askarels) for Capacitors	70
17. D 2283: Chlorinated Aromatic Hydrocarbons (Askarels) for Transformers	71
18. D 2521: Asphalt Used in Canal, Ditch and Pond Lining	71
19. D 2604: High-Boiling Hydrocarbon Solvent for Preparing Oil-Borne Preservative Solutions	71
20. D 2762: Drycleaning Detergent, Non-Charge Type	71
21. D 2763: Drycleaning Detergent, Liquid Charge Type	71
22. D 2880: Gas Turbine Fuel Oils	72
23. D 3141: Asphalt for Undersealing Portland Cement	72
24. D 3225: Low Boiling Hydrocarbon Solvent for Oil-Borne Preservatives	72
25. D 3320: Emulsified Coal-Tar Pitch (Mineral Colloid Type)	72
26. D 3487: Mineral Insulating Oil Used in Electrical Apparatus	73
27. D 3699: Kerosine	73
28. D 3734: High-Flash Aromatic Naphthas	73
29. D 3735: VM&P Naphthas	73
30. D 3757: Guide for Preparing Specifications for Solvent Floor Polishes	73
31. D 3955: Electrical Insulating Varnishes	74
32. D 4010: Waterless Hand Cleaner	74
33. D 4011: Lotion Soap	74
34. D 4022: Coal Tar Roof Cement	74
35. D 4293: Phosphate Ester Based Fluids for Turbine Lubrication	74
36. D 4304: Mineral Lubricating Oil Used in Steam or Gas Turbines	75
<b>Chapter 5: ASTM Fire Property Standards Relating to Flash Point</b>	76
1. D 2883: Reaction Threshold Temperature of Liquids and Solid Materials	76
2. D 4206: Sustained Burning of Liquid Mixtures by Setaflash Apparatus (Open-Cup)	77
3. D 4207: Sustained Burning of Low-Viscosity Liquid Mixture by the Wick Test	77
4. D 4359: Determining Whether a Material is a Liquid or a Solid	78
5. E 659: Test Method for Autoignition Temperature of Liquid Chemicals	78



6. E 681: Concentration Limits of Flammability of Chemicals	79
7. E 771: Spontaneous Heating Tendency of Materials	80
8. E 918: Standard Practice for Determining Limits of Flammability of Chemicals at Elevated Temperature and Pressure	80
9. E 1231: Temperature Limit of Flammability of Chemicals	81
<b>Chapter 6: Auxiliary ASTM Standards Used to Define Flammable and Combustible Liquids in Government Regulations</b>	83
1. D 86: Test Method for Distillation of Petroleum Products	83
2. D 88: Saybolt Viscosity	84
3. D 323: Vapor Pressure of Petroleum Products (Reid Method)	84
4. D 445: Kinematic Viscosity of Transparent and Opaque Liquids (and the Calculation of Dynamic Viscosity)	84
5. D 2170: Kinematic Viscosity of Asphalts (Bitumens)	85
6. D 2171: Viscosity of Asphalts by Vacuum Capillary Viscometer	86
<b>PART II: U.S. STANDARDS, SPECIFICATIONS, CODES, REGULATIONS, AND TARIFFS (FEDERAL, STATE, AND MUNICIPAL)</b>	
<b>Chapter 7: U.S. Federal Standards and Specifications</b>	89
1. Standards and Specifications of U.S. Government	89
2. U.S. Department of Defense Index of Specifications and Standards	89
<b>Chapter 8: Flash Point Standards of U.S. Standards Organization</b>	93
1. American National Standards Institute	93
2. American Boat and Yacht Council	93
3. American Association of Cereal Chemists	93
4. American Oil Chemists' Society	94
5. American Association of State Highway Transportation Officials	94
6. Chemical Specialties Manufacturers Association	94
7. Essential Oil Association of U.S.A.	94
8. Factory Mutual System	94
9. International Conference of Building Officials	94
10. National Fire Prevention Association	94
11. Underwriters Laboratories	95
<b>Chapter 9: U.S. Code and Tariff Writing Organizations</b>	96
1. Association of American Railroads	96
2. United Parcel Service	96
3. Building Officials and Code Administrators	96
3.1 Fire Prevention Code 1990	96
<b>Chapter 10: Local Governmental Regulations in the U.S. States and Municipalities</b>	96
1. State of Michigan	96
2. State of New Jersey	96
3. State of Ohio	96
4. Commonwealth of Pennsylvania	96
4.1 Law	98
4.2 Transportation	98
4.3 Labor Industrial	98
4.4 Environmental Resources	99

