MILESTONE APPLICATIONS OF VINYL ELECTRICAL MATERIALS

1937	First recorded use of vinyl as wire insulation
1939	First use in house wiring
1941	First use aboard U.S. Navy ships
1946	First use in telephone system central office switchboards
1952	First use in telephone system subscriber stations
1954	First use in telephone cords
1955	First use in commercial and industrial power cable
1956	First rigid use outdoors in underground conduit
1957	First use in telephone system drop wiring
1967	First use in telephone system wiring guides, telephone sets
1971	First use of concrete-encased rigid conduit indoors
1975	First program to recycle vinyl wire and cable scrap
1980	First use in voice and data transmission riser cables
1982	First use in voice and data transmission plenum cables

* All dates are approximate, based on company records and the recollections of individuals directly involved in the applications at the time.

R&S150336

Vinyl Conduit Savings Documented

Savings of up to 33 cents on every dollar can be obtained by using non-metallic rigid vinyl tubing in electrical applications, a study performed by a leading independent research firm shows.

The study, the first of its kind to include installation and labor costs in estimating the savings advantages of vinyl in electrical raceways, was conducted by IFT Technical Services, Berkeley, California.

Estimates were based on actual building costs in Atlanta, Boston, Cleveland, Houston, San Francisco and Seattle. Concealed lighting and outlet systems for four types of structures were evaluated: a wood frame townhouse, strip shopping center, high-rise residential building and high-rise office building.

On average, the vinyl system cost between 30 and 33 percent less to install than the comparable metallic system.

"Vinyl electrical systems have proven to be safe, dependable and capable of meeting all existing building codes," said Roy T. Gottesman, executive director of the Vinyl Institute, which funded the IFT study. "Now there is concrete evidence of PVC's excellent economics as well."

Industry Experts Share Views, Experiences About Vinyl Electrical Materials

Lively discussion. Useful information. In all, a very productive session. That's how the Vinyl Institute Electrical Materials Council viewed a meeting it recently hosted in Chicago of electrical industry influentials.

"The meeting was an effort to help the Council get closer to its market: to better understand major industry issues, to hear about the real as well as perceived strengths and weaknesses of vinyl and competing materials in electrical applications," said Council Chairman Richard R (Rick) Smith.

Participating in the meeting were approximately a dozen individuals with various backgrounds and perspectives relative to the electrical materials market: specifying engineers, code officials, code influentials, contractors, product manufacturers and distributors.

Smith said the various issues raised in the meeting will be addressed in the Council's current and future communications activities.

VI Clarifies Recent Wall Street Journal Article About New HCl Sensor

In response to an article in the September 26th Wall Street Journal about a new low-cost sensor designed to detect hydrogen chloride gas in electrical fires, Vinyl Institute Executive Director Roy T Gottesman has expressed concern that the article suggested that vinyl electrical materials present unusual fire hazards.

In a letter to the editor of the Wall Street Journal dated October 15, Gottesman said the article appeared to have extrapolated too broadly the appropriateness of a technology developed for fairly narrow applications.

"Specifically, it suggests the new sensor will have utility in residential construction," Gottesman wrote. "Virtually all current studies show residential fires almost always originate in and/or involve everyday furnishings. Vinyl wiring and cables are typically installed behind fire-safe walls, in accordance with local and national codes, and are usually the last materials involved in residential fires."

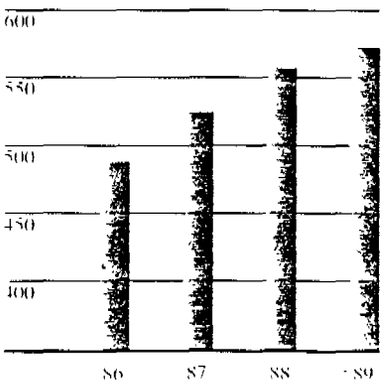
According to Gottesman, the technology of the new sensor would seem to best apply to those applications where there are extremely large concentrations of vinyl wire and cable, such as in a telephone switching station or computer center.

"However, even in the Hinsdale, Illinois Telephone Company fire referenced in the article, an official study by the National Fire Protection Association has shown that vinyl was not responsible for the extensive corrosion and disruption of the facility's electronic equipment," Gottesman noted. "And contrary to popular perception, the cause of the fire was an electrical fault during the removal of old cables by a contractor, and damage to the facility and its equipment was caused primarily by smoke and the water used to fight the fire."

