

**Report of the Committee on
Aerosol Products**

Michael J. Madden, Chair
Gage-Babcock & Assoc., CA [SE]

David L. Fredrickson, S. C. Johnson & Son Inc., WI [M]
Rep. Chemical Specialties Mfrs. Assn.
Robert O. George, 3M Co., MN [U]
David Grandaw, Fenwal Safety Systems, Inc., IL [M]
William A. Gregg, IV, Precision Valve Corp., SC [M]
Rep. Chemical Specialties Mfrs. Assn.
Richard J. Hild, Verlan Fire Insurance Co., MD [I]
Edmund M. Kelly, Chubb Group of Insurance Co. GA [I]
James Koskan, SUPERVALU, Inc., MN [U]
Thomas J. Kramer, Schirmer Engr Corp., IL [SE]
John A. LeBlanc, Factory Mutual Research Corp., MA [I]
Michael J. Nappi, Potomac Electric Power Co., DC [U]
Rep. Edison Electric Inst.
Donald E. Rowson, Industrial Hydrocarbons, Inc., CA [SE]
Todd E. Schumann, Industrial Risk Insurers, IL [I]
Thomas Siciliano, Jr., Reckitt & Colman, Inc., NJ [M]
Rodney P. Smith, The Kartridg Pak Co., IA [M]
David C. Tabar, The Sherwin-Williams Co., OH [M]
Jack Thacker, Allan Automatic Sprinkler Corp. of Southern
California, CA [IM]
Rep. Nat'l Fire Sprinkler Assn.
William P. Thomas, Jr., Kemper Nat'l Insurance Cos., IL [I]
James W. Tomes, Tomes, VanRickle & Assoc., CA [U]
Rep. The Home Depot
Gene Wolfe, Los Angeles County Fire Dept., CA [E]

Alternates

Efrein Correa, Carter-Wallace, Inc., NJ [M]
(Alt. to D. L. Fredrickson)
John F. Devlin, Schirmer Engr Corp., [SE]
(Alt. to T. J. Kramer)
D. Douglas Fratz, Chemical Specialties Mfg. Assn., DC [M]
(Alt. to W. A. Gregg, IV)
Rick Glenn, Gage-Babcock & Assoc., Inc., IL [SE]
(Alt. to M. J. Madden)

Kenneth E. Isman, Nat'l Fire Sprinkler Assn., NY [I/M]
(Alt. to J. Thacker)
Donald B. Pounder, Grinnell Corp., RI [M]
(Voting Alt. to Grinnel Corp. Rep.)
Douglas Raymond, Sherwin-Williams Co., OH [M]
(Alt. to D. C. Tabar)
Mark Schmid, Tomes, Van Rickle and Assoc., CA [U]
(Alt. to J. W. Tomes)
Thomas K. Terrebonne, Kemper, MO [I]
(Alt. to W. P. Thomas, Jr.)
William A. Thornberg, Industrial Risk Insurers, CT [I]
(Alt. to T. E. Schumann)

Staff Liaison: Gregory E. Harrington

This list represents the membership at the time the Committee was balloted on the text of this edition. Since that time, changes in the membership may have occurred. A key to classifications is found at the back of this document.

Committee Scope: This Committee shall have primary responsibility for documents on safeguarding against the fire and explosion hazards associated with the manufacturing, handling, and storage of aerosol products.

The Report of the Technical Committee on Aerosol Products is presented for adoption.

This Report was prepared by the Technical Committee on Aerosol Products and proposes for adoption amendments to NFPA 30B-1994, Code for the Manufacture and Storage of Aerosol Products. NFPA 30B-1994 is published in Volume 2 of the 1997 National Fire Codes and in separate pamphlet form.

This Report has been submitted to letter ballot of the Technical Committee on Aerosol Products which consists of 21 voting members. The results of the balloting, after circulation of any negative votes, can be found in the report.

(Log #6)

30B- 1 - (1-1.4): Accept in Principle

SUBMITTER: Robert P. Pauline, CSMA

RECOMMENDATION: Add new text as follows:

1-1.4 This code shall not apply to aerosol products once in the hands of the consumer, which are emptied by usual means and are meant for recycling.

SUBSTANTIATION: Recycling is the proven and preferred method of disposing of empty aerosol containers. Accepting aerosol cans into the recycling stream is beneficial to the environment and the economy. Recycling conserves energy and resources while important to producing high grade steel and aluminum. Empty aerosol containers should be treated like other metal cans in recycling programs. Occasional full or partially full aerosols may enter the recycling stream, but do not present a problem.

COMMITTEE ACTION: Accept in Principle.

Add new text as follows:

1-1.4 This code shall not apply to post-consumer processing of aerosol containers.

COMMITTEE STATEMENT: The revised text should clarify the submitter's intent.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

(Log #1)

30B- 2 - (1-6 Chemical Heat of Combustion (Hc), Combustion Efficiency, Theoretical Heat of Combustion, Table A-1-7): Accept in Principle

SUBMITTER: Dave Frederickson, S.C. Johnson & Son, Inc.

RECOMMENDATION: 1. Add the following definitions to Section 1-6.

Chemical Heat of Combustion (Hc). The amount of heat released, in kJ/g, when a substance is oxidized to yield stable end products, including water as a vapor, as measured under actual fire conditions in a normal ambient (air) atmosphere.

Combustion Efficiency. The ratio of chemical heat of combustion to theoretical heat of combustion.

Theoretical Heat of Combustion. The amount of heat released, in kJ/g, when a substance is completely oxidized to yield stable end products, including water as a vapor, as measured using an oxygen bomb calorimeter. Alternatively, the theoretical heat of combustion can be calculated from heat of formation data or heat of combustion data, as reported in the literature and assuming all products are in the vapor state.

2. Replace Table A-1-7 with that shown on page 7 and 8:

3. Revise the footnotes to Table A-1-7 to read as follows:

(a) Materials that either have a flash point greater than 500°F (260°C), when tested in accordance with ASTM D92, Test Method for Flash and Fire Points by Cleveland Open Cup, or are combustible solids. Such materials contribute very little to the overall fire hazard of aerosol products in an actual fire, due to incomplete combustion or inconsistent burning behavior (i.e., the majority of the released material does not burn). Such materials are considered to be "noncontributory" to the overall determination of the product's level of classification. They can be ignored or they can be assigned a chemical heat of combustion (ΔHc) of 0 kJ/g.

1 Chemical Abstracts Service Registration Number.

2 The theoretical heats of combustion and combustion efficiencies used to determine the chemical heats of combustion listed in this table are contained in the supporting documentation on file at NFPA.

4. Change Example 3 following Table A-1-7 as follows:

- Replace "Pigments, etc." with "Pigments (Titanium Dioxide), etc."

- Change the data for "Pigments" in the last two columns from "43.7 kJ/g" and "4.4 kJ/g" to "0 kJ/g," in both places.

- Change total from "35.3 kJ/g" to "30.9 kJ/g."
- Remove the qualifying sentence under the example as it is no longer necessary.

5. Add a new Table A-1-7(a) Cross Reference - CAS Number to Chemical Name as follows:

Table A-1-7(a)

| Chemical Name | CAS Number ¹ |
|---|-------------------------|
| Piperonyl Butoxide | 51-03-6 |
| Propylene Glycol | 57-55-6 |
| Ethanol | 64-17-15 |
| Ethanol (95.6% Azeotrope) | 64-17-15 |
| Methanol | 67-56-1 |
| Isopropyl Alcohol | 67-63-0 |
| Acetone | 67-64-1 |
| 1,1,1-Trichloroethane | 71-55-6 |
| Propane | 74-98-6 |
| Methylene Chloride | 75-09-2 |
| 2-Methylpropane (Isobutane) | 75-28-5 |
| 1,1-Difluoroethane (HCFC 152a) | 75-37-6 |
| 1-Chloro-1,1-Difluoroethane (HCFC 142b) | 75-68-3 |
| Isobutyl Alcohol | 78-83-1 |
| sec-Butyl Alcohol | 78-92-2 |
| Methyl Ethyl Ketone | 78-93-3 |
| Trichloroethylene | 79-01-6 |
| Butyl Benzyl Phthalate | 85-68-7 |
| Benzidine (Yellow) | 92-87-5 |
| 1,2,4-Trimethylbenzene (Pseudocumene) | 95-63-6 |
| Ethylbenzene | 100-41-4 |
| Triacetin | 102-76-1 |
| Butane | 106-97-8 |
| Ethylene Glycol | 107-21-1 |
| Hexylene Glycol | 107-41-5 |
| Isopropyl Acetate | 108-21-4 |
| 1-Methoxy-2-Propanol Acetate | 108-65-6 |
| Toluene | 108-88-3 |
| Pentane | 109-66-0 |
| Isopropyl Myristate | 110-27-0 |
| Methyl n-Amyl Ketone | 110-43-0 |
| n-Hexane | 110-54-3 |
| 1,2-Dimethoxyethane | 110-71-4 |
| 2-Ethoxyethanol | 110-80-5 |
| 2-Ethoxyethyl Acetate | 111-15-9 |
| Ethylene Glycol Diacetate | 111-55-7 |
| 2-Butoxyethanol | 111-76-2 |
| Diethylene Glycol Methyl Ether | 112-34-5 |
| n-Octyl Bicycloheptane Dicarboximide | 113-48-4 |
| Dimethyl Ether | 115-10-6 |
| Diacetone Alcohol | 123-42-2 |
| n-Butyl Acetate | 123-86-4 |
| Carbon Dioxide | 124-38-9 |
| Perchloroethylene (Tetrachloroethylene) | 127-18-4 |
| N,N-Diethyl-m-Toluamide (Deet) | 134-62-3 |
| n-Heptane | 142-82-5 |
| Isopropyl Palmitate | 142-91-6 |
| Phthalocyanine Blue | 147-14-8 |
| Methyl Isopropyl Ketone | 563-80-4 |
| Ethyl 3-Ethoxypropionate | 763-69-9 |
| Chromium Hydroxide | 1308-14-1 |
| Iron Oxide | 1309-37-1 |
| Zinc Oxide | 1314-13-2 |
| Calcium Carbonate | 1317-65-3 |
| Phthalocyanine Green | 1328-53-6 |
| Xylene | 1330-20-7 |
| Kaolin Clay (Aluminum Silicate Hydroxide) | 1332-58-7 |
| Carbon Black | 1333-86-4 |
| Sorbitan Monolaurate | 1338-39-2 |
| 1,1-Dichloro-1-Fluoroethane | 1717-00-6 |
| d-Limonene | 5989-27-5 |
| Aluminum | 7429-90-5 |
| Silica, Amorphous Hydrated | 7631-86-9 |
| Nitrogen | 7727-37-9 |
| Barium Sulfate | 7727-43-7 |
| Water | 7732-18-5 |
| Graphite | 7782-42-5 |
| Corn Oil | 8001-30-7 |

NFPA 30B — A98 ROP

| | |
|---|------------|
| Paraffin (Wax) | 8002-74-2 |
| Kerosene | 8008-20-6 |
| Mineral Oil | 8012-95-1 |
| Naphtha (Petroleum Distillate) | 8030-30-6 |
| Naphtha (High Flash) | 8052-41-3 |
| Asphalt | 8052-42-4 |
| Polyoxyethylene (20) Sorbitan Monolaurate | 9005-64-5 |
| Polyoxyethylene Sorbitan Oleate | 9005-65-6 |
| Mica (Mica Silicate) | 12001-26-2 |
| Titanium Dioxide | 13463-67-7 |
| Magnesium Silicate (Talc) | 14807-96-6 |
| Tin Oxide (Stannic Oxide) | 18252-10-5 |
| Styrene Butadiene Rubber | 25038-32-8 |
| Sorbitan Monopalmitate | 26266-57-9 |
| Dipropylene Glycol Methyl Ether | 34590-94-8 |
| Silicone Oil | 63148-58-3 |
| Silicone Oil | 63148-62-9 |
| Petroleum Distillate | 64741-65-7 |
| Mineral Spirits (Petroleum Distillate) | 64742-47-8 |
| Naphtha, VM&P (Petroleum Distillate) | 64742-48-9 |
| Mineral Spirits (Petroleum Distillate) | 64742-88-7 |
| Naphtha, VM&P (Petroleum Distillate) | 64742-94-5 |
| Naphtha, VM &P (Petroleum Distillate) | 64742-95-6 |

SUBSTANTIATION: As noted in the 1994 Annual Meeting TCR, new test data has shown that the overall fire hazard of an aerosol product is a function of the chemical heat of combustion of all constituents in the can.

The chemical heat of combustion was available on only a limited number of materials at the time the TCR was issued and when the Technical Committee on Aerosol Products met to discuss the public comments. Some aerosol formulators felt that it was critical to them and to many of the smaller formulators that additional data be made available with NFPA 30B when it is issued this summer.

NOTE: Supporting material is available for review at NFPA Headquarters.

COMMITTEE ACTION: Accept in Principle.

Do that which the submitter proposes with the following corrections:

1. In Table A-1-7, Line 20, 1,1-Difluoroethane, correct "HCFC 152a" to read "HFC 152a".
2. In Table A-1-7, retain existing heading from NFPA 30B-1994 to read "Chemical Heat of Combustion for Representative Materials".
3. In Table A-1-7(a), Line 12, 1,1-Difluoroethane, correct "HCFC 152a" to read "HFC 152a".
4. In Table A-1-7(a), retain existing heading from NFPA 30B-1994 to read "Cross-Reference Table - Chemical Abstract Services (CAS) Numbers for Representative Materials in Table A-1-7".
5. In Table A-1-7(a), reverse order of presentation so CAS numbers are in left-hand column.

