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AUG 1 1985

Curtis M. Pontz

Roy T. Gottesman
Executive Director

August 1, 1985

To: Vinyl Institute Legal Committee

Subject: Generic PVC Material Safety Data Sheet and Label

You will recall that at the last Vinyl Institute Legal Committee Meeting on May 1 in Washington, Bob Luss agreed to undertake the development of a generic PVC Material Safety Data Sheet and Label in an attempt to standardize these documents within the industry.

I have now received the enclosed letter and attachments from Bob and I know that you will agree that he has done an outstanding job in carrying out this assignment. These are being forwarded to you with the request that you have them reviewed by the appropriate person(s) within your own company and return them to me no later than September 10 with any changes, corrections or additions you deem necessary. I would also request that technical data, viz. physical constants, be checked with your technical people. If you have any questions, I'd suggest you discuss them directly with Bob Luss at (215) 327-6425.

When I receive your replies, I will coordinate the finalization of these documents with Bob Luss and obtain final approval from Keller and Heckman.

In order to expedite the review process, I am sending a copy of this to Jerry Heckman for any comments that Keller and Heckman may have at this stage. At the same time, I am requesting Jerry Heckman to have his firm provide the Vinyl Institute with a legal opinion on the applicability of the OSHA labeling standard to PVC film material.

Once we have final review and approval on the generic Material Safety Data Sheet and Label, we can then discuss the desirability of submitting them to OSHA for their acceptance.

RTG:g
Encl.

cc: Jerome H. Heckman, Esq.

Mr. Donald Goodman-- As per your request, the attachments are not being sent to Richard Lorenz as you will handling the review within Tenneco Polymers
A Division of

THE SOCIETY OF THE PLASTICS INDUSTRY, INC.

355 LEXINGTON AVENUE • NEW YORK, N.Y. 10017 • (212) 503-0652

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Occidental Chemical Corporation

PVC Products

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JUL 20 1985

Robert D. Luss

Group Counsel

DR. R. T. GOTTESMAN

July 17, 1985

Mr. Roy T. Gottesman, Executive Director
The Vinyl Institute Division
The Society of the Plastics Industry, Inc.
1025 Connecticut Avenue, N.W.
Washington, D. C. 20036

Dear Roy:

Enclosed please find a generic-PVC material Safety Data Sheet and label for your review. The intent of developing these two documents is to standardize them for the industry. From the material you previously sent me, we were able to see differences in the amount of information among the PVC producers.

After you have had a chance to review the documents, they should either be forwarded to Keller and Heckman or the legal committee for review. If you have any questions, please feel free to contact me.

I believe that our next project should be a review of the Keller and Heckman opinion concerning the applicability of the OSHA labeling standard to PVC film material. I still believe that film is an article and not covered by the standard.

Have a good vacation.

Sincerely,


RDL:CDH

cc: Donald Goodman - Tenneco

encs.

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MATERIAL SAFETY DATA SHEET

GENERIC PVC MATERIAL SAFETY DATA SHEET

I. PRODUCT INFORMATION

- Product Name The trade name under which the product is marketed.
- Common Name or Synonym: Polyvinyl Chloride; PVC; Polyvinyl Chloride Resin
- Chemical Name: Ethene, Chloro-homopolymer
- CAS Registry Number: 9002-86-2
- Chemical Family: Homopolymers of Vinyl Chloride
- Chemical Formula: $(CH_2CHCl)_n$
- Manufacturer's name as cited on product package.
Manufacturer's address as cited on product package.
Manufacturer's emergency telephone number as cited on product package.
- Transportation emergency telephone _____
CHEMTREC: (800) 424-9300
- Date of MSDS preparation or date of last change to it.

II. HAZARDOUS INGREDIENTS

PVC is not considered a hazardous material under current Department of Labor definitions. PVC may contain any of the materials cited below in residual (trace) concentrations.

<u>CAS Number</u>	<u>Common Name</u>	<u>Chemical Name</u>
75-01-4	Vinyl Chloride	Ethene, Chloro
79-01-6	Trichlorethylene	Ethene, Trichloro--

III. PHYSICAL DATA

- Boiling Point: Not Applicable
(760 mm Hg)
- Vapor Pressure: Not Applicable
(mm Hg 20°)
- Vapor Density: Not Applicable
(Air = 1)

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- Solubility in Water:
(% by Weight) Negligible
- Appearance and Color: Powder: White.
- Specific Gravity:
H₂O = 1) 1.40
- pH: Not Applicable
- Percent Volatility:
(By Volume) Not Applicable
- Evaporation Point:
(Butyl Acetate = 1) Not Applicable
- Other: Bulk density, depending upon type ranges from 18 to 35 lbs./ ft³