Market For Vinyl Electrical Materials Continues To Grow

The market for vinyl (polyvinyl chloride or PVC) in electrical and electronic applications experienced six percent compounded

PVC Electrical/Electronic Market Growth
(in millions of pounds)



average annual growth from 1986 to 1989, according to statistics prepared by The Society of the Plastics Industry, Inc.

Consumption of vinyl in electrical

Published by
The Vinyl
Institute
Electrical
Materials
Council

FALL
1990

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The Vinyl Institute
Electric Materials Council
155 Route 46 West
Wayne Interchange Plaza II
Wayne, NJ 07470

Printed in U.S.A., on recycled paper

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and electronic applications totalled 573 million pounds in 1989. This was up from 559 million pounds in 1988; 524 million pounds in 1987, and 478 million pounds in 1986.

"Vinyl is a versatile and economical material that can be used in a wide range of products, especially those serving the electrical and electronic markets," said Richard R. (Rick) Smith, chairman of the Vinyl Institute's Electrical Materials Council.

"Because of its safety, durability and many other performance advantages, flexible vinyl is the predominant material used in wire and cable insulation and sheathing. Increasingly, we are also seeing vinyl compounded for processing into rigid products such as conduit, boxes and receptacles," Smith said.

New Information Kit Details Role Of Vinyl In Solid Waste

The Vinyl Institute has produced a new information kit that describes the role of vinyl (polyvinyl chloride, or PVC) in the solid waste stream.

Titled "Vinyl Plastics and Solid Waste, Some Basic Facts," the kit describes how vinyl can be recycled, incinerated and landfilled without harm to the environment. Recent in-depth articles about vinyl and solid waste are included, as is information about ordering the Institute's new directory of vinyl recyclers.

EC&M Article Addresses Misperceptions About Vinyl's Fire Performance

A guest editorial in EC&M magazine recently set the record straight on vinyl's fire properties.

In the editorial, Vinyl Institute Executive Director Roy T. Gottesman acknowledged how years of study have led experts to recognize that the total fire hazard posed by any material is determined by a number of properties, including ignitability, flammability, heat release, smoke and toxicity.

"Vinyl, one of the most thoroughly tested materials in use today," Gottesman writes, "performs extremely well in all of these."

Gottesman points out that tests carried out by vinyl's detractors often seek to show it at its worst by testing very basic flexible compounds that are not formulated to reduce smoke production or flame-spread. However, for any real-world applications involving a fire hazard, vinyl manufacturers supply sophisticated compounds designed to maximize ignition resistance and minimize smoke production and rate of heat release, he continues.

"Today, the demand for even safer vinyl products is growing. The industry is developing new materials with even better fire performance properties," Gottesman writes.

Who We Are . . .

The Vinyl Institute Electrical Materials Council was established in 1989 to promote and expand the use of vinyl in electrical applications. It is part of the Vinyl Institute, the national trade association representing the leading manufacturers of vinyl, vinyl feedstock, additives, and film and sheet products. Headquartered in Wayne, New Jersey, the Vinyl Institute is a division of The Society of the Plastics Industry, Inc.

For more information about any of the items appearing in this newsletter, please write to us at the address indicated in the upper left corner of the mailing panel.

PVC PIPE RESOURCE REPORT

Published by the
Pipe Resource Organization
of the Vinyl Institute

Technical Information Available

Information on the use of PVC pipe in water distribution, waste water handling and plumbing systems is available from the following organizations. The publications listed are subject to availability and there may be a charge for some items. To order these publications, contact each organization directly.

From the American Society for Testing and Materials (ASTM), 1916 Race Street, Philadelphia, PA 19103 (215) 299-5400:

Buried Plastic Pipe Technology, Papers from a symposium held September 10-13, 1990 and sponsored by Committee F-17 on Plastics Systems and Subcommittee D20.23 on Reinforced Plastic Piping Systems and Chemical Equipment. Designation: STP 1093.

Standard Practice for Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings, Designation: D2855.

Standard Specification for Coextruded Poly (Vinyl Chloride) (PVC) Plastic Pipe with a Cellular Core, Designation: F891.

Standard Specification for Corrugated Poly (Vinyl Chloride) Tubing and Compatible Fittings, Designation: F800.

Standard Specification for Poly (Vinyl Chloride) (PVC) Corrugated Sewer Pipe with a Smooth Interior and Fittings, Designation: F949.

Standard Specification for Poly (Vinyl Chloride) (PVC) Gasketed Sewer Fittings, Designation: F1336-91.

Standard Specification for Poly (Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings, Designation: F679.

Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings, Designation: D2665.

Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40, Designation: D2466.

Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120, Designation: D1785.

Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series), Designation: D2441.

Standard Specification for Poly (Vinyl Chloride) (PVC) Ribbed Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter, Designation: F794.

Standard Specification for Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings, Designation: D2729.

Standard Specification for Socket-Type Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80, Designation: D2467.

Standard Specification for Smooth-Wall Poly (Vinyl Chloride) (PVC) Plastic Underdrain Systems for Highway, Airport, and Similar Drainage, Designation: F758.

Standard Specification for Thermoplastic Well Casing Pipe and Couplings Made in Standard Dimension Ratios (SDR), Schedule 40 and Schedule 80, Designation: F480-90.

Standard Specification for Threaded Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80, Designation: D2464.

Standard Specification for 3.25-In. Outside Diameter Poly (Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings, Designation: D2949.

Standard Specification for Type PS-46 Poly (Vinyl Chloride) (PVC) Plastic Gravity Flow Sewer Pipe and Fittings, Designation: F789.

Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings, Designation: D3034.

From the American Water Works Association (AWWA), 6666 West Quincy Avenue, Denver, CO 80235. (303) 794-7711:

AWWA Standard for Polyvinyl Chloride (PVC) Pressure Fittings, 4 Inch Through 8 Inch, For Water Distribution, published in 1991. Describes ANSI/AWWA standard C907-91.

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AWWA Standard for Polyvinyl Chloride (PVC) Pressure Pipe, 4 Inch Through 12 Inch, For Water Distribution, published in 1989. Describes ANSI/AWWA standard C900-89.

AWWA Standard for Polyvinyl Chloride (PVC) Water Transmission Pipe, Nominal Diameters 14 Inches Through 36 Inches, published in 1988. Describes ANSI/AWWA standard C905-88.

PVC Pipe - Design and Installation, manual of water supply practices. Publication number AWWA No. M23.

From Uni-Bell PVC Pipe Association, 2655 Villa Creek Drive, Suite 155, Dallas, TX 75234. (214) 243-3902:

Information related to water distribution systems:

External Corrosion of Underground Water Distribution Piping Systems, UNI-PUB-7 (14 pages).

Grounding, Locating and Thawing Procedures for Water Mains and Services, UNI-TR-2 (10 pages).

PVC Pipe - Technology Serving the Water Industry, UNI-PUB-3 (15 pages).

Recommended Practice for the Direct Tapping of Polyvinyl Chloride (PVC) Pressure Water Pipe, UNI-B-8 (4 pages).

Recommended Practice for the Installation of Polyvinyl Chloride (PVC) Pressure Pipe, UNI-B-3 (7 pages).

Recommended Standard Performance Specifications for Joint Restraint Devices for Use with Polyvinyl Chloride (PVC) Pipe, UNI-B-13 (4 pages).

Recommended Standard Specification for Fiberglass Overwrapped Polyvinyl Chloride (PVC) Pressure Fittings, UNI-B-14 (12 pages).

Recommended Standard Specification for Polyvinyl Chloride (PVC) Pressure Fittings, UNI-B-12 (12 pages).

Tapping Guide for PVC Pressure Pipe, UNI-PUB-8 (20 pages).

Tapping PVC Pressure Pipe, (13 min. VHS video; $10 charge).

Information related to waste water handling:

Deflection: The Pipe/Soil Mechanism, UNI-TR-1 (40 pages).

Installation Guide for PVC Sewer Pipe, UNI-PUB-6 (28 pages).

Maintenance of PVC Sewer Pipe, UNI-TR-3 (14 pages).

Recommended Performance Specification for Polyvinyl Chloride (PVC) Profile Wall Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter (Nominal Pipe Sizes 4-48 inches), UNI-B-9 (8 pages).

Recommended Practice for the Installation of Polyvinyl Chloride (PVC) Sewer Pipe, UNI-B-5 (16 pages).

Recommended Practice for Low-Pressure Air Testing of Installed Sewer Pipe, UNI-B-6 (14 pages).

Recommended Standard Specification for Type PS46 Polyvinyl Chloride (PVC) Plastic Gravity Sewer Pipe and Fittings (Based on Performance Requirements) (Nominal Diameters 4-15 inches), UNI-B-10 (4 pages).

Additional Information:

The Effects of Ultraviolet Aging on PVC Pipe, UNI-TR-5 (12 pages).

Handbook of PVC Pipe: Design and Construction, third edition, published September 1991 (474 pages; $40 charge).