COMMITTEE STATEMENT: Acceptance of this proposal formally incorporates into NFPA 30B, Tentative Interim Amendment No. 94-1 to the 1994 edition of NFPA 30B. The five changes described in the Committee Action are editorial corrections.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

Table A-1-7

| Chemical Name | CAS Number ¹ | Chemical Heat of Combustion ² ΔH _c , kJ/g |
|---|-------------------------|---|
| Acetone | 67-64-1 | 27.7 |
| Acrylic Resin | - | a |
| Alkyd Resin | - | a |
| Aluminum | 7429-90-5 | a |
| Asphalt | 8052-42-4 | 22.7 |
| Barium Sulfate | 7727-43-7 | 0.0 |
| Benzidine (Yellow) | 92-87-5 | a |
| Butane | 106-97-8 | 43.3 |
| 2-Butoxyethanol | 111-76-2 | 29.6 |
| Butyl Benzyl Phthalate | 85-68-7 | 31.5 |
| Calcium Carbonate | 1317-65-3 | 0.0 |
| Carbon Black | 1333-86-4 | a |
| Carbon Dioxide | 124-38-9 | 0.0 |
| 1-Chloro-1,1-Difluoroethane (HCFC 142b) | 75-68-3 | 3.3 |
| Chromium Hydroxide | 1308-14-1 | 0.0 |
| Corn Oil | 8001-30-7 | 35.3 |
| Diacetone Alcohol | 123-42-2 | 35.1 |
| 1,1-Dichloro-1-Fluoroethane | 1717-00-6 | 2.9 |
| Diethylene Glycol Methyl Ether | 112-34-5 | 33.0 |
| 1,1-Difluoroethane (HCFC 152a) | 75-37-6 | 6.3 |
| 1,2-Dimethoxyethane | 110-71-4 | 25.9 |
| Dimethyl Ether | 115-10-6 | 26.5 |
| Dipropylene Glycol Methyl Ether | 34590-94-8 | 32.2 |
| Ethanol | 64-17-15 | 24.7 |
| Ethanol (95.6% Azeotrope) | 64-17-15 | 23.6 |
| 2-Ethoxyethanol | 110-80-5 | 25.9 |
| 2-Ethoxyethyl Acetate | 111-15-9 | 30.9 |
| Ethyl 3-Ethoxypropionate | 763-69-9 | 32.0 |
| Ethylbenzene | 100-41-4 | 29.0 |
| Ethylene Glycol | 107-21-1 | 16.4 |
| Ethylene Glycol Diacetate | 111-55-7 | 32.0 |
| Graphite | 7782-42-5 | a |
| Hexylene Glycol | 107-41-5 | 28.5 |
| Iron Oxide | 1309-37-1 | 0.0 |
| Isobutane, See 2-Methylpropane | - | |
| Isobutyl Alcohol | 78-83-1 | 29.8 |
| Isopropyl Acetate | 108-21-4 | 25.5 |

NFPA 30B — A98 ROP

| | | |
|---|------------|------|
| Isopropyl Alcohol | 67-63-0 | 27.4 |
| Isopropyl Myristate | 110-27-0 | 36.2 |
| Isopropyl Palmitate | 142-91-6 | 37.2 |
| Kaolin Clay (Aluminum Silicate Hydroxide) | 1332-58-7 | 0.0 |
| Kerosene | 8008-20-6 | 41.4 |
| d-Limonene | 5989-27-5 | 39.8 |
| Liquids, Noncombustible/Nonflammable | - | 0.0 |
| Liquids, Noncontributory | - | a |
| Magnesium Silicate (Talc) | 14807-96-6 | 0.0 |
| Methanol | 67-56-1 | 19.0 |
| 1-Methoxy-2-Propanol Acetate | 108-65-6 | 30.9 |
| Methyl Ethyl Ketone | 78-93-3 | 30.6 |
| Methyl Isopropyl Ketone | 563-80-4 | 31.1 |
| Methyl n-Amyl Ketone | 110-43-0 | 35.0 |
| Methylene Chloride | 75-09-2 | 2.1 |
| 2-Methylpropane (Isobutane) | 75-28-5 | 42.8 |
| Mica (Mica Silicate) | 12001-26-2 | 0.0 |
| Mineral Oil | 8012-95-1 | 31.5 |
| Mineral Spirits (Petroleum Distillate) | 64742-47-8 | 41.2 |
| Mineral Spirits (Petroleum Distillate) | 64742-88-7 | 41.2 |
| N,N-Diethyl-m-Toluamide (Deet) | 134-62-3 | 28.2 |
| n-Butyl Acetate | 123-86-4 | 27.6 |
| n-Heptane | 142-82-5 | 41.0 |
| n-Hexane | 110-54-3 | 41.1 |
| n-Octyl Bicycloheptane Dicarboximide | 113-48-4 | 30.0 |
| Naphtha (High Flash) | 8052-41-3 | 41.2 |
| Naphtha (Petroleum Distillate) | 8030-30-6 | 41.2 |
| Naphtha, VM & P (Petroleum Distillate) | 64742-95-6 | 41.2 |
| Naphtha, VM&P (Petroleum Distillate) | 64742-48-9 | 41.2 |
| Naphtha, VM&P (Petroleum Distillate) | 64742-94-5 | 41.2 |
| Nitrogen | 7727-37-9 | 0.0 |
| Paraffin (Wax) | 8002-74-2 | a |
| Pentane | 109-66-0 | 41.9 |
| Perchloroethylene (Tetrachloroethylene) | 127-18-4 | a |
| Petroleum Distillate | 64741-65-7 | 41.2 |
| Phthalocyanine Blue | 147-14-8 | a |
| Phthalocyanine Green | 1328-53-6 | a |
| Piperonyl Butoxide | 51-03-6 | 32.0 |
| Polyoxyethylene Sorbitan Oleate | 9005-65-6 | a |
| Polyoxyethylene (20) Sorbitan Monolaurate | 9005-64-5 | a |
| Propane | 74-98-6 | 44.0 |
| Propylene Glycol | 57-55-6 | 20.5 |
| sec-Butyl Alcohol | 78-92-2 | 39.9 |
| Silica (Crystalline) | - | 0.0 |
| Silica, Amorphous Hydrated | 7631-86-9 | 0.0 |
| Silicone Oil | 63148-58-3 | a |
| Silicone Oil | 63148-62-9 | a |
| Solids, Noncombustible/Nonflammable | - | 0.0 |
| Solids, Noncontributory | - | a |
| Sorbitan Monolaurate | 1338-39-2 | 37.9 |
| Sorbitan Monopalmitate | 26266-57-9 | 37.9 |
| Styrene Butadiene Rubber | 25038-32-8 | a |
| Tin Oxide (Stannic Oxide) | 18252-10-5 | 0.0 |
| Titanium Dioxide | 13463-67-7 | 0.0 |
| Toluene | 108-88-3 | 28.4 |
| Triacetin | 102-76-1 | 35.4 |
| 1,1,1-Trichloroethane | 71-55-6 | a |
| Trichloroethylene | 79-01-6 | a |
| 1,2,4-Trimethylbenzene (Pseudocumene) | 95-63-6 | 27.5 |
| Water | 7732-18-5 | 0.0 |
| Xylene | 1330-20-7 | 27.4 |
| Zinc Oxide | 1314-13-2 | 0.0 |

(Log #CP1)

(Log #19)

30B- 3 - (1-6 Face Sprinkler and Horizontal Barrier New): Accept

SUBMITTER: Technical Committee on Aerosol Products
RECOMMENDATION: Add definitions for Face Sprinkler and Horizontal Barrier. NFPA 231C wording can be used.

Definitions will read as follows:

Face Sprinklers. Standard sprinklers located in transverse flue spaces along the aisle or in the rack, within 18 in. (0.46 m) of the aisle face of storage and used to oppose vertical development of fire on the external face of storage.

Horizontal Barrier. A solid barrier in the horizontal position covering the entire rack, including all flue spaces at certain height increments, to prevent vertical fire spread.

SUBSTANTIATION: These items are required for proper protection in some cases yet are not defined. The new definitions correlate with NFPA 231C.

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

(Log #CP47)

30B- 4 - (1-6 Fire Area): Accept

SUBMITTER: Technical Committee on Aerosol Products

RECOMMENDATION: Revise definition of Fire Area as follows:

Fire Area. An area of a building separated from the remainder of the building by construction having a fire resistance rating of at least 1 hr and having all communicating openings properly protected by an assembly having a fire protection rating of at least 1 hr 45 min.

SUBSTANTIATION: The proposed revision is required to correlate with the Committee Action on Proposal 30B-39 (Log #CP43) (new Table 4-5).

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

(Log #CP42)

30B- 5 - (1-6 Net Weight (new)): Accept

SUBMITTER: Technical Committee on Aerosol Products

RECOMMENDATION: Add the following definition and appendix note:

Net Weight.* Total weight of base product and propellant as indicated on aerosol container label.

A-1-6 Net Weight. Label weight should always be used for calculation of total net weight. When dealing with limited quantities of aerosols, the total net weight is the sum of the individual container net weights.

For example, if a small retail display area contains 100 7 oz containers, 140 10 oz containers, and 180 16 oz containers, the total net weight is calculated as follows:

$\{100 \text{ cans X } (7 \text{ oz/can}) / (16 \text{ oz/lb})\} + \{140 \text{ cans X } (10 \text{ oz/can}) / (16 \text{ oz/lb})\} + \{180 \text{ cans X } (16 \text{ oz/can}) / (16 \text{ oz/lb})\} = 43.75 \text{ lb} + 87.5 \text{ lb} + 180 \text{ lb} = 311 \text{ lb}$

When dealing with larger quantities of product, the number of cases per pallet and the number of units per case also enters into the calculation.

For example, if a general purpose warehouse contains 20 pallets of a product with a label weight of 12 oz, and there are 12 units per case, and 75 cases per pallet, the total net weight calculation is as follows:

$(12 \text{ oz/unit}) / (16 \text{ oz/lb}) \text{ X } (12 \text{ units/case}) \text{ X } (75 \text{ cases/pallet}) \text{ X } (20 \text{ pallets}) = 13500 \text{ lb.}$

SUBSTANTIATION: Provides a definition for the term "net weight" that is used throughout the code to clarify the committee's intent.

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

30B- 6 - (1-6 Theoretical Heat of Combustion): Accept in Principle

SUBMITTER: David C. Tabar, The Sherwin-Williams Co.

RECOMMENDATION: Theoretical Heat of Combustion. The amount of heat released, in kJ/g, when a substance is completely oxidized to yield stable end products, including water as a vapor, as measured using an oxygen bomb calorimeter. Alternatively, the theoretical heat of combustion can be calculated from heat of formation data or heat of combustion data, as reported in the literature and assuming all products are in the vapor state, or other accepted means of calculation.

SUBSTANTIATION: Clarification is needed to ensure that heat of combustion may be calculated by accepted methods involving molecular evaluation.

COMMITTEE ACTION: Accept in Principle.

Revise definition:

Theoretical Heat of Combustion. The amount of heat released, in kJ/g, when a substance is completely oxidized to yield stable end products, including water as a vapor, as measured using an oxygen bomb calorimeter. Alternatively, the theoretical heat of combustion can be calculated from heat of formation data, heat of combustion data, or molecular calculation data as reported in the literature and assuming all products are in the vapor state.

COMMITTEE STATEMENT: Editorial changes to recommendation made for clarity.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

COMMENT ON AFFIRMATIVE:

SCHUMANN: A definition of Theoretical Heat of Combustion was accepted in both 30B-2 and 50B-6 but they are slightly different. The definition in 30B-6 should be used.

(Log #7)

30B- 7 - (1-7): Accept

SUBMITTER: Robert P. Pauline, Chemical Specialties Mfrs. Assn.

RECOMMENDATION: Revise as follows:

1-7* Classification of Aerosol Products. Aerosol products manufactured after September 1, 1994, shall be classified by means of the calculation of their chemical or theoretical heats of combustion and shall be designated Level 1, Level 2, or Level 3 in accordance with the definitions given in 1-7.1 through 1-7.3 and in Table 1-7.

SUBSTANTIATION: Theoretical heat of combustion is more conservative and was intended to be permitted. Therefore, clarification is needed.

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

(Log #18)

30B- 8 - (1-7): Accept

SUBMITTER: David C. Tabar, The Sherwin-Williams Co.

RECOMMENDATION: Revise text as follows:

1-7* Classification of Aerosol Products. Aerosol products manufactured after September 1, 1994, shall be classified by means of the calculation of their chemical or theoretical heats of combustion and shall be designated Level 1, Level 2, or Level 3 in accordance with the definitions given in 1-7.1 through 1-7.3 and in Table 1-7.

SUBSTANTIATION: Theoretical heat of combustion is more conservative and was intended to be permitted. Therefore, clarification is needed.

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

NFPA 30B — A98 ROP

(Log #2)

30B- 9 - (2-1): Reject

Note: This Proposal appeared as Comment 30B-5 which was held from the Annual 94 TCD on Proposal 30B-5.

SUBMITTER: Richard G. Gewain, Hughes Associates Inc./CSMA
RECOMMENDATION: Revise the wording as follows:

2-1 Site Requirements. Distances between buildings . . . built upon shall be ~~based on sound engineering principles in accordance with regulations adopted by the Authority Having Jurisdiction.~~

SUBSTANTIATION: This change is consistent with the intent of proposal 30B-5 to eliminate unclear or permissive language in the standard so it can be adopted by reference in the building and fire prevention codes and enforced as law, rather than rewrite 30B into the codes. Communities using NFPA 30B to regulate the design, construction and maintenance of aerosol storage, display or manufacturing also have zoning laws and codes which further regulate land usage. This proposed wording gives the enforcing official and the designer specific guidelines.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: The language of the current text is performance-based and is intended to apply even when no other code is in effect.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

(Log #CP10)

30B- 10 - (2-7.2): Accept

SUBMITTER: Technical Committee on Aerosol Products

RECOMMENDATION: Delete 2-7.2.