IV. FIRE AND EXPLOSION HAZARD DATA

- Flash Point: About 391°C (735°F)
- Method: Not Specified
- Auto Ignition Temp.: About 435-557°C (815-1035°F)
- Method: Not Specified
- Flammable Limits:
(In Air % by Volume) Lower - Not Applicable
Upper - Not Applicable
- Extinguishing Media: Water is most effective. ABC dry chemical, AFFF and protein type air foams also work well. PVC resins are "ordinary combustibles" (NEPA defined Class A). Carbon Dioxide is not generally recommended for use on Class A fires as a lack of cooling capacity may result in reignition.
- Special Fire Fighting: Wear positive pressure, self-contained breathing apparatus (SCBA). Personnel not having suitable respiratory protection must leave the area to prevent significant exposure to toxic combustion gases from any source. In enclosed or poorly ventilated areas, wear SCBA during cleanup immediately after a fire as well as during the attack phase of firefighting operations.

IV. FIRE AND EXPLOSION HAZARD DATA

- Unusual Fire and Explosion Hazards:

Combustion or thermal decomposition yields Carbon Dioxide, Carbon Monoxide, Hydrogen Chloride (gas).

Hydrogen chloride has a corrosive effect on many metals. Affected equipment surfaces and unprotected structural elements of buildings should be washed to remove corrosive deposits as soon as possible after depositions have occurred.

Vinyl resin is not considered to be a dust explosion risk. The potential hazard has been evaluated using the Hartmann Vertical Tube Apparatus. Data have also been reported by the National Fire Protection Association (NFPA).

In the Hartmann apparatus, vinyl resin representing fine particle size (2 Microns) and large particle size (130 Microns) does not ignite or explode in concentrations up to 2.0 gm/liter.

The NFPA shows "fine" particle size vinyl resin to have a low order of risk.*

Explosibility index: <<0.1 (weak)
Ignition sensitivity: <<0.1 (weak)
Explosion severity: <<0.1 (weak)
Ignition temperature
dust cloud: 660°C (1220°F)

*Source: NFPA 654-1975. "Prevention of Dust Explosions in the Plastics Industry." <<0.1 means that ignition of the dust cloud is not obtained by a spark or flame source.

As a precaution, it is prudent to employ standard safety measures used in handling finely divided organic powders.

V. HEALTH HAZARD DATA THRESHOLD LIMIT VALUE

None Established

- Dust Exposure:

Vinyl resin has little effect on the lungs and is not known to cause any disease when dust exposure is minimized.

While there is no evidence of a substantial risk to health, a British study found a small decrease in breathing capacity for workers who smoked and were exposed to vinyl resin dust. This decrease was about one-seventh of that caused by normal aging and about equal to that expected with one-pack-a-day cigarette smokers.

The American Conference of Governmental Industrial Hygienists' Threshold Limit Value (1984) for nuisance dust is 10 mg/m³ for total dust and 5 mg/m³ for respirable dust. Respirable dust are those particles in a size range below 10 microns. Typical particle size for suspension and mass vinyl resin is 70-150 microns; blending resin is 25-130 microns. Dispersion resin has an average particle size below 5 microns.

Routine inhalation of dust of any kind should be avoided. Exercise care when dumping bags, sweeping, mixing or doing other tasks which can create dust. Where large amounts of any dust may occur, wear a respirator approved by NIOSH/MSHA to protect against nuisance dust.

V. HEALTH HAZARD DATA

- Effects of Overexposure:

There are no significant health hazards from vinyl resin at ambient temperature (see Dust Exposure).

No adverse health effects are expected from processing vinyl resin when potential exposures are minimized by good industrial hygiene practice and adequate ventilation. Nevertheless, at

processing temperatures, the sum total of all ingredients in a vinyl-based compound (e.g., vinyl resin, stabilizer, lubricant, modifier, etc.) may emit fumes and vapors that are irritating to the respiratory tract, eyes or skin of some sensitive people. This depends upon processing technique and temperature, volume processed and, most importantly, the effectiveness of exhaust ventilation provided to the process area.

Inhalation of decomposition or combustion products, especially hydrogen chloride, will cause irritation of the respiratory tract, eyes and skin. Depending on the severity of exposure, physiological response will be coughing, pain and inflammation. Individuals with bronchial asthma and other types of chronic obstructive respiratory diseases may develop bronchospasm if exposure is prolonged.