Recommended Standard Specification for Thermoplastic Pipe Joints, Pressure and Non-Pressure Applications, UNI-B-1 (4 pages).

Technology Serving the Water and Sewer Industries, UNI-PUB-1 (4 pages).

From the Plastics Pipe Institute (PPI), 155 Route 46 West, Wayne Interchange Plaza II, Wayne, NJ 07470. (201) 812-9076:

Cementing of PVC Pressure Pipe, Report number TR10.

Policies and Procedures for Developing Recommended Hydrostatic Design Stresses for Thermoplastic Pipe Materials, Report number TR3.

Poly (Vinyl Chloride) (PVC) Plastic Piping Design and Installation, Report number TR13.

Pressure Rating of PVC Plastic Piping for Water at Elevated Temperatures, Recommendation C.

Recommended Hydrostatic Strengths and Design Stresses for Thermoplastic Pipe and Fittings Compounds, Report number TR4.

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Recommended Method for Calculation of Nominal Weight of Plastic Pipe. Report number TR7.

[illegible] Service (Design) Factors for Pressure [illegible] Thermoplastic Pipe Materials. Report [illegible] TR9.

Resistance of Thermoplastic Piping Materials to Micro- and Macro-Biological Attack. Report number TR11.

Sealants for Polyvinyl Chloride (PVC) Plastic Piping. Report number TN2.

Standards for Plastics Piping (A listing of standards published by all North American standards organizations.). Report number TR5.

[illegible]ed Temperature Limits for Thermoplastic Pipe [illegible]ation and for Non-Pressure Pipe Operation. Report number TN11.

Thermal Expansion and Contraction of Plastic Pipe. Report number TR21.

Thermoplastic Piping for the Transport of Compressed Air or Other Compressed Gasses. Recommendation B.

Water Flow Characteristics of Thermoplastic Pipe. Report number TR14.

Weatherability of Thermoplastic Piping. Report number TR18.

[illegible]om the Plastic Pipe and Fittings Association (PPFA), 800 Roosevelt Road, Building C, Suite 20, Glen Ellyn, IL 60137-5833. (708) 858-6540:

Crush Strength and Flexibility of Thermoplastic Piping. Bulletin number 1-80.

The Growing World of Plastics Piping: A Comprehensive Listing of Common Applications of Plastic Plumbing Systems Covered by National Consensus Standards.

Hydrostatic Strengths and Suggested Pressure Ratings for CPVC 4120 at Various Temperatures. Bulletin number 2-80.

Indent Marking. Bulletin number 5-80.

Installation Handbook: CPVC Hot and Cold Water Piping.

Noise in Piping. Bulletin number 7-82.

Plastic Pipe in Fire Resistive Construction. Second edition, 1991.

Plumbers' Installation Handbook.

Position on the Use of Solvent Cements for Transition Joints between ABS and PVC Nonpressure Piping Components. Bulletin number 12-85.

Pressure Rating of PVC Plastic Piping for Water at Elevated Temperatures. Bulletin number 3-80.

Thawing Thermoplastic Water Pipes. Bulletin number 10-83.

Thermoplastic Piping in Residential Fire Sprinkler Systems. Bulletin number 9-83.

Use of Banded Flexible Connectors in DWV Systems as a Transition Between Iron Spigot and Plastic Spigots. Bulletin number 11-84.

Note: PPFA also offers audio/visual programs on the following topics: Joining and Adapting Plastic Pipe, Installing Plastic Sewer Pipe, Installing Plastic DWV Piping.

From McGraw-Hill, 1221 Ave. of the Americas, New York, NY 10020. (800)262-4729:

Buried Pipe Design. A.P. Moser, May 1990 (219 pages; $42.50 charge).

From the Vinyl Institute, 155 Route 46 West, Wayne Interchange Plaza II, Wayne, NJ 07470. (201) 890-9299:

Is PVC Piping Firesafe?, a technical article from the November/December issue of Fire Journal.

PVC vs. Copper Domestic Hot and Cold Water Systems: A Cost/Benefit Comparison (executive summary), 1990.

PVC Drain, Waste and Vent Pipe vs. Cast Iron Soil Pipe: A Cost/Benefit Comparison (executive summary), 1990.

PVC Electrical Non-Metallic Tubing vs. Electrical Metallic Tubing: A Cost/Benefit Comparison (executive summary), 1990.

PVC Pipe and Drinking Water Safety, technical information, revised July, 1991.

PVC Pipe Resource Reports, a series of illustrated case history articles about applications of PVC pipe.

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