SUBSTANTIATION: The Committee believes this language is not necessary because NFPA 72 adequately addresses the location of manual fire alarm boxes.

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

(Log #CP17)

30B- 11 - (3-4.5): Accept

SUBMITTER: Technical Committee on Aerosol Products

RECOMMENDATION: In 3-4.5 delete parenthetical reference to NFPA 68. Also, add a new 3-4.5.1 as follows and renumber the existing 3-4.5.1 as 3-4.5.2:

3-4.5.1 Deflagration venting shall be designed at a ratio of not less than 1 sq ft (0.09 sq m) of vent area for 30 cu ft (0.85 cu m) of room volume.

(See NFPA 68, Guide for Venting of Deflagrations, for additional information on the design and sizing of vents and vent closures.)

SUBSTANTIATION: The proposed language incorporates a minimum industry standard for deflagration venting into the body of the code.

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

COMMENT ON AFFIRMATIVE:

SCHUMANN: Proposal was to delete the parenthetical reference and the same parenthetical reference follows the new 3-4.5.1. This is believed to be an error.

(Log #20)

30B- 12 - (3-4.5 Exception): Reject

SUBMITTER: John A. LeBlanc, FMRC

RECOMMENDATION: Delete text as follows:

3-4.5 Deflagration venting shall be provided for the following areas:

- Flammable propellant charging rooms;
- Flammable propellant pump rooms;
- Areas in which Class IA liquids or unstable liquids are handled.

~~Exception: In existing rooms where the required deflagration venting cannot be installed, an explosion suppression system that meets the requirements of NFPA 69, Standard on Explosion Prevention Systems, shall be installed.~~

SUBSTANTIATION: Testing conducted at FMRC has shown that explosion suppression systems will not control/suppress an explosion involving a turbulent LPG-gas-air mixtures that fills a volume similar to an aerosol filling room. All aerosol filling rooms using liquefied hydrocarbon gas as a propellant have the potential of filling an entire room with a flammable gas-air mixture resulting in a severe explosion. Deflagration venting is required for aerosol filling rooms to control this potential event. Existing explosion suppression systems will not provide an equivalent level of control or protection. Explosion suppression systems may provide adequate protection against partial volume explosions created by a small gas release. Full deflagration venting may not be needed for this type of event.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: The Committee believes the current exception offers a degree of protection in some existing facilities that otherwise may not be provided.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 16

NEGATIVE: 2

ABSTENTION: 1

NOT RETURNED: 2 Thomas, Wolfe

EXPLANATION OF NEGATIVE:

SCHUMANN: I agree with the substantiation of the submitter.

TABAR: Deflagration suppression systems required by NFPA 30B in flammable propellant charging rooms are not proven as an equivalent building safety feature to deflagration vent panels which accompany damage-limiting construction.

EXPLANATION OF ABSTENTION:

LeBLANC: As written in the current text, an end user can easily assume an equivalent level of protection is provided by either explosion venting or explosion suppression systems. This is an incorrect belief. A clear statement describing the limitations of explosion suppression is needed.

(Log #CP21)

30B- 13 - (3-4.5 Exception): Accept

SUBMITTER: Technical Committee on Aerosol Products

RECOMMENDATION: Revise 3-4.5 Exception as follows:

Exception: In existing facilities where the required deflagration venting cannot be installed, ~~an explosion deflagration~~ suppression system ... (Balance to remain unchanged.)

SUBSTANTIATION: This change is necessary to remain consistent with the terminology used in NFPA 69 which changed "Explosion Suppression" to "Deflagration Suppression" in Chapter 4 prior to the publishing of the 1992 edition.

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

(Log #CP36)

30B- 14 - (3-9.2 Exception): Accept

SUBMITTER: Technical Committee on Aerosol Products

RECOMMENDATION: Revise as follows:

Exception: Storage of up to 2500 lb (1135 kg) ~~net weight~~ of Level 2 or Level 3 aerosol products per production line ... (Balance to remain unchanged.)

SUBSTANTIATION: Clarifies the committee's intent.

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

NFPA 30B — A98 ROP

(Log #CP2)

30B- 15 - (3-10.1): Accept
SUBMITTER: Technical Committee on Aerosol Products
RECOMMENDATION: Add the following publication to the existing list:
NFPA 2001, Standard on Clean Agent Fire Extinguishing Systems.
SUBSTANTIATION: This standard covers agent replacements for halon 1301 and 1211. The standard did not exist when the 1994 edition of NFPA 30B was prepared. It should be included at this time.
COMMITTEE ACTION: Accept.
NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:
 AFFIRMATIVE: 19
 NOT RETURNED: 2 Thomas, Wolfe

SUBSTANTIATION: Dual band "infrared" is equally acceptable to the "ultraviolet" light example, and offers a high degree of system reliability.
COMMITTEE ACTION: Accept in Principle.
 Revise text as follows:
 3-12.2 Where installed, an engineered explosion suppression system shall meet the requirements of NFPA 69, Standard on Explosion Prevention Systems, and shall use approved radiant energy detectors that respond to radiant energy or ultraviolet light.
COMMITTEE STATEMENT: Wording clarified so as to not exclude approved detection devices. The committee action should meet the submitter's intent.
NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:
 AFFIRMATIVE: 19
 NOT RETURNED: 2 Thomas, Wolfe

(Log #CP22)

30B- 16 - (3-12): Accept
SUBMITTER: Technical Committee on Aerosol Products
RECOMMENDATION: Revise 3-12, 3-12.1, and 3-12.2 as follows:
 3-12 Explosion Deflagration Suppression Systems.
 3-12.1 An explosion deflagration suppression system meeting the requirements... (Balance to remain unchanged.)
 3-12.2 Where installed, an engineered explosion deflagration suppression system shall meet... (Balance to remain unchanged.)
SUBSTANTIATION: This change is necessary to remain consistent with the terminology used in NFPA 69 which changed "Explosion Suppression" to "Deflagration Suppression" in Chapter 4 prior to the publishing of the 1992 edition.
COMMITTEE ACTION: Accept.
NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:
 AFFIRMATIVE: 19
 NOT RETURNED: 2 Thomas, Wolfe

30B- 19 - (Table 3-13): Accept in Principle
SUBMITTER: Robert P. Pauline, Chemical Specialties Mfrs. Assn.
RECOMMENDATION: Revise Table 3-13 as follows:

Table 3-13 Equipment Interlocks

| Condition | Automatic Action |
|--|---|
| Detection of 20 percent of the lower explosive limit. | Alarm activates. General ventilation flow rate increases to that required by 3-5.2(e). |
| Detection of 40 percent of the lower explosive limit. | Audible alarm activates. Main propellant line shuts down. All equipment in propellant charging room shuts down. Vacuum pump(s) used in conjunction with aerosol can filling shuts down. |
| <u>In the event of loss of ventilation, explosion suppression, or a power failure</u> | <u>The propellant trapped within the piping inside the gas house is vented in a controlled and safe manner to a safe location.</u> |
| Actuation of protective systems within the propellant charging room or product fill area | Automatic shut-down of entire propellant charging line. |

SUBSTANTIATION: In the event of loss of ventilation, explosion suppression, or a power failure, this removes all gas from the gassing room and terminates any potential leaks.
COMMITTEE ACTION: Accept in Principle.
 See the committee action on Proposal 30B-20 (Log #13).
COMMITTEE STATEMENT: The committee action more clearly reflects its intent for equipment interlocks in table format. The committee action should meet the submitter's intent.
NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:
 AFFIRMATIVE: 19
 NOT RETURNED: 2 Thomas, Wolfe

(Log #CP6)

30B- 17 - (3-12.1): Accept
SUBMITTER: Technical Committee on Aerosol Products
RECOMMENDATION: Revise as follows:
 3-12.1 An explosion suppression system meeting the requirements of NFPA 69, Standard on Explosion Prevention Systems, shall be installed in flammable propellant charging rooms and pump rooms.
SUBSTANTIATION: Exposures in aerosol pump rooms are similar to those in aerosol gas houses involving flammable compressed gas and corresponding flammable vapors.
COMMITTEE ACTION: Accept.
NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:
 AFFIRMATIVE: 18
 NEGATIVE: 1
 NOT RETURNED: 2 Thomas, Wolfe
EXPLANATION OF NEGATIVE:
 HILD: I do not feel that explosion suppression systems should be required for pump rooms.
COMMENT ON AFFIRMATIVE:
 TABAR: Sentence should read as follows:
 "A deflagration system meeting the requirements of NFPA 69, Standard on Explosion Prevention Systems, shall be installed in flammable propellant charging and pump rooms. The proposed language, "flammable propellant charging and pump rooms" does not clarify that flammable propellant pump rooms (not liquid and other "pump rooms") are at issue.

(Log #17)

30B- 18 - (3-12.2): Accept in Principle
SUBMITTER: David C. Tabar, The Sherwin-Williams Co.
RECOMMENDATION: Revise text as follows:
 3-12.2 Where installed, an engineered explosion suppression system shall meet the requirements of NFPA 69, Standard on Explosion Prevention Systems, and shall use detectors that respond to radiant energy, infrared or ultraviolet light.

30B- 20 - (Table 3-13): Accept in Principle
SUBMITTER: Robert P. Pauline, Chemical Specialties Mfrs. Assn.
RECOMMENDATION: Revise Table 3-13 as shown on the next page:

(Log #13)

NFPA 30B — A98 ROP

Table 3-13 Equipment Interlocks

| Condition | Automatic Action |
|--|---|
| Detection of 20 percent of the lower explosive limit. | Alarm activates. General ventilation flow rate increases to that required by 3-5.2(e). |
| Detection of 40 percent of the lower explosive limit. | Audible alarm activates. Main propellant line shuts down. All equipment in propellant charging room shuts down <u>(exception: high ventilation flow rate may be maintained when water explosion suppression systems are utilized)</u> . Vacuum pump(s) used in conjunction with aerosol can filling shuts down. |
| Actuation of protective systems within the propellant charging room or product fill area | Automatic shut-down of entire propellant charging line. |

SUBSTANTIATION: Necessary clarifications when "water" is used as agent.

COMMITTEE ACTION: Accept in Principle.

Replace Table 3-13 Equipment Interlocks with the following:

COMMITTEE STATEMENT: The Committee Action more clearly reflects its intent for equipment interlocks in table format. The committee action should meet the submitter's intent.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

COMMENT ON AFFIRMATIVE:

SCHUMANN: Regarding the committee's revised Table 3-13:

1. In the first five columns under Process/Equipment Response, replace all "X" with "Yes" and put "No" in the blank boxes.

2. The boxes under Standard Ventilation should read, from top to bottom, On, On, Off, On, On, Off, On, Off, On, On.

3. The boxes under Emergency Ventilation should read, from top to bottom, On, On, Off, On, Off, Off, On, Off, Off, On.

(Log #CP18)

30B- 21 - (3-14.3.1): Accept

SUBMITTER: Technical Committee on Aerosol Products

RECOMMENDATION: Revise as follows:

3-14.3.1 The propellant pump and all equipment subject to pressure from the pump shall be suitable for the working pressure of the pump system. Pump discharge pressures shall not be limited provided they do not exceed the working pressure of the system.

SUBSTANTIATION: The added language clarifies the committee's intent. Pump pressure are not permitted to exceed the working pressure of the system.

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

Table 3-13 Equipment Interlocks

| SYSTEM INPUTS | Process/Equipment Response | | | | | | |
|--|----------------------------|--------------------|-----------------------|-------------------------|-------------|----------------------|-----------------------|
| | Propellant Supply Shutdown | Propellant Venting | Aerosol Line Shutdown | Audible & Visual Alarms | Fire Alarms | Standard Ventilation | Emergency Ventilation |
| Gas Detection @ 20% LEL | | | | X | | | ON |
| Gas Detection @ 40% LEL | X | | X | X | | | ON |
| Loss of Ventilation | X | X | X | X | | | |
| Emergency Stop | X | X | X | X | | | ON |
| Deflagration Suppression System Disarm or Trouble | X | X | X | X | | ON | |
| Halon 1301 Deflagration Suppression System Actuation | X | X | X | X | X | OFF | OFF |
| Water Deflagration Suppression System Actuation | X | X | X | X | X | | ON |
| Loss of Power | X | X | X | X | | | |
| Gas Detection System Fault | X | X | X | X | | ON | |
| Automatic Sprinkler Actuation | X | X | X | X | X | | |

NFPA 30B — A98 ROP

(Log #CP46)

30B- 22 - (3-15.3(c)): Accept

SUBMITTER: Technical Committee on Aerosol Products

RECOMMENDATION: Revise as follows:

(c) The container shall be pierced with a ~~nail or~~ non-sparking punch, making as small a puncture as possible.

SUBSTANTIATION: Revised language is intended to prevent an ignition source when puncturing aerosol containers.

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

(Log #CP45)

30B- 23 - (3-15.3(e)): Accept

SUBMITTER: Technical Committee on Aerosol Products

RECOMMENDATION: Revise as follows:

(e) When more than ~~five one~~ containers are ~~is~~ to be evacuated at ~~any one a~~ time, the operation shall be conducted in the propellant charging room, outdoors, or within equipment or facilities specifically designed for this purpose.

SUBSTANTIATION: The revised language is intended to provide guidance to testing laboratories for the safe handling of hydrocarbon vapors.