SPECIAL NOTE: Hydrogen chloride is detectable by its sharp, pungent odor in concentrations as low as 1-5 ppm. Low concentrations (below 50 ppm) are not harmful in short-term exposures, but do provide excellent warning properties by causing coughing or irritation. Because the protective response is so strong, humans rarely submit to damaging concentrations--instead, there is an unmistakable urge to leave the area. Repeated or prolonged exposure to high concentrations can cause eye and respiratory damage. In studies sponsored by the Federal Aviation Administration, no incapacitation, no impairment to escape and no significant post-exposure effects occurred in baboons exposed to hydrogen chloride up to 11,400 ppm (1.14%). OSHA has established a ceiling limit of 5 ppm for workplace exposure to hydrogen chloride.

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- First Aid Measures:

Below decomposition temperature the product has no significant toxic hazard. HAZARDOUS FUMES are produced by combustion or high temperature decomposition. If exposed to fumes:

 - Skin: Flush skin thoroughly with cool water for at least five minutes.
 - Eyes: Immediately flush eyes with a directed stream of water for at least 15 minutes, while forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissue. GET MEDICAL ATTENTION.
 - Inhalation: Remove to fresh air. If breathing is difficult, administer oxygen. If respiration stops, give mouth-to-mouth resuscitation. GET MEDICAL ATTENTION.
- Note to Physician : Material has no significant toxic hazard. Hazardous fumes (HCl, CO, CO₂) are produced by combustion and may be produced by decomposition at processing temperatures.

VI. HAZARDOUS REACTIVITY DATA

- Stability: Stable. Hazardous polymerization will not occur.
- Conditions to Avoid: Excessive heat for prolonged periods.
- Incompatibility: Avoid contact with acetal or acetal copolymers and with amine containing materials during processing. At processing conditions these materials are mutually destructive and involve rapid degradation. Thoroughly purge and mechanically clean processing equipment to avoid even trace quantities of these materials from coming in contact with each other. Prevent cross contamination of feedstocks.
- Hazardous Decomposition Products: Hydrogen chloride, carbon monoxide, carbon dioxide, and small amounts of benzene and aromatic and aliphatic hydrocarbons.

VII. ENVIRONMENTAL PROTECTION

Procedure In Case of Spill or Release:

Vacuum or sweep into a closed container for reuse or disposal.

• Waste Disposal Method:

Dispose of waste in a licensed landfill or by incineration in accordance with federal, state and local regulations. For waste disposal purposes. PVC resins are not defined or designated as hazardous by current provisions of the Federal Resource Conservation and Recovery Act (RCRA - 40CFR261). If incinerated, be aware that hydrogen chloride is generated.

• Ventilation:

Provide effective exhaust ventilation to draw dust and/or fumes away from workers to prevent routine inhalation. Compounding, hot melt processing (extruding, molding, etc.), cutting or sawing, machining, regrinding, thermoforming, heat welding, and other processing or post-processing operations involving heat sufficient to result in polymer breakdown should be examined to ensure adequate ventilation.

Ventilation guidelines and techniques may be found in the following publications:

- NIOSH Recommended Industrial Ventilation Guidelines: GPO #017-033-00136-7. Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20042 (\$9.00 as of December 1984).
- Industrial Ventilation, 18th Edition. Available from the American Conference of Governmental Industrial Hygienists, 6500 Glenway Ave., Bldg. D-5, Cincinnati, Ohio 45211 (\$15.00 as of December 1984).

III. SPECIAL PROTECTION INFORMATION

- Respiratory:
(Type)
Not normally required. Abnormal conditions such as equipment malfunction, use of improper equipment or procedures, or hangup or stagnation of vinyl-based compound during processing may cause decomposition. Employees involved in removing decomposing material should be provided with suitable air-supplied respirators, such as NIOSH/MSHA approved positive pressure, selfcontained breathing apparatus.
- Gloves:
(Type)
None required. Protective gloves are suggested when handling hot material during processing.
- Other Protective Equipment:
None required. Gloves if allergic dermatitis is suspected. Dust masks where exposure to dust takes place. Note: TLV (Threshold Limit Value) for Chemical Substances in Workroom Air Adopted by ACGIH for 1978, page 32, "Nuisance Particles: is 30 mppcf or 10 mg/m³ of total dust <1% quartz, or 5 mg/m³ respirable dust.

IX. SPECIAL PRECAUTIONS

Precautions to be Taken Store in cool, dry place (for prod-
in Handling and Storing: uct quality).