5. City of Baltimore	99
6. City of New York	100
6.1 Administrative Code	100
6.2 Regulations for Storage and Use of Chemicals, Acids, and Cases in University, College Hospital Research and Commercial Laboratories	100
7. City of Philadelphia	100
8. Baltimore County Fire Department	101
 <b>Chapter 11: U.S. Governmental Regulatory Agencies—Governmental         Regulations</b>	 102
Introduction	102
1. 49 CFR, Part A, U.S. Department of Transportation, Research and Special Programs Administration (RSPA) (Subchapter C) Hazardous Materials Regulations	102
1.1 Matter Incorporated by Reference (171.1)	103
1.2 Definitions and Abbreviations (171.8)	104
1.3 General Information, Regulations and Definitions (RSPA)	105
1.4 Transitional Provisions for Implementing Requirements Based on the U.N. Recommendations (171.14), <b>Federal Register</b> (December 21, 1990)	105
1.5 Transitional Provisions for Implementing Requirements on the U.N. Recommendations, <b>Federal Register</b> (December 20, 1991)	106
1.6 Purpose and Scope (173.1)	106
1.7 Hazardous Materials Classes and Index to Hazard Class Definitions (173.2)	106
1.8 Classification of Materials Having More Than One Hazard (173.2a)	106
1.9 Precedence of Hazard Table (173.2b)	107
1.10 Subpart D—Definitions, Classification, Packing Group Assignments and Exceptions for Hazardous Materials Other Than Class 1 and Class 7	107
1.11 Appendix E to Part 173—Guidelines for the Classification and Packing Group Assignment of Class 4 Materials	111
1.12 Appendix F to Part 173—Guidelines for the Classification and Packing Group Assignment of Division 5.1 Materials	114
2. 46 CFR, U.S. Coast Guard	115
2.1 Bulk Shipments	115
2.2 Commercial Fishing—Vessels Used to Transport Petroleum Products	115
2.3 Hazardous Ships Stores (Part 147)	115
3. 33 CFR, U.S. Coast Guard, St. Lawrence Shipping	116
3.1 Navigation and Navigable Waters	116
4. 29 CFR, U.S. Department of Labor (Part B), Occupational Safety and Health Administration (OSHA)— Industrial Plants (Labor)	117
4.1 Flammable and Combustible Liquids (1910.106)	117
4.2 Hazard Communication (1910.1200)	117
4.3 Occupational Exposure to Hazardous Chemicals in Laboratories (1910.1450)	119
4.4 Shipyard Employment (1915)	119

## **x CONTENTS**

5. 29 CFR, Construction Industry (Subchapter D)	120
5.1 Safety and Health Regulations for Construction Hazard Communications (1926)	120
6. 16 CFR, Consumer Product Safety Commission (Subchapter C)	120
6.1 Commercial Practices (1500)	120
7. 16 CFR, Flash Point Testing Procedures, CPSC Regulations	121
7.1 Tag Open-Cup Method (1500.43)	121
7.2 Method of Test for Flash Point of Volatile Flammable Materials (1500.43a)	122
7.3 Method for Determining Extremely Flammable and Flammable Solids (1500.44)	122
7.4 Method for Determining Extremely Flammable and Flammable Contents of Self-Pressurized Containers (1500.45)	123
7.5 Method for Determining Flash Point of Extremely Flammable and Flammable Contents of Self-Pressurized Containers (1500.45)	123
8. 40 CFR, U.S. Environmental Protection Agency (Part D)	123
8.1 Pesticides and Toxic Substances	123
8.2 Office of Solid Waste	124
PART III: FLASH POINT RELATED SPECIFICATIONS AND STANDARDS FROM OTHER COUNTRIES (NATIONAL GOVERNMENTS AND ORGANIZATIONS)	
<b>Chapter 12: Specifications of Other National Governments</b>	127
Introduction	127
Australia	127
Brazil	127
Canada	127
France	127
Japan	127
Peoples Republic of China	128
Sweden	128
United Kingdom	128
USSR	128
<b>Chapter 13: Flash Point Methods from National Standards Organizations of Other Countries</b>	129
Introduction	129
1. Australia	129
2. Austria	129
3. Bangladesh	129
4. Belgium	130
5. Canada	130
6. Peoples Republic of China	130
7. Republic of China (Taiwan)	130
8. Columbia	130
9. Czechoslovakia	130
10. Denmark	130
11. Ecuador	130
12. Egypt, Arab Republic of	130
13. France	130
14. Germany	131
15. Hungary	131
16. India	131