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

(Log #CP12)

30B- 24 - (Chapter 4): Accept

SUBMITTER: Technical Committee on Aerosol Products

RECOMMENDATION: Revise Chapter 4 as follows:

Chapter 4 Storage in Warehouses and Storage Areas

4-1 Basic Requirements.

4-1.1 All cartons of aerosol products shall be identified on at least one side with the classification of the aerosol products contained therein, in accordance with Section 1-7. Cartons shall be clearly marked as follows:

"Level _____ Aerosols"

4-1.2* Fire retardant cartons shall not be considered an acceptable alternative to the protection requirements of this chapter.

4-2 Storage of Level 1 Aerosol Products.

4-1-4 ~~4-2.1~~ Level 1 aerosol products shall be considered equivalent to Class III commodities, as defined in NFPA 231, Standard for General Storage, and NFPA 231C, Standard for Rack Storage of Materials. In cases where the storage of Level 1 aerosol products is required to be protected, such storage shall be protected in accordance with the requirements set forth in NFPA 231 and NFPA 231C.

4-3 Storage of Level 2 and Level 3 Aerosol Products.

4-3.1 ~~The storage of Level 2 and Level 3 aerosol products shall be in accordance with this section.~~

4-1-4-1 ~~Exception:~~ Level 2 aerosol products in containers whose net weight of flammable contents is less than 1 oz (28 g) shall be considered to be equivalent to Group A plastics, as defined in NFPA 231 and NFPA 231C.

4-2 ~~4-3.2~~ Fire Protection — Basic Requirements.

4-1-3 ~~4-3.2.1~~ Storage of Level 2 and Level 3 aerosol products shall not be permitted in basement areas of warehouses.

Exception: As provided for in Section 4-3.

4-1-5 ~~4-3.2.2~~ Encapsulated storage of Level 2 and Level 3 aerosol products shall not be permitted. Stretch-wrap of aerosol containers in lieu of cartons shall not be permitted. However, stretch-wrapping of cartons of aerosol products shall be permitted.

4-1-6 ~~4-3.2.3~~ Level 2 and 3 aerosol products whose containers are designed to vent at pressures less than 210 psig (1450 kPa) shall not be stored.

4-1-7 ~~4-3.2.4~~ Noncombustible draft curtains shall be installed as follows:

(a) At the interface between the ESFR sprinkler design area and the spray sprinkler design area; and

(b) At the interface between the design areas utilizing ordinary-temperature sprinklers and high-temperature sprinklers.

The draft curtains shall extend for a depth of 6 ft (1.8 m) or 20 percent of the ceiling height, whichever is smaller.

4-1-8 ~~4-3.2.5~~ Storage of mixed commodities within or adjacent to aerosol product storage areas shall meet all applicable requirements of this chapter.

4-1-9 ~~4-3.2.6~~ Storage of idle or empty pallets shall meet all applicable requirements of NFPA 231, Standard for General Storage.

4-2-1 ~~4-3.2.7~~ Where required by this chapter, wet-pipe automatic sprinkler protection shall be provided in accordance with Tables 4-2(a) through 4-2(f). Protection shall be based on the highest level of aerosol product present.

4-2-2 ~~4-3.2.8~~ Control valves for in-rack sprinklers shall be provided in accordance with NFPA 231C, Standard for Rack Storage of Materials.

4-2-3 ~~4-3.2.9~~ Installations of hose connections shall meet the requirements of NFPA 231 or NFPA 231C, whichever is applicable.

Exception: Subject to the approval of the authority having jurisdiction, hose stations need not be installed in storage areas.

4-2-4 ~~4-3.2.10~~ Storage height and clearance requirements between storage and sprinklers shall comply with Tables 4-2(a) through 4-2(f).

4-2-5 ~~4-3.2.11~~ Solid shelving that is installed in racks that contain Level 3 aerosol products shall be protected in accordance with Table 4-2(f). Solid shelving that is installed in racks that contain Level 2 aerosol products and that are protected by spray sprinklers shall also be protected in accordance with Table 4-2(f). Solid shelving shall not be installed in racks that are protected by a ceiling sprinkler system that utilizes ESFR sprinklers.

4-3 ~~4-3.3~~ Limited Quantity Storage in Occupancies Other than Warehouses.

4-3-1 ~~4-3.3.1~~ Storage of Level 2 and Level 3 aerosol products in a single fire area in occupancies other than warehouses or mercantile occupancies, such as assembly, business, educational, industrial, and institutional occupancies, shall be permitted up to the following quantities:

(a) A maximum of 1000 lb (454 kg) net weight of Level 2 aerosol products, or

(b) A maximum of 500 lb (227 kg) of Level 3 aerosol products. In no case shall the combined net weight of Level 2 and Level 3 aerosol products exceed 1000 lb (454 kg).

4-3-1-1 ~~4-3.3.2~~ These quantities shall be permitted to be doubled if the quantities in excess of those stated in 4-3.1 are stored in storage cabinets that meet the requirements of Section 4-3 of NFPA 30, Flammable and Combustible Liquids Code.

4-3-2 ~~4-3.3.3~~ Where Level 2 and Level 3 aerosol products are stored in quantities greater than those allowed by 4-3.1, such quantities shall be stored in a separate inside storage area meeting the requirements of Section 4-7.

4-4 ~~4-3.4~~ Limited Quantity Storage in General Purpose Warehouses.

4-4-1 ~~4-3.4.1~~ Subject to the approval of the authority having jurisdiction, solid pile, palletized, or rack storage of Level 2 and Level 3 aerosol products shall be permitted in a general purpose warehouse that is either unsprinklered or not protected in accordance with this code, up to the following quantities:

(a) A maximum of 2500 lb (1135 kg) net weight of Level 2 aerosol products, or

(b) A maximum of 1000 lb (454 kg) net weight of Level 3 aerosol products.

In no case shall the combined net weight of Level 2 and Level 3 aerosol products exceed 2500 lb (1135 kg).

4-4-2 ~~4-3.4.2~~ Subject to the approval of the authority having jurisdiction, solid pile or palletized storage of Level 2 and Level 3 aerosol products shall be permitted in a general purpose warehouse that is protected throughout by an automatic sprinkler system up to a maximum total quantity of 12,000 lb (5450 kg) combined net weight of Level 2 and Level 3 aerosol products, subject to the following:

(a) The sprinkler system over the aerosol storage area and for a distance of 20 ft (6 m) beyond shall be designed in accordance with Tables 4-2(a) and 4-2(b).

(b) Storage of flammable and combustible liquids shall be separated from the aerosol products storage area by at least 25 ft (8 m).

Such storage shall also meet the requirements of 4-5.2 of NFPA 30, Flammable and Combustible Liquids Code.

~~4.4.3~~ 4.3.4.3 Subject to the approval of the authority having jurisdiction, rack storage of Level 2 and Level 3 aerosol products shall be permitted in a general purpose warehouse that is protected throughout by an automatic sprinkler system up to a maximum total quantity of 24,000 lb (10 900 kg) combined net weight of Level 2 and Level 3 aerosol products, subject to the following:

(a) The sprinkler system in the Level 2 and Level 3 aerosol products storage area shall be designed in accordance with Tables 4-2(c) through 4-2(f). The ceiling sprinkler system design shall extend for 20 ft (6 m) beyond the aerosol products storage area.

(b) Storage of aerosol products shall be separated from storage of flammable and combustible liquids by at least 25 ft (8 m).

Such storage shall also meet the requirements of 4-5.2 of NFPA 30, Flammable and Combustible Liquids Code.

~~4.5~~ 4.3.5 Segregated Aerosol Product Storage Areas in General Purpose Warehouses.

~~4.5.1~~ 4.3.5.1 Segregated storage of Level 2 and Level 3 aerosol products in a general purpose warehouse shall only be in a warehouse that is protected throughout by an automatic sprinkler system that is designed in accordance with NFPA 231, Standard for General Storage, or NFPA 231C, Standard for Rack Storage of Materials, whichever is applicable.

~~4.5.2~~ 4.3.5.2 Solid pile, palletized, or rack storage of Level 2 and Level 3 aerosol products in excess of the maximum quantities given in 4-4.2 and 4-4.3 shall be protected in accordance with the requirements in 4-5.2.1 through 4-5.2.6.

~~4.5.2.1~~ 4.3.5.3 Storage of Level 2 and Level 3 aerosol products shall be in a segregated area separated from the rest of the warehouse by interior walls, chain link fencing, or a separation area, in accordance with the requirements of 4-5.2.1.1 through 4-5.2.1.3.

~~4.5.2.1.1~~ 4.3.5.3.1 Interior walls shall have a fire-resistance rating of 1 or 2 hr and shall be continuous from floor to the underside of the roof deck or ceiling.

(a) For interior walls having a fire-resistance rating of 2 hr, the aggregate floor area utilized for Level 2 and Level 3 aerosol product storage shall not exceed 25 percent of the total floor area of the warehouse, up to a maximum of 40,000 ft² (3660 m²).

(b) For interior walls having a fire-resistance rating of 1 hr, the aggregate floor area utilized for Level 2 and Level 3 aerosol product storage shall not exceed 20 percent of the total floor area of the warehouse, up to a maximum of 30,000 ft² (2745 m²).

~~4.5.2.1.2~~ 4.3.5.3.2 Chain link fencing shall extend from the floor to the underside of the roof deck or ceiling and shall meet the following requirements:

(a) The aggregate area utilized for Level 2 and Level 3 aerosol product storage shall not exceed 20 percent of the total area of the warehouse, up to a maximum of 20,000 ft² (1830 m²).

(b) Fencing shall not be lighter than 9 gauge (2.9 mm) steel wire woven into a maximum 2 in. (50 mm) diamond mesh.

(c) Storage of commodities whose hazard exceeds that of a Class III commodity, as defined by NFPA 231, shall be kept outside of the segregated area and at least 8 ft (2.4 m) from the fence, except as allowed by 4-5.2.6.

(d) The area of the design for the required ceiling sprinkler system shall extend 20 ft (6 m) beyond the segregated area.

(e) A minimum of two personnel exits shall be provided.

(f) All openings in the fencing shall be provided with self-closing or automatic-closing gates or shall be protected with a labyrinth arrangement.

~~4.5.2.1.3~~ 4.3.5.3.3 Subject to the approval of the authority having jurisdiction, a separation area shall extend outwards from the periphery of the segregated aerosol product storage area and shall meet the following requirements:

(a) The aggregate area used for aerosol product storage shall not exceed 15 percent of the total area of the warehouse, up to a maximum of 20,000 ft² (91830 m²).

(b) The limits of the aerosol product storage area shall be clearly marked on the floor.

(c) The separation area shall be a minimum of 25 ft (7.6 m) and shall be maintained clear of all materials that have a commodity classification greater than III, according to NFPA 231, Standard for General Storage.

(d) The area of the design for the required ceiling sprinkler system shall extend 20 ft (6 m) beyond the segregated area.

~~4.5.2.2~~ 4.3.5.4 Sprinkler protection shall be provided for segregated aerosol product storage areas in accordance with Tables 4-1 through 4-6. Protection shall be provided for the highest level of aerosol products present.

~~4.5.2.3~~ 4.3.5.5 Solid pile and palletized storage shall be arranged so that no storage is more than 25 ft (7.6 m) from an aisle. Aisles shall be at least 4 ft (1.2 m) wide.

~~4.5.2.4~~ 4.3.5.6 Rack storage shall be arranged so that a minimum aisle width of 8 ft (2.4 m) is maintained between rows of racks and between racks and adjacent solid pile or palletized storage of Level 2 and Level 3 aerosol products.

Exception: Where protection is provided by ESFR sprinklers, the minimum aisle width shall be 4 ft (1.2 m).

~~4.5.2.5~~ 4.3.5.7 An approved fire alarm system, meeting the requirements of Section 2-7, shall be provided in any general purpose warehouse in which Level 2 and Level 3 aerosol products are stored.

(a) Activation of the fire alarm system shall be by operation of the automatic sprinkler system or by manual pull station.

(b) Activation of the fire alarm system shall cause all fire doors or gates leading to the segregated aerosol product storage area to close automatically.

~~4.5.2.6~~ 4.3.5.8 Storage of flammable and combustible liquids shall be separated from the segregated area by a minimum distance of 25 ft (8 m) or by the segregating wall.

~~4.6~~ 4.3.6 Aerosol Warehouses.

~~4.6.1~~ 4.3.6.1 Storage of Level 2 and Level 3 aerosol products in excess of the amounts permitted in Sections 4-4 and 4-5 shall be located within an aerosol warehouse.

~~4.6.2~~ 4.3.6.2 Aerosol warehouses shall be protected by automatic sprinkler systems in accordance with Tables 4-2(a) through 4-2(f). Protection shall be provided for the highest level of aerosol product present.

Exception: Subject to the approval of the authority having jurisdiction, an unprotected aerosol warehouse shall be located a minimum of 100 ft (30 m) from exposed buildings or adjoining property that can be built upon if there is protection for exposures. Where protection for exposures is not provided, a minimum 200-ft (60-m) distance is required.

~~4.6.3~~ 4.3.6.3 Aerosol warehouses shall be separate, detached buildings or shall be separated from other occupancies by freestanding 4-hr fire walls, with communicating openings protected on each side by automatic closing, listed 3-hr fire doors.

~~4.6.4~~ 4.3.6.4 If the aerosol warehouse building is located more than 10 ft (3 m), but less than 50 ft (15 m), from an important building or line of adjoining property that can be built upon, the exposing wall shall have a fire resistance rating of at least 2 hr with each opening protected with a listed 1 1/2-hr fire door.

~~4.6.5~~ 4.3.6.5 If the aerosol warehouse building is located 10 ft (3 m) or less from an important building or line of adjoining property that can be built upon, the exposing wall shall have a fire resistance rating of 4 hr with each opening protected with a listed 3-hr fire door.

~~4.6.6~~ 4.3.6.6 The total quantity of aerosols within an aerosol warehouse shall not be restricted.

~~4.6.7~~ 4.3.6.7 Combustible commodities, other than flammable and combustible liquids, shall be permitted to be stored in an aerosol product warehouse, provided the warehouse is protected in accordance with Tables 4-2(a) through 4-2(f), whichever is applicable. Flammable and combustible liquids in metal containers of 1 qt (0.9 L) capacity or less shall be permitted to be stored in an aerosol product warehouse, provided the warehouse is protected in accordance with Table 4-2(f).

~~4.6.8~~ 4.3.6.8 Solid pile and palletized storage shall be arranged so that no storage is more than 25 ft (7.6 m) from an aisle. Aisles shall be at least 4 ft (1.2 m) wide.

~~4.6.9~~ 4.3.6.9 Rack storage shall be arranged so that a minimum aisle width of 8 ft (2.4 m) is maintained between rows of racks and between racks and adjacent solid pile or palletized storage of aerosol products.

Exception: Where protection is provided by ESFR sprinklers, the minimum aisle width shall be 4 ft (1.2 m).

~~4.7~~ 4.3.7 Storage of Aerosol Products in Separate Inside Flammable Liquid Storage Areas.

~~4.7.1~~ 4.3.7.1 Storage of aerosol products shall be permitted in separate inside flammable liquid storage areas of 500 ft² (47 m²) or less that meet the requirements of NFPA 30, Flammable and Combustible Liquids Code, up to a maximum quantity of 1000 lb (454 kg) of Level 2 aerosol products or 500 lb (227 kg) of Level 3 aerosol products or 1000 lb (454 kg) of combined Level 2 and Level 3 aerosol products.

~~4.7.2~~ 4.3.7.2 Storage of aerosol products shall be permitted in separate inside flammable liquid storage areas of greater than 500 ft² (47 m²) that meet the requirements of NFPA 30, Flammable and

Combustible Liquids Code, up to a maximum quantity of 2500 lb (1135 kg) of Level 2 aerosol products or 1000 lb (454 kg) of Level 3 aerosol products or 2500 lb (1135 kg) of combined Level 2 and Level 3 aerosol products.

Exception: Storage of Level 2 and Level 3 aerosol products shall be permitted in separate inside storage areas up to a maximum of 5000 lb (2270 kg), if the separate inside storage area is protected by an automatic sprinkler system that is designed in accordance with Tables 4-2(a) through 4-2(f), whichever is applicable.

~~4.8~~ ~~4.3.8~~ Storage of Aerosol Products in Liquid Warehouses (as defined in NFPA 30).

~~4.8.1~~ ~~4.3.8.1~~ Storage of Level 2 and Level 3 aerosol products in a liquid warehouse, as defined in NFPA 30, Flammable and Combustible Liquids Code, shall be within a segregated area.

~~4.8.2~~ ~~4.3.8.2~~ Storage of Level 2 and Level 3 aerosol products shall be in a segregated area that is separated from the rest of the warehouse by either interior walls or chain link fencing in accordance with the requirements of 4.8.2.1 or 4.8.2.2.

Exception: Where aerosol products are stored in an unprotected liquid warehouse, as allowed by 4-4.4 of NFPA 30, the aerosol products are not required to be in a segregated area. Storage configuration shall meet the requirements of 4-6.8 and 4-6.9 of this code.

~~4.8.2.1~~ ~~4.3.8.2.1~~ Interior walls shall have a fire-resistance rating of 1 or 2 hr and shall be continuous from floor to the underside of the roof deck.

(a) For interior walls having a fire-resistance rating of two hours, the aggregate floor area utilized for the storage of Level 2 and Level 3 aerosol products shall not exceed 25 percent of the total floor area of the warehouse, up to a maximum of 40,000 ft² (3700 m²).

(b) For interior walls having a fire resistance of 1 hr, the aggregate floor area utilized for the storage of Level 2 and Level 3 aerosol products shall not exceed 20 percent of the total floor area of the warehouse, up to a maximum of 30,000 ft² (1850 m²).

(c) Spill control or drainage shall be provided to prevent the flow of liquid to within 8 ft (2.4 m) of the segregated area.

~~4.8.2.2~~ ~~4.3.8.2.2~~ Chain link fencing shall extend from the floor to the underside of the roof deck and shall meet the following requirements:

(a) The aggregate floor area utilized for the storage of Level 2 and Level 3 aerosol products shall not exceed 20 percent of the total floor area of the warehouse, up to a maximum of 20,000 ft² (1850 m²).

(b)* Fencing shall be not lighter than 9 gauge (2.9 mm) steel wire woven into a maximum 2 in. (5 cm) diamond mesh.

(c) All storage outside the segregated storage area shall be kept at least 8 ft (2.4 m) from the fence.

(d) Spill control or drainage shall be provided to prevent the flow of liquid to within 8 ft (2.4 m) of the segregated storage area.

(e) The area that extends for 20 ft (6 m) beyond the segregated storage area shall be protected by an automatic sprinkler system designed in accordance with the requirements for storage of aerosol products, as specified by this code, or in accordance with the requirements for liquid storage, as specified in NFPA 30, Flammable and Combustible Liquids Code, whichever is the more restrictive.

(f) All openings in the fencing shall be provided with self-closing or automatic-closing gates or shall be protected with a labyrinth arrangement.

(g) A minimum of two personnel exits shall be provided.

~~4.8.3~~ ~~4.3.8.3~~ Sprinkler protection shall be provided for segregated aerosol product storage areas in accordance with Tables 4-2(a) through 4-2(f). Protection shall be provided for the highest level of aerosol products present.

~~4.8.4~~ ~~4.3.8.4~~ Solid pile and palletized storage shall be arranged so that no storage is more than 25 ft (7.6 m) from an aisle. Aisles shall be at least 4 ft (1.2 m) wide.

~~4.8.5~~ ~~4.3.8.5~~ Rack storage shall be arranged so that a minimum aisle width of 8 ft (2.4 m) is maintained between rows of racks and between racks and adjacent solid pile or palletized storage of aerosol products.

Exception: Where protection is provided by ESFR sprinklers, aisle width shall not be less than 4 ft (1.2 m).

~~4.8.6~~ ~~4.3.8.6~~ Fire doors or gates that lead into the segregated storage area shall be either self-closing or provided with automatic-closing devices that are activated by water flow or by an approved fire detection system.

~~4.9~~ ~~4.3.9~~ Outdoor Storage.

~~4.9.1~~ ~~4.3.9.1~~ Level 2 and 3 aerosol products that are stored outdoors shall be separated from important buildings or structures. (See NFPA 80A, Recommended Practice for Protection of Buildings from Exterior Fire Exposures, for recommended separation).

~~4.9.2~~ ~~4.3.9.2~~ A minimum 50-ft (15-m) separation shall be maintained between Level 2 and Level 3 aerosol products and other combustible yard storage.

~~4.9.3~~ ~~4.3.9.3~~ Temporary storage trailers shall be located a minimum of 50 ft (15 m) from buildings, any property line that can be built upon, and other unprotected or combustible yard storage. A maximum of two such trailers shall be permitted in any one storage group.

~~4.9.4~~ ~~4.3.9.4~~ Storage shall meet all applicable requirements of NFPA 231, Standard for General Storage.

SUBSTANTIATION: This reorganization of Chapter 4 clarifies the committee's intent regarding the storage of Level 1 aerosols. These changes are not intended to modify the technical requirements of the code.

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

COMMENT ON AFFIRMATIVE:

HILD: Since there is only one subsection to 4-2, it should be with 4-2 and not labeled 4-2.1. The NFPA "Manual of Style" states that "subsections should be numbered only when more than one is required."

SCHUMANN: Section 4-3.2.1 has an Exception. There is nothing in the old 4-3 that specifically addressed basement storage unless it was OK as long as it conformed to "4-3 Limited Quantities Storage in Occupancies Other Than Warehouses." If the exception is appropriate, it should give specific comment and direction.

Section 4-3.9.4 directs one to NFPA 231. Section 1-1.3(d) of NFPA 231 brings one back to NFPA 30B. Maybe NFPA 231 Section 1-1.2 Outdoor Storage of a Broad Range of Combustibles should be specifically referenced. It refers the reader to Appendix C.

(Log #8)

30B- 25 - (4-1.4.1): Reject

SUBMITTER: Robert P. Pauline, Chemical Specialties Mfrs. Assn.

RECOMMENDATION: Revise text as follows:

" ... shall (for warehousing purposes only) be considered to be equivalent to group A ... "

SUBSTANTIATION: To clarify that this is only for storage and has no impact on the manufacturing of the product.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: The Committee intends 4-1.4.1 to apply only to storage and not manufacturing, however, the proposed language does not accomplish the submitter's intent.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

(Log #CP13)

30B- 26 - (4-1.4.1): Accept

SUBMITTER: Technical Committee on Aerosol Products

RECOMMENDATION: Revise 4-1.4.1 as follows:

4-1.4.1 Level 2 aerosol products in containers whose net weight of ~~flammable contents~~ is less than 1 oz (28 g) shall be considered to be equivalent to Group A plastics, as defined in NFPA 231 and NFPA 231C.

SUBSTANTIATION: Clarifies committee's intent. This paragraph is intended to apply to aerosol containers with a net weight of less than 1 oz (28 g) containing either flammable or combustible product.

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

NFPA 30B — A98 ROP

(Log #CP14)

30B- 27 - (4-1.4.1): Accept

SUBMITTER: Technical Committee on Aerosol Products

RECOMMENDATION: Revise 4-1.4.1 as follows:

4-1.4.1 Level 2 aerosol products in containers whose net weight of flammable contents is less than 1 oz (28 g) shall be considered to be equivalent to Group A plastics, as defined in NFPA 231 and NFPA 231C. In cases where the storage of such products is required to be protected, such storage shall be in accordance with the requirements set forth in NFPA 13, NFPA 231, and NFPA 231C.

SUBSTANTIATION: This change specifies protection criteria for aerosol products not otherwise regulated by this code.

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

COMMENT ON AFFIRMATIVE:

SCHUMANN: Since 30B-26 was accepted, the words "flammable contents" should be removed from the 30B-27 proposal.

(Log #3)

30B- 28 - (4-1.6): Reject

SUBMITTER: Thomas Siciliano, Reckitt & Colman

RECOMMENDATION: Change pressure designation from 210 psig to 175 psig.

SUBSTANTIATION: The DOT currently allows an exemption for high pressure products with a maximum charge of 150 psig at 75°F.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: The submitter has not provided sufficient technical justification for the proposed change.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

(Log #9)

30B- 29 - (4-1.7): Accept in Principle

SUBMITTER: Robert P. Pauline, Chemical Specialties Mfrs. Assn.

RECOMMENDATION: Revise text as follows:

"The draft curtains shall extend for a depth of 6 ft (1.8 m) or 20 percent of the ceiling height, whichever is smaller 2 ft."

SUBSTANTIATION: Factory Mutual Loss Prevention Standards, FM 8-9, Section 3.3.3.2, which permits 2 ft. draft curtains. Unnecessary long draft curtains risk damage by lift truck operations. Recent changes were also made to the Uniform Fire Code.

COMMITTEE ACTION: Accept in Principle.

Revise text as follows:

"4-1.7 Noncombustible draft curtains of at least 2 ft (0.61 m) depth shall be installed..."

Delete last paragraph.

COMMITTEE STATEMENT: The revised text should clarify the submitter's intent.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 18

NEGATIVE: 1

NOT RETURNED: 2 Thomas, Wolfe

EXPLANATION OF NEGATIVE:

SCHUMANN: The June 15, 1995 letter to Dave Table from Bill Wilcox, which was passed out at the September 1996 committee meeting, seems only to apply to 4-1.7(a). Also, should heat and smoke vents be installed, NFPA 204M suggests the existing 6 ft deep curtains be used.

(Log #CP3)

30B- 30 - (Figure 4-2(a) and Figure 4-2(b)): Accept

SUBMITTER: Technical Committee on Aerosol Products

RECOMMENDATION: Add the following note to both figures:

"Each square in the figure represents a storage cube measuring 4 ft to 5 ft (1.25m to 1.56m) on a side." [NFPA 231C Fig 7-10.1(a).]

SUBSTANTIATION: Existing figures lack anything (except some approximate height dimensions) to scale them by. This method is used in NFPA 231C.

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

(Log #10)

30B- 31 - (Table 4-2(d)): Accept in Principle

SUBMITTER: Robert P. Pauline, Chemical Specialties Mfrs. Assn.

RECOMMENDATION: Revise Table 4-2(d) to permit 25 ft rack storage of aerosol products under ESFR sprinklers, when in-rack sprinklers are used.

SUBSTANTIATION: Recent Factory Mutual fire testing involving flammable liquids shows that ESFR ceiling sprinklers are able to be used in conjunction with in-rack sprinklers.

COMMITTEE ACTION: Accept in Principle.

See Committee Action on Proposal 30B-32 (Log #15).

COMMITTEE STATEMENT: The Committee Action on Proposal 30B-32 (Log #15) is consistent with the submitter's intent.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

(Log #15)

30B- 32 - (Table 4-2(d)): Accept in Principle

SUBMITTER: David C. Tabar, The Sherwin-Williams Co.