17. Indonesia	131
18. Iran	131
19. Iraq	131
20. Israel	131
21. Italy	132
22. Japan	132
23. Jordan	132
24. Kuwait	132
25. Mexico	132
26. The Netherlands	132
27. New Zealand	132
28. Saudi Arabia	132
29. Singapore	132
30. Republic of South Africa	133
31. Sweden	133
32. Switzerland	133
33. United Kingdom	133
34. USSR	134
35. Venezuela	134
36. Zimbabwe	134

## PART IV—INTERNATIONAL STANDARDS AND REGULATIONS

<b>Chapter 14: International Flash Point and Related Standards</b>	137
Introduction	137
1. ISO 412: Gum Spirit of Turpentine and Wood Turpentine's for Paints and Varnishes	138
2. ISO 1516: Paints, Varnishes, Petroleum and Related Products—Flash/No Flash-Closed Cup Equilibrium Method	138
3. ISO 1523: Paints, Varnishes, Petroleum and Related Products—Determination of Flash Point—Closed Cup Equilibrium Method	139
4. ISO 2592: Petroleum Products—Determination of Flash and Fire Points—Cleveland Open Cup Method	140
5. ISO 2719: Petroleum Products—Determination of Flash Point—Pensky Martens Closed Cup Method	140
6. ISO 3679: Paints, Varnishes, Petroleum and Related Products—Determination of Flash Point—Rapid Equilibrium Method	141
7. ISO 3680: Paints, Varnishes, Petroleum and Related Products—Determination of Flash Rapid Equilibrium Method	141
8. ISO 5280: Xylene for Industrial Use Specification	142
9. ISO 2431: Paints and Varnishes—Determination of Flow Time by Use of Flow Cups	142
<b>Chapter 15: Regulations of International Regulatory Agencies</b>	147
1. Recommendations of the United Nations Economic and Social Council (Orange Book)	147
1.1 Scope of the Recommendations	147
1.2 Principles Underlying the Regulations of the Transport of Dangerous Goods	147
1.3 Desirability of Uniformity at the World Level for All Modes of Transport	148
1.4 Classification and Definitions of Classes of Dangerous Goods	148

1.5 Special Recommendations Relating to Class 3 Inflammable Liquids	148
2. International Civil Aviation Organization	150
3. International Maritime Organization	150
3.1 International Maritime Dangerous Goods Code	150
3.2 Definitions of Class 3 Inflammable Liquids	151
3.3 Standardization of the Flash Point Test Method	151
4. European Highway and Rail Transport Committee of the United Nations	152
4.1 Definitions	152
4.2 Test for Determining Flash Point	152
4.3 Test for Determining Fluidity	153
5. European Economic Community, Commission of the European Communities	153
5.1 Introduction/Definitions	153
5.2 Flash Point Definitions	154
6. International Air Transport Association	154
APPENDICES	
<b>Appendix A: Regulatory and Non-Regulatory Agencies (Governmental and Civilian)</b>	159
A.1 U.S. Governmental Regulatory Agencies	159
A.2 U.S. Governmental Non-Regulatory Agencies	159
A.3 International Governmental Regulatory Organizations	159
A.4 United Nations Organizations of Experts on the Transportation of Dangerous Goods	160
A.5 International Non-Governmental Regulatory Organizations: International Air Transportation Association	160
A.6 U.S. State Regulatory and Enforcement Agencies for Hazardous Materials	160
A.7 Status of Federal Hazardous Materials Regulations	161
<b>Appendix B: U.S. Non-Governmental Standard, Code, and Tariff Writing Organizations</b>	162
B.1 Code and/or Tariff Writing Organizations	162
B.2 Building Code Organizations	162
B.3 Safety Organizations	162
B.4 Standards Organization Having Flash Point Standards	163
<b>Appendix C: National Standards Organizations of Other Countries</b>	164
C.1 ISO Members	164
C.2 ISO Correspondent Members	167

# Overview

At present, there is no single reference available on flash point standards and their relationship to regulations controlling hazardous materials. This manual provides such information. In addition, it gives information on the relationship between various national and international regulations using flash point to define flammable liquids.