RECOMMENDATION: Revise table 4-2(d) as shown at the bottom of this page:

Table 4-2(d) ESFR (K = 13.5 to 14.5) Arrangement and Protection of Level 3 Rack Storage*

| | | | |
|--------------------------------------|-------------------------------|----------------------------|---|
| Max. Ceiling Ht (ft) | 30 | 25 | <u>30</u> |
| Max Storage Ht (ft) | 15 | 15 | <u>25</u> |
| Temp. Rating** | Ordinary | Ordinary | <u>Ordinary</u> |
| Sprinkler Spacing (ft ²) | 80-100 | 80-100 | <u>10 ft x 10 ft or 8 ft x 12 ft</u> |
| Sprinkler Demand | 12 sprinklers at 75 psi | 12 sprinklers at 50 psi | <u>12 sprinklers at 75 psi</u> |
| <u>In-Rack Sprinklers</u> | <u>None</u> | <u>None</u> | <u>LO OR 30 psi, staggered vertically at each tier of storage in longitudinal flue, top tier protected by ceiling ESFR.</u> |
| <u>In-Rack Sprinkler Demand</u> | <u>None</u> | <u>None</u> | <u>6 sprinklers at each level, up to 18 sprinklers.</u> |
| Hose Stream Demand (gpm) | 250 | 250 | <u>250</u> |
| Duration (hr) | 1 | 1 | <u>1</u> |

*Single and double-row racks only

**When sprinklers having higher temperature ratings are used, such as near unit heaters, refer to NFPA 13, *Standard for the Installation of Sprinkler Systems*. For SI Units: 1ft = 3048 mm; 1 ft² = 0.0929 m²; 1 gpm/ft² = 40.743 L/min/m²; 1 psi = 6.895 kPa; 1 gpm = 3.785 L/min.

SUBSTANTIATION: The Table needs to provide clarification regarding permissible sprinkler designs when ESFR is used at the ceiling in lieu of "spray sprinklers," in conjunction with in-rack sprinklers. FM 1995-6 large-scale test results involved suppression for 25 ft cartoned storage of 1 gal Class IB heptane, and uncartoned 5 gal Class IB heptane. Tests involved 25 ft storage under a 30 ft ceiling using ESFR ceiling sprinklers with a combination of in-rack sprinklers. For FM Large-Scale Test No. 6 (9/8/95), maximum one minimum average steel temperature was 120°F, and 2 ESFR sprinklers at 50 psi with one LO in-rack sprinkler at 14 psi suppressed the 1 gal cartoned heptane 25 ft rack storage fire. For FM Large-Scale Test No. 9 (12/12/95), maximum one minimum average steel temperature was 86°F, and 4 ESFR sprinklers at 75 psi with 3 LO in-rack sprinklers at 30 psi suppressed the 5 gal uncartoned heptane 25 ft rack storage fire.

COMMITTEE ACTION: Accept in Principle.

Delete Tables 4-2(e) and 4-2(f), and replace with new Table 4-2(e) as shown on page 18 and 19:
 Also editorially replace references to Table 4-2(f) with Table 4-2(e) throughout remainder of document.

COMMITTEE STATEMENT: The new Table 4-2(e) consolidates Tables 4-2(e) and 4-2(f), and adds protection criteria for ESFR sprinklers. The committee action should satisfy the submitter's intent.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:
 AFFIRMATIVE: 19
 NOT RETURNED: 2 Thomas, Wolfe

COMMENT ON AFFIRMATIVE:

LeBLANC: 1. The option of ESFR sprinkler protection should be included for racks protected with flue and face in-rack sprinkler protection. The full scale fire tests conducted for this protection arrangement fully supports this option (i.e., no ceiling sprinklers operated).

2. The reason ESFR protection can be accepted over racks protected with in-racks is based only on the results of the aerosol fire tests. The testing conducted on flammable liquids provide no support for the protection of aerosols.

SCHUMANN: NFPA 13 now identifies orifices by physical size (1/2, 17/32...) not by name (standard, large orifice...). Table should be revised as needed.

The storage arrangements identified in Tables 4-2(c) and 4-2(d) are also covered by the new Table 4-2(e). Table 4-2(e) requires more protection (higher ESFR operating pressures and in-rack) than Tables 4-2(c) and 4-2(d) for the same storage arrangements. This is going to cause confusion. Tables 4-2(c) and 4-2(d) could be combined with Table 4-2(e) and arranged by level of commodity and then by increasing storage height.

(Log #CP4)

30B- 33 - (4-2.2): Accept

SUBMITTER: Technical Committee on Aerosol Products

RECOMMENDATION: Revise 4-2.2 as follows:
 4-2.2 Installation of in-rack sprinklers shall be in accordance with NFPA 231C as modified by Tables 4-2(e) and 4-2(f).

SUBSTANTIATION: During the 30B committee meeting on 9.19-20.96, it was noted that there was no requirement for water shields for in rack sprinklers. This will correct this and other noted omissions.

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:
 AFFIRMATIVE: 19
 NOT RETURNED: 2 Thomas, Wolfe

COMMENT ON AFFIRMATIVE:
 SCHUMANN: If 30B-32 is accepted, and 4-2(f) would have to be dropped from proposed revision to 30B-33.

(Log #16)

30B- 34 - (4-2.2 (New)): Accept in Principle
SUBMITTER: David C. Tabar, The Sherwin-Williams Co.
RECOMMENDATION: Add new 4-2.2 and renumber existing 4-2.2 through 4-2.5.

4-2.2 Protection criteria developed from full-scale fire testing conducted at a fire test facility acceptable to the authority having jurisdiction shall be permitted in lieu of protection tables 4-2(a) through 4-2(f). For additional information, see Appendix B.

SUBSTANTIATION: Correlation with NFPA 30 -1996 performance-based provisions for allowing fire test data in lieu of specific fire protection tables. Encourages the conduct of fire research and testing, and avoids constraints created when fire test programs are completed in between code cycles.

COMMITTEE ACTION: Accept in Principle.

Add a new 4-2.2 as follows, and renumber the existing 4-2.2 through 4-2.5.

4-2.2 Protection criteria that is developed based on full-scale fire tests performed at an approved test facility shall be considered an acceptable alternative to the protection criteria set forth in Tables 4-2(a) through 4-2(f). Such alternative protection criteria shall be subject to the approval of the authority having jurisdiction.

COMMITTEE STATEMENT: The Committee agrees with the submitter's proposed recommendation, however, the Committee Action should clarify the submitter's intent.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19
 NOT RETURNED: 2 Thomas, Wolfe

COMMENT ON AFFIRMATIVE:

SCHUMANN: If 30B-32 is accepted, the table identification would have to be changed to properly identify the referenced tables.

(Log #11)

30B- 35 - (4-2.6 (New)): Reject
SUBMITTER: Robert P. Pauline, Chemical Specialties Mfrs. Assn.
RECOMMENDATION: Add new text as follows:

4-2.6 Ceiling heights indicated in Tables 4-2(a) through 4-2(f) can be increased by a maximum of 10 percent if an equivalent percentage increase in ceiling sprinkler design density is provided.

SUBSTANTIATION: Building height allowances must correlate with NFPA 30-1996, Chapter 4, which allows a 10 percent deviation with a 10 percent increase in sprinkler water flow.

COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The submitter has not provided sufficient technical justification to warrant the proposed change. This change would also affect sprinkler systems that are not designed by the area-density method.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:
 AFFIRMATIVE: 17
 NEGATIVE: 2
 NOT RETURNED: 2 Thomas, Wolfe

EXPLANATION OF NEGATIVE:

KOSKAN: Inconsistencies between codes is an issue we must address when given the opportunity. Given the wide range of actual storage heights and storage densities (empty pallet positions of lower level) at most facilities a 10 percent deviation in ceiling sprinkler design is a concession that will not impact fire safety but demonstrates one more step towards improved consistency.

TABAR: NFPA 30 and 30B must correlate similar building construction considerations. Otherwise, liquid warehouse construction will be unusable for aerosol storage. It appears that test data should be thoroughly reviewed, and appropriate engineering judgement given.

NFPA 30B — A98 ROP

Table 4-2(e) Protection of Rack Storage of Level 2 and Level 3 Aerosols with In-Rack Sprinklers

| Level | Maximum Ceiling Height | Maximum Storage Height | Ceiling Sprinkler Type & Arrangement ¹ | Clearance: Storage to Sprinklers | Ceiling Design | In-Rack Sprinkler Type & Arrangement ^{1,2} | In-Rack Design | Duration |
|-------|------------------------|------------------------|---|--|---|--|---|----------|
| 2 | None | None | Standard spray, high temperature, standard or large orifice, SR, 100 sq ft maximum spacing. | 15 ft max. If clearance exceeds 15 ft, a barrier with face sprinklers below is required. | 0.30 gpm/sq ft over 2500 sq ft | Ordinary temperature sprinklers 8 ft apart max. One line at each tier except top. Locate in longitudinal flue spaces in double row racks. ³ | 30 gpm per sprinkler minimum. Based on operation of hydraulically most remote: (1) 8 sprinklers if one level. (2) 6 sprinklers each of 2 levels if only 2 levels. (3) 6 sprinklers on top 3 levels if 3 or more levels. | 2 hr. |
| | 30 ft | 25 ft | ESFR ⁵ | Minimum 3 ft | 12 sprinklers @ 75 psig | Ordinary temperature, QR, sprinklers 8 ft apart max. One line at each tier except top. Locate in longitudinal flue spaces in double row racks. ³ | | |
| 3 | None | None | Standard Spray, high temperature, LO or ELO, SR, 100 sq ft max spacing. | 5 ft or less. | 0.30 gpm/sq ft over 2500 sq ft. | Ordinary temperature sprinklers 8 ft apart max. One line at each tier except top. Locate in longitudinal flue spaces and on face of each tier except top tier. | 30 gpm per sprinkler minimum. Based on operation of hydraulically most remote: (1) 8 sprinklers if one level. (2) 6 sprinklers each of 2 levels if only 2 levels. (3) 6 sprinklers on top 3 levels if 3 or more levels. | 2 hr. |
| | | | | More than 5 ft to 15 ft. | 0.60 gpm/sq ft over 1500 sq ft to 2500 sq ft. Interpolate for clearances between 5 ft and 15 ft. | | | |
| | | | | More than 15 ft or more than 5 ft where barriers are used | 0.30 gpm/sq ft over 2500 sq ft plus a barrier above top tier of storage with face sprinklers below. | | | |

NFPA 30B — A98 ROP

Table 4-2(e) Protection of Rack Storage of Level 2 and Level 3 Aerosols with In-Rack Sprinklers (cont)

| Level | Maximum Ceiling Height | Maximum Storage Height | Ceiling Sprinkler Type & Arrangement ¹ | Clearance: Storage to Sprinklers | Ceiling Design | In-Rack Sprinkler Type & Arrangement ^{1,2} | In-Rack Design | Duration |
|-------|------------------------|------------------------|---|----------------------------------|---|---|--|----------|
| 3 | 30 ft | 25 ft | Standard spray, high temperature, LO or ELO, SR, 100 sq ft max spacing. | Up to 15 ft. | 0.60 gpm/sq ft over 2500 sq ft. | Ordinary temperature sprinklers 8 ft apart max. One line at each tier except top. Locate in longitudinal flue spaces and stagger vertically. ⁴ | 30 gpm per sprinkler minimum. Based on operation of hydraulically most remote: (1) 8 sprinklers if one level. (2) 6 sprinklers each of 2 levels if only 2 levels. (3) 6 sprinklers on top 3 levels if 3 or more levels. | 2 hr |
| | | | | More than 15 ft. | 0.60 gpm/sq ft over 2500 sq ft plus a barrier above top tier of storage with face sprinklers below. | | | |
| | | | ESFR ³ | Min 3 ft. | 12 sprinklers @ 75 psig. | Ordinary temperature, QR sprinklers 8 ft apart max. One line at each tier except top. Locate in longitudinal flue spaces and stagger vertically. ⁴ | | |

1. LO = Large Orifice, ELO = Extra Large Orifice, ESFR = Early Suppression Fast Response, QR = Quick Response, SR = Standard Response. ELO sprinklers shall have a minimum operating pressure of 10 psi (69 kPa).
2. Provide at least 6 in. (150 mm) between sprinkler deflectors and top of storage tier.
3. For multiple-row rack storage, refer to Figure 4-2(a) where distance between transverse flue does not exceed 6 ft (1.8 m); refer to Figure 4-2(b) where distance between transverse flues exceeds 6 ft (1.8 m).
4. For multiple-row racks, refer to Figure 4-2(b).
5. The combination of ESFR ceiling sprinklers and in-rack sprinklers was determined in this case to be acceptable based on the review of the original full scale testing that was used to determine adequate protection using in-rack sprinklers and spray sprinklers at the ceiling. The low number of ceiling sprinklers that operated in the full scale tests indicate that the substitution of ESFR sprinklers over racks with the same level of in-rack sprinkler protection would not result in a more severe fire. The in-rack sprinklers must be quick-response type and must meet the currently required installation rules provided in the table.

(Log #14)

30B- 36 - (4-2.6 (New)): Reject
SUBMITTER: David C. Tabar, The Sherwin-Williams Co.
RECOMMENDATION: Add new text as follows:
 4-2.6 Ceiling heights indicated in Tables 4-2(a) through 4-2(f) can be increased by a maximum of 10 percent if an equivalent percentage increase in ceiling sprinkler design density is provided.
SUBSTANTIATION: Correlation with ceiling height allowances permitted by NFPA 30-1996, Section 4-8.2.5.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Committee Action on Proposal 30B-35 (Log #11).
NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:
 AFFIRMATIVE: 17
 NEGATIVE: 2
 NOT RETURNED: 2 Thomas, Wolfe
EXPLANATION OF NEGATIVE:
 KOSKAN: Inconsistencies between codes is an issue we must address when given the opportunity. Given the wide range of actual storage heights and storage densities (empty pallet positions of lower level) at most facilities a 10 percent deviation in ceiling

sprinkler design is a concession that will not impact fire safety but demonstrates one more step towards improved consistency.
 TABAR: NFPA 30 and 30B must correlate similar building construction considerations. Otherwise, liquid warehouse construction will be unusable for aerosol storage. It appears that test data should be thoroughly reviewed, and appropriate engineering judgement given.

(Log #CP37)

30B- 37 - (4-3.1): Accept
SUBMITTER: Technical Committee on Aerosol Products
RECOMMENDATION: Revise as follows:
 4-3.1 Storage of Level 2 and Level 3 aerosol products in a single fire area in occupancies other than warehouses or mercantile occupancies, such as assembly, business, educational, industrial, and institutional occupancies, shall be permitted up to the following quantities:
 (a) A maximum of 1000 lb (454 kg) net weight of Level 2 aerosol products, or

NFPA 30B — A98 ROP

(b) A maximum of 500 lb (227 kg) net weight of Level 3 aerosol products.
 In no case shall the combined net weight of Level 2 and Level 3 aerosol products exceed 1000 lb (454 kg).
SUBSTANTIATION: Clarifies the committee's intent.
COMMITTEE ACTION: Accept.
NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:
 AFFIRMATIVE: 19
 NOT RETURNED: 2 Thomas, Wolfe

COMMITTEE ACTION: Accept.
NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:
 AFFIRMATIVE: 19
 NOT RETURNED: 2 Thomas, Wolfe
COMMENT ON AFFIRMATIVE:
 SCHUMANN: Section 4-5.2.1.1 only identifies 1 or 2 hour rated walls. Why include 4 hour walls in Table 4-5? What technical justification is there for the rating of the doors' versus the walls? NFPA 80 and NFPA 221 provide no such guidance.

(Log #CP30)

(Log #CP32)

30B- 38 - (4-5.2.1.1): Accept
SUBMITTER: Technical Committee on Aerosol Products
RECOMMENDATION: Revise as follows:
 4-5.2.1.1 Interior walls shall have a fire-resistance rating of 1 or 2 hr and shall be continuous from floor to the underside of the roof deck or ceiling.
 (a) For interior walls having a fire-resistance rating of 2 hr, the ~~aggregate total floor area utilized for~~ of the segregated Level 2 and Level 3 aerosol ~~product storage area or areas~~ shall not exceed 25 percent of the total floor area of the warehouse, up to a maximum of 40,000 sq ft (3660 m²).
 (b) For interior walls having a fire-resistance rating of 1 hr, the ~~aggregate total floor area utilized for~~ of the segregated Level 2 and Level 3 aerosol ~~product storage area or areas~~ shall not exceed 20 percent of the total floor area of the warehouse, up to a maximum of 30,000 sq ft (2745 m²).
SUBSTANTIATION: Clarifies the committee's intent.
COMMITTEE ACTION: Accept.
NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:
 AFFIRMATIVE: 18
 NEGATIVE: 1
 NOT RETURNED: 2 Thomas, Wolfe

30B- 40 - (4-5.2.1.2(a)): Accept
SUBMITTER: Technical Committee on Aerosol Products
RECOMMENDATION: Revise as follows:
 (a) The ~~aggregate total floor area utilized for~~ of the segregated Level 2 and Level 3 aerosol ~~product storage area or areas~~ shall not exceed 20 percent of the total area of the warehouse, up to a maximum of 20,000 sq ft (1830 m²).
SUBSTANTIATION: Clarifies committee's intent.
COMMITTEE ACTION: Accept.
NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:
 AFFIRMATIVE: 18
 NEGATIVE: 1
 NOT RETURNED: 2 Thomas, Wolfe
EXPLANATION OF NEGATIVE:
 TABAR: Using total building square footage and maximum percentages to establish allowable size places an undue operating disadvantage on small distributors of aerosol products. Area limits should be based upon the size of the aerosol storage area or quantities involved.

EXPLANATION OF NEGATIVE:
 TABAR: Using total building square footage and maximum percentages to establish allowable size places an undue operating disadvantage on small distributors of aerosol products. Area limits should be based upon the size of the aerosol storage area or quantities involved.

(Log #CP31)

30B- 39 - (4-5.2.1.1): Accept
SUBMITTER: Technical Committee on Aerosol Products
RECOMMENDATION: Revise as follows:
 4-5.2.1.1 Interior walls shall have a fire-resistance rating of 1 or 2 hr and shall be continuous from floor to the underside of the roof deck or ceiling. Openings in these walls shall be protected with self-closing or automatic-closing listed fire door assemblies with fire protection ratings corresponding to the fire resistance rating of the wall as specified in Table 4-5. (Balance to remain unchanged.)
 Also, add new Table 4-5 as follows:

30B- 41 - (4-5.2.1.3(a)): Accept
SUBMITTER: Technical Committee on Aerosol Products
RECOMMENDATION: Revise as follows:
 (a) The ~~aggregate total floor area used for~~ of the segregated Level 2 and Level 3 aerosol ~~product storage area or areas~~ shall not exceed 15 percent of the total area of the warehouse, up to a maximum of 20,000 sq ft (91830 m²).
SUBSTANTIATION: Clarifies committee's intent.
COMMITTEE ACTION: Accept.
NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:
 AFFIRMATIVE: 18
 NEGATIVE: 1
 NOT RETURNED: 2 Thomas, Wolfe
EXPLANATION OF NEGATIVE:
 TABAR: Using total building square footage and maximum percentages to establish allowable size places an undue operating disadvantage on small distributors of aerosol products. Area limits should be based upon the size of the aerosol storage area or quantities involved.

(Log #CP43)

(Log #CP9)

| Fire Resistance Rating of Wall, hr | Fire Protection Rating of Door, hr |
|------------------------------------|------------------------------------|
| 1 | 3/4 |
| 2 | 1 1/2 |
| 4 | 3 ¹ |

¹One fire door required on each side of interior openings for attached aerosol warehouses.
SUBSTANTIATION: New Table 4-5 prescribes requirements for the protection of openings in fire-resistance rated assemblies.

30B- 42 - (4-5.2.2): Accept
SUBMITTER: Technical Committee on Aerosol Products
RECOMMENDATION: Replace reference to Figures 4-1 through 4-6 with Figures 4-2(a) through 4-2(f).
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept.
NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:
 AFFIRMATIVE: 19
 NOT RETURNED: 2 Thomas, Wolfe

(Log #CP15)

30B- 43 - (4-5.2.4 Exception): Accept
SUBMITTER: Technical Committee on Aerosol Products
RECOMMENDATION: Revise 4-5.2.4 Exception as follows:
 Exception: Where protection is ~~provided by ESFR sprinklers and storage arrangements are in accordance with Table 4-2(c) or Table 4-2(d)~~, the minimum aisle width shall be 4 ft (1.2 m).

NFPA 30B — A98 ROP

SUBSTANTIATION: Clarifies the reduced aisle width is not applicable to the ESFR and in-rack sprinkler protection criteria added to the proposed Table 4-2(e). See the Committee Action on Proposal 30B- (Log #15).

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

(Log #CP11)

30B- 44 - (4-5.2.5): Accept

SUBMITTER: Technical Committee on Aerosol Products

RECOMMENDATION: Revise as follows:

4-5.2.5 An approved fire alarm system, including manual fire alarm boxes, meeting the requirements of Section 2-7, shall be provided in any general purpose warehouse in which Level 2 and Level 3 aerosol products are stored.

~~(a) Activation of the fire alarm system shall be by operation of the automatic sprinkler system or by manual pull station.~~

~~(b) Activation of the fire alarm system shall cause all fire doors or gates leading to the segregated aerosol storage area to close automatically.~~

SUBSTANTIATION: Manual fire alarm boxes are necessary for fast response to aerosol warehouse accidental spills and/or resulting fires. Early response and resulting closing of fire doors can confine the incident to the immediate area.

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 16

NEGATIVE: 3

NOT RETURNED: 2 Thomas, Wolfe

EXPLANATION OF NEGATIVE:

HILD: With the proposed changes, 30B will now require that any general purpose warehouse with Level 2 or 3 aerosol products be provided with manual fire alarm boxes that will close all fire doors or gates leading to the aerosol storage area. I feel that this is excessive and that the original wording was adequate. Even in a flammable liquids warehouse, with segregated aerosol storage, the code does not require that the doors/gates be closed with manual fire alarm boxes.

MADDEN: This change would require manual pull stations throughout a large general purpose warehouse because a small segregated aerosol storage area is provided in the building. I believe this is overly restrictive. Closing fire doors can be accomplished by operation of the automatic sprinkler system, and by manual door closer or release mechanisms at the aerosol enclosure.

SICILIANO: I agree with the comments of Richard Hild and Michael Madden.

(Log #CP16)

30B- 45 - (4-6.9 Exception): Accept

SUBMITTER: Technical Committee on Aerosol Products

RECOMMENDATION: Revise 4-6.9 Exception as follows:

Exception: Where protection is provided by ESFR sprinklers and storage arrangements are in accordance with Table 4-2(c) or Table 4-2(d), the minimum aisle width shall be 4 ft (1.2 m).

SUBSTANTIATION: Clarifies the reduced aisle width is not applicable to the ESFR and in-rack sprinkler protection criteria added to the proposed Table 4-2(e). See the Committee Action on Proposal 30B- (Log #15).

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

(Log #CP38)

30B- 46 - (4-7.1): Accept

SUBMITTER: Technical Committee on Aerosol Products

RECOMMENDATION: Revise as follows:

4-7.1 Storage of aerosol products shall be permitted in separate inside flammable liquid storage areas of 500 sq ft (47 m²) or less

that meet the requirements of NFPA 30, Flammable and Combustible Liquids Code, up to a maximum quantity of 1000 lb (454 kg) net weight of Level 2 aerosol products or 500 lb (227 kg) net weight of Level 3 aerosol products or 1000 lb (454 kg) net weight of combined Level 2 and Level 3 aerosol products.

SUBSTANTIATION: Clarifies the committee's intent.

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

(Log #CP39)

30B- 47 - (4-7.2): Accept

SUBMITTER: Technical Committee on Aerosol Products

RECOMMENDATION: Revise as follows:

4-7.2 Storage of aerosol products shall be permitted in separate inside flammable liquid storage areas of greater than 500 sq ft (47 m²) that meet the requirements of NFPA 30, Flammable and Combustible Liquids Code, up to a maximum quantity of 2500 lb (1135 kg) net weight of Level 2 aerosol products or 1000 lb (454 kg) net weight of Level 3 aerosol products or 2500 lb (1135 kg) net weight of combined Level 2 and Level 3 aerosol products.

Exception: Storage of Level 2 and Level 3 aerosol products shall be permitted in separate inside storage areas up to a maximum of 5000 lb (2270 kg) net weight, if the separate inside storage area is protected by an automatic sprinkler system that is designed in accordance with Tables 4-2(a) through 4-2(f), whichever is applicable.

SUBSTANTIATION: Clarifies the committee's intent.

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

(Log #CP33)

30B- 48 - (4-8.2.1): Accept

SUBMITTER: Technical Committee on Aerosol Products

RECOMMENDATION: Revise as follows:

4-8.2.1 Interior walls shall have a fire-resistance rating of 1 or 2 hr and shall be continuous from floor to the underside of the roof deck.

(a) For interior walls having a fire-resistance rating of two hours, the aggregate total floor area utilized for the storage of the segregated Level 2 and Level 3 aerosol products storage area or areas shall not exceed 25 percent of the total floor area of the warehouse, up to a maximum of 40,000 sq ft (3700 m²).

(b) For interior walls having a fire resistance of 1 hr, the aggregate total floor area utilized for the storage of the segregated Level 2 and Level 3 aerosol products storage area or areas shall not exceed 20 percent of the total floor area of the warehouse, up to a maximum of 30,000 sq ft (1850 m²).

(c) Spill control or drainage shall be provided to prevent the flow of liquid to within 8 ft (2.4 m) of the segregated area.

SUBSTANTIATION: Clarifies the committee's intent.

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

(Log #CP44)

30B- 49 - (4-8.2.1): Accept

SUBMITTER: Technical Committee on Aerosol Products

RECOMMENDATION: Revise as follows:

4-8.2.1 Interior walls shall have a fire-resistance rating of 1 or 2 hr and shall be continuous from floor to the underside of the roof deck. Openings in these walls shall be protected with self-closing or automatic-closing listed fire door assemblies with fire protection ratings corresponding to the fire resistance rating of the wall as specified in Table 4-5. (Balance to remain unchanged.)

SUBSTANTIATION: See the Committee Action on Proposal 30B-39 (Log #CP43) (4-5.2.1.1 and New Table 4-5).

NFPA 30B — A98 ROP

COMMITTEE ACTION: Accept.
NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:
AFFIRMATIVE: 19
NOT RETURNED: 2 Thomas, Wolfe
COMMENT ON AFFIRMATIVE:
SCHUMANN: Section 4-8.2.1 only identifies 1 or 2 hour rated walls. Why include 4 hour walls in Table 4-5? What technical justification is there for the rating of the doors' versus the walls? NFPA 80 and NFPA 221 provide no such guidance.