During the last 15 years, there has been a continued major activity in regulations and flash point standards development worldwide to control the manufacturing, storage, shipment, and use of hazardous materials. With the advent of the U.S. Occupational Safety and Health Administration's use of the closed-cup flash point apparatus and the change in flash point method from the open to the closed-cup apparatus by the U.S. Department of Transportation, U.S. industry was required to do extensive flash point testing. This has continued with the addition of regulations to control the environment and will continue with the change from open to closed-cup apparatus in the U.S. Consumer Safety Product Commission regulations.

At present, efforts to make the United Nation's Recommendations on Transportation of Dangerous Goods the basis for worldwide standards and regulations are being considered. Thus, availability of information on worldwide standards and regulations becomes important.

This volume includes the eight full ASTM flash point standard test methods and excerpts of all other ASTM flash point standard test methods and specifications with complete alphanumeric and date designations. Furthermore, all the ASTM flash point standard test methods and specifications with their volume numbers are listed in Chapter 2.

Selected excerpts of regulations for control of flammable liquids as they apply to definitions, classification of, and exceptions to hazardous materials are quoted exactly. Those quoted are from the regulations of all U.S. Regulatory Agencies as specified in the U.S. Code of Federal Regulations and in the publications of the International Regulatory Bodies, such as the International Civil Aviation Organization and the International Maritime Organization. Although the open-cup method specified by the Consumer Product Safety Commission (CPSC) regulation is an old method, and since its use will be permitted even after the adoption of the closed-cup method, it is printed in its entirety.

This guide is as complete as possible, but may contain omissions. As always, ASTM welcomes constructive comments. These can be directed to the Chairman of the ASTM Coordinating Committee for Flash Point and Related Properties, ASTM, 1916 Race Street, Philadelphia, PA 19103.

*Harry A. Wray*  
*Editor*



HARRY A. WRAY

## ABOUT THE EDITOR

Currently retired from the E.I. du Pont de Nemours and Company, Inc., Harry A. Wray served there for 29 years. Part of his early career was spent as a research chemist in industrial finishes prior to his work with standards and test methods. Before joining the Dupont Co., Wray spent 10 years teaching at Lewistown, PA High School, Long Island University, and for Pennsylvania State University. The editor holds a B.S. degree in Science from Albright College and a Masters Degree in Chemistry from Columbia University.

While with Dupont, Mr. Wray became interested in flash point testing and Government regulations based on these tests. He has published several articles on flash point testing and contributed to the development of several related ASTM standards. Wray has served on many ASTM committees including, Committee D-1 on Paint and Related Coatings, D-2 on Petroleum Products and Lubricants, E-27 on Hazard Potential of Chemicals, E-43 on Metric Practices and the ASTM Standing Committee on Terminology.

Mr. Wray was one of the founders and the first chairman of the ASTM Coordinating Committee on Flash Point and Related Properties. He is now *Chairman Emeritus* of the committee.

During Wray's long membership with ASTM he has been honored with many awards including; Honorary Member of D-1, the Committee on Terminology Membership Award, and their Certificate of Appreciation, the Henry A. Gardner Award, the William T. Pearce Award, and ASTM's Award of Merit. Wray has also been awarded the U.S. Environmental Protection Agency's National Enforcement Investigations Center Certificate of Appreciation.

Wray, with the help of his local Congressman, was able to convince congress to amend the Federal Hazardous Substances Act to permit the Consumer Product Safety Commission to adopt flammability regulations similar to other agencies.

Now retired, Mr. Wray continues to work with flammability of liquids as a consultant and expert witness.

ISBN 0-8031-1410-4