(Log #CP34)

30B- 50 - (4-8.2.2(a)): Accept
SUBMITTER: Technical Committee on Aerosol Products
RECOMMENDATION: Revise as follows:
(a) ~~The aggregate total floor area utilized for the storage of the segregated Level 2 and Level 3 aerosol products storage area or areas shall not exceed 20 percent of the total floor area of the warehouse, up to a maximum of 20,000 sq ft (1850 m²).~~
SUBSTANTIATION: Clarifies the committee's intent.
COMMITTEE ACTION: Accept.
NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:
AFFIRMATIVE: 19
NOT RETURNED: 2 Thomas, Wolfe

(Log #CP20)

30B- 51 - (5-1.3.1): Accept
SUBMITTER: Technical Committee on Aerosol Products
RECOMMENDATION: Revise 5-1.3.1 and 5-1.3.2 as follows:
5-1.3.1 In sales display areas that are unsprinklered or whose sprinkler system does not meet the requirements of 5-1.3.2, the total aggregate quantity of Level 2 and Level 3 aerosol products shall not exceed 2 lb net weight per sq ft (9.8 kg/m²) of gross sales floor area, up to the following maximum quantities. No single 10-ft by 10-ft (3-m by 3-m) section of sales floor area shall contain more than 1000 lb (454 kg) net weight of Level 2 and Level 3 aerosol products. (Balance to remain unchanged.)
5-1.3.2 In sales display areas that are sprinklered in accordance with NFPA 13 for at least Ordinary Hazard (Group 2) occupancies, the total aggregate quantity of Level 2 and Level 3 aerosol products shall not exceed 2 lb net weight per sq ft (9.8 kg/m²) of gross sales floor area. ~~However, a~~ No single 10-ft by 10-ft (3-m by 3-m) section of sales floor area shall contain more than 1000 lb (454 kg) net weight of Level 2 and Level 3 aerosol products.
SUBSTANTIATION: This proposal clarifies the committee's intent regarding the permitted quantities of aerosol products in sprinklered buildings.
COMMITTEE ACTION: Accept.
NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:
AFFIRMATIVE: 19
NOT RETURNED: 2 Thomas, Wolfe
COMMENT ON AFFIRMATIVE:
SCHUMANN: In section 5-1.3.1, there should be a ":" after ...maximum quantities and the table from the existing 5-1.3.1 immediately there after. Also, I believe it was the intent to limit a total of 1000 lb to any 10 ft x 10 ft area. As it is now written, it could mean 1000 lb of Level 2 and 1000 lb of Level 3. This same comment applies to 5-1.3.2.

(Log #CP35)

30B- 52 - (5-1.3.2): Accept
SUBMITTER: Technical Committee on Aerosol Products
RECOMMENDATION: Revise as follows:
5-1.3.2 In sales display areas that are sprinklered in accordance with NFPA 13 for at least Ordinary Hazard (Group 2) occupancies, the total aggregate quantity of Level 2 and Level 3 aerosol products shall not exceed 2 lb net weight per sq ft (9.8 kg/m²) of ~~gross total sales floor display area.~~ However, no single 10-ft by 10-ft (3-m by 3-m) section of sales ~~floor display~~ area shall contain more than 1000 lb (454 kg) net weight of aerosol products.
SUBSTANTIATION: Clarifies the committee's intent.
COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:
AFFIRMATIVE: 19
NOT RETURNED: 2 Thomas, Wolfe
COMMENT ON AFFIRMATIVE:
SCHUMANN: The wording of Section 5-1.3.2 in this proposal is preferred over the wording in 30B-51.

(Log #CP8)

30B- 53 - (5-1.4): Accept
SUBMITTER: Technical Committee on Aerosol Products
RECOMMENDATION: Revise last sentence as follows:
Shelving shall be of stable construction and storage shall not exceed 8 ft (2.4 m) in height.
SUBSTANTIATION: Language revised to clarify the committee's intent.
COMMITTEE ACTION: Accept.
NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:
AFFIRMATIVE: 19
NOT RETURNED: 2 Thomas, Wolfe

(Log #CP25)

30B- 54 - (5-2.3): Accept
SUBMITTER: Technical Committee on Aerosol Products
RECOMMENDATION: Revise 5-2.3 as follows:
5-2.3 The storage and display of Level 2 and Level 3 aerosol products shall be protected in accordance with Tables 4-2(a) through 4-2(f), whichever is applicable. Where in-rack sprinklers are required by Table 4-2(e) or 4-2(f) and where the Level 2 and Level 3 aerosol products are stored in accordance with the Exception to 5-2.2, the first tier of in-rack sprinklers shall be installed above the shelf unit but not more than 6 ft (1.8 m) above the floor level.
SUBSTANTIATION: Revised language clarifies the scope of the subsection.
COMMITTEE ACTION: Accept.
NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:
AFFIRMATIVE: 19
NOT RETURNED: 2 Thomas, Wolfe

(Log #CP7)

30B- 55 - (5-2.3.1): Accept
SUBMITTER: Technical Committee on Aerosol Products
RECOMMENDATION: Revise as follows:
"Noncombustible draft curtains of at least 2 ft (0.61 m) depth shall be installed ..."
Delete last sentence.
SUBSTANTIATION: Revision required for consistency with action taken on Log #9.
COMMITTEE ACTION: Accept.
NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21
VOTE ON COMMITTEE ACTION:
AFFIRMATIVE: 18
NEGATIVE: 1
NOT RETURNED: 2 Thomas, Wolfe
EXPLANATION OF NEGATIVE:
SCHUMANN: The June 15, 1995 letter to Dave Table from Bill Wilcox, which was passed out at the September 1996 committee meeting, seems only to apply to 5-2.3.1(a). Also, should heat and smoke vents be installed, NFPA 204M suggests the existing 6 ft deep curtains be used.

(Log #CP26)

30B- 56 - (5-2.4): Accept
SUBMITTER: Technical Committee on Aerosol Products
RECOMMENDATION: Revise 5-2.4 as follows:
5-2.4 Storage and display of Level 2 and Level 3 aerosol products shall not exceed 10,000 lb (4540 kg) net weight within any 25,000 sq ft (2323 m²) of sales display area. Level 2 and Level 3 aerosol

products display areas shall be separated from each other by a minimum of 25 ft (7.6 m).

(Log #CP41)

SUBSTANTIATION: Revised language clarifies the scope of the subsection and the committee's intent.

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

(Log #CP27)

30B- 57 - (5-2.5): Accept

SUBMITTER: Technical Committee on Aerosol Products

RECOMMENDATION: Revise 5-2.5 as follows:

5-2.5 The area of the design for the required ceiling sprinkler system shall extend 20 ft (6 m) beyond the Level 2 and Level 3 aerosol display and storage area.

SUBSTANTIATION: Revised language clarifies the scope of the subsection.

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

(Log #CP19)

30B- 58 - (5-2.6): Accept

SUBMITTER: Technical Committee on Aerosol Products

RECOMMENDATION: Replace 5-2.6 with the following:

5-2.6 Storage and display of Level 2 and Level 3 aerosol products shall be separated from the storage of flammable and combustible liquids by a minimum distance of 25 ft (7.6 m) or by a segregating wall or noncombustible barrier. Where Level 2 and Level 3 aerosol products are stored within 25 ft (7.6 m) of flammable and combustible liquids, liquid-tight curbing shall be provided to prevent spilled liquids from flowing underneath the aerosol products.

SUBSTANTIATION: The revised language clarifies the committee's intent that the segregating wall is provided to prevent flammable and combustible liquid spills from flowing under aerosol product storage.

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 18

NEGATIVE: 1

NOT RETURNED: 2 Thomas, Wolfe

EXPLANATION OF NEGATIVE:

SICILIANO: The use of a liquid tight barrier will cause operational difficulties in many areas of use. The size of the barrier in height and floor area is also not mentioned. The carrying capacity of the liquid tight area needs to be appropriate for the amount of material stored and should be stated.

COMMENT ON AFFIRMATIVE:

SCHUMANN: The existing 5-2.6 requires a 25 ft distance or a segregating wall for a distance of less than 25 ft. The first revision is to give the option of a noncombustible barrier in lieu of the wall. I thought the second revision was if the distance was less than 25 ft, a segregating wall or noncombustible barrier with a liquid-tight curb would be required. The curbing alone provides no radiant protection.

30B- 59 - (5-3.3): Accept

SUBMITTER:

RECOMMENDATION: Revise as follows:

5-3.3 An additional quantity of Level 2 and Level 3 aerosol products, up to a maximum of 500 lb (227 kg) net weight, shall be permitted in back stock areas, where the additional quantities are stored in flammable liquid storage cabinets that meet the requirements of Section 4-3 of NFPA 30, Flammable and Combustible Liquids Code.

SUBSTANTIATION: Clarifies the committee's intent.

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

(Log #CP29)

30B- 60 - (5-3.4): Accept

SUBMITTER: Technical Committee on Aerosol Products

RECOMMENDATION: Revise 5-3.4 as follows:

5-3.4 Storage of Level 2 and Level 3 aerosol products in separate inside flammable liquids storage rooms shall meet the requirements of Section 4-7 of this code.

SUBSTANTIATION: Revised language clarifies the scope of the subsection.

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

(Log #5)

30B- 61 - (6-5.3): Reject

SUBMITTER: Robert P. Pauline, CSMA

RECOMMENDATION: Add new text as follows:

Empty aerosol containers which have been in the hands of consumers should be recycled where programs are present. **SUBSTANTIATION:** Aerosol cans have been a part of community recycling programs for more than 5 years. Aerosol cans are currently being recycled in over 3,000 communities. Factory Mutual Research Corporation (FMRC) recently completed a study which reconfirmed that there is no significant increase in risk associated with the addition of aerosol cans in the recycling process. The report includes a review of published work on aerosol recycling from Germany, Canada, France, and the US and it studies the safety records of Material Recovery Facilities (MRF's) currently accepting aerosol containers.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: The Committee believes the proposed text is beyond the scope of NFPA 30B. The Committee's Action on Proposal 30B-1 (Log #6) should address the submitter's concerns.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

NFPA 30B — A98 ROP

(Log #CP23)

30B- 62 - (6-6.1(b)): Accept

SUBMITTER: Technical Committee on Aerosol Products

RECOMMENDATION: Revise 6-6.1(b) as follows:

~~Explosion~~ Deflagration suppression systems;

SUBSTANTIATION: This change is necessary to remain consistent with the terminology used in NFPA 69 which changed "Explosion Suppression" to "Deflagration Suppression" in Chapter 4 prior to the publishing of the 1992 edition.

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

(Log #CP5)

30B- 63 - (7-1.1): Accept

SUBMITTER: Technical Committee on Aerosol Products

RECOMMENDATION: Add the following publication to the existing list: NFPA 2001, Standard on Clean Agent Fire Extinguishing Systems, 1996 edition.

SUBSTANTIATION: This standard covers agent replacements for halon 1301 and 1211. The standard did not exist when the 1994 edition of 30B was prepared. It should be included at this time.

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 20

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

(Log #CP48)

30B- 64 - (A-3-5.2(d)): Accept

SUBMITTER: Technical Committee on Aerosol Products

RECOMMENDATION: Revise part (a) as follows:

(a) The lower explosive limit (LEL) used in the calculation should be that of the most flammable propellant gas used. Normally, this will be isobutane (propellant A-31), which has an LEL of 1.8% in air at 70°F (21°C). Butane has the same ~~as~~ LEL. (Balance to remain unchanged.)

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

(Log #CP49)

30B- 65 - (A-3-5.2(d)): Accept

SUBMITTER: Technical Committee on Aerosol Products

RECOMMENDATION: Revise as follows:

"... Loss per ~~Gen Container~~. This is the maximum quantity of propellant that is expected to be lost during the propellant filling operation and will depend on the type of filling mode used. Some propellant fillers will release 3.0 cubic centimeters (cc) per container per filling station. Some propellant fillers will fill each container several times from separate filling stations. In this case the loss per container will be the loss per fill multiplied by the number of fills per container. Some filling operations require ..."

"...Under-the-Cup Filler, 3 cc per min release per filling head container. A second machine in the propellant charging room is an indexing through-the-valve filler that fills each container three times at three separate stations with a loss per fill of 1 cc X 3 fills per container = 3 cc released per container. Two fill machines, Each machine is operating at 150 containers per min. Propellant is isobutane; LEL is 1.8%. 30.59 cu ft per gal Safety factor for leakage is 20%. LEL Design Level is 10%." (Balance to remain unchanged.)

SUBSTANTIATION: Required to account for indexing type propellant filling machines that regularly fill multiple fills into each container. Each time the container is filled an amount of propellant is released. For example, an indexing propellant filler that is filling containers at 100 containers per minute but is performing three separate fills on each container by three separate through-the-valve filling heads will release 1 cc per fill X 3 fills per container X 100 containers per minute = 300 cc per minute loss from one propellant filling machine.

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

(Log #12)

30B- 66 - (Appendix C): Accept

SUBMITTER: Robert P. Pauline, Chemical Specialties Mfrs. Assn.

RECOMMENDATION: Break the last sentence of Paragraph 1 into 2 sentences worded as follows:

"... and communicate such information through carton marking as per 1-8 and 4-1.1. In addition, this communication may also be provided through other appropriate means such as Material Safety Data Sheets (MSDS)."

SUBSTANTIATION: NFPA 30B did not require carton marking when it was issued in 1990. There was a grace period until January 1, 1992. The wording in Appendix C needs to be modified as above to clarify that carton marking is required and may not be replaced by other means such as material safety data sheets.

COMMITTEE ACTION: Accept.

NUMBER OF COMMITTEE MEMBERS ELIGIBLE TO VOTE: 21

VOTE ON COMMITTEE ACTION:

AFFIRMATIVE: 19

NOT RETURNED: 2 Thomas, Wolfe

COMMENT ON AFFIRMATIVE:

SICILIANO: The use of the MSDS to provide the proper level information is excellent. Clarification of location within the MSDS and the proper wording would be a useful addition to the appendix. I suggest that we provide an example to assist people and give uniformity to the use of the MSDS. The level information should be included directly under the normal NFPA Hazard information.