Normal melt processing. Virtually all thermoplastic materials will emit fumes and/or vapors when heated to processing temperatures. The concentration and composition of these vapors will depend upon variables such as the specific compound formulation and processing method and temperature. Always use vinyl compound under well-ventilated conditions and avoid continued or prolonged breathing of process vapors. For personal hygiene, wash thoroughly after handling resin, especially before eating, smoking or using toilet facilities. Do not store or consume food in processing areas. Do not use processing equipment to heat food.

Cleanup following normal melt processing should be performed under well-ventilated conditions. Compound

based upon vinyl resin may be held at process temperatures for a short time without significant thermal degradation. However, it should be recognized that exposure to either elevated temperature or excessive heat history (time) will result in decomposition.* Equipment should not be shut down for extended time periods with vinyl compound in it, or decomposition and possible corrosion of unprotected metal may result. If dies and screws are not to be cleaned manually, then compound should be purged from processing equipment prior to shutdown using special vinyl purge compound or a compatible thermoplastic such as general purpose ABS (do not use flame-retarded or halogen-containing grades for this purpose).

*Time and temperature required to initiate degradation will vary depending upon processing technique, degree of compound stabilization and other factors. As a general rule-of-thumb, degradation begins to occur after about one hour at 177°C (350°F), about ten minutes at 204°C (400°F) and within five minutes at 232°C (450°F).

In case of power loss or other mishap, shut off the machine and dismantle the die assembly as soon as possible before degradation or decomposition begins. If decomposition begins (with gassing and "Popping" sounds) before the die can be disassembled, dangerously high pressure may occur in the die system. In this event, shut off the machine, clear the area of personnel and wait until decomposition stops. Thoroughly ventilate the area. Remove and disassemble the die system. These are guidelines only. Refer to technical service reports and equipment manufacturer's recommendations for specific procedures.

Regrinding scrap normally generates substantial heat. Cool regrind before placing it in containers. The excellent insulating quality of vinyl will prevent heat in the center of a container from escaping, potentially resulting in slow thermal decomposition of the material. This may not only render the product unsatisfactory for further processing but also result in fumes and vapors being released into the workplace atmosphere.

Remove vinyl resin from walkways and floors to prevent slippery footing.

Sprinklered warehouse areas are recommended. Although vinyl resin by itself will not support combustion, materials such as wooden pallets, cardboard boxes and other combustibles can provide sufficient fuel to cause vinyl to burn.

Compounding vinyl resin. Many of the common compounding ingredients which are mixed with vinyl resin may require special handling, especially respiratory protection. It is the user's responsibility to obtain and follow the recommended precautions of the individual additive supplier.

SPECIAL NOTE: Vinyl compound at or above normal processing temperature must never be allowed to accumulate in thick masses, or it will begin to thermally decompose and to swell due to internal gassing. Gassing may cause a thick mass to explode if its outside surface is hardened. Molten waste should be collected as strands or flattened to 2-inches or less, and quenched in a drum of cold water provided for this purpose. Decomposing material should be removed to a well-ventilated area, preferably outdoors.

X. REGULATORY STATUS

- Vinyl Chloride Monomer (VCM):

Employee exposure to vinyl chloride monomer (CAS Registry Number: 75-01-4), a carcinogen, is regulated by OSHA (29CFR1910.1017). The current regulation requires that no employee may be exposed to VCM concentrations greater than 1.0 ppm (parts per million by volume) averaged over any eight-hour period or 5.0 ppm averaged over any period not exceeding 15 minutes. The action level is 0.5 ppm averaged over any eight-hour work day.

The regulation applies to the manufacture, packaging, repackaging, storage, handling or use of vinyl chloride or polyvinyl chloride, but does not apply to the handling or use of fabricated products made of polyvinyl chloride. Typically, purchasers of vinyl resin to be compounded or further processed must comply with the permissible exposure limits set by OSHA. Moreover, the regulations requires a program of initial monitoring in each facility to determine if there is any employee exposure in excess of the action level without the use of respirators. If monitoring does not find VCM above 0.5 ppm, no further action is necessary. Refer to OSHA regulations (including 29CFR1910.1017) for complete details.

- SPECIAL NOTE--Vinyl Chloride Warning Labels on Resin Containers:

Monitoring of vinyl processing and fabricating plants and modeling studies show that the action level (0.5 ppm) cannot be exceeded when residual VCM is at or below _____.

The OSHA regulation requires that the label says "Polyvinyl chloride contains vinyl chloride. Vinyl chloride is a cancer suspect agent."

Polyvinyl chloride resin is not a cancer suspect agent. It is the trace amount of unreacted vinyl chloride monomer that must be controlled, not the vinyl itself.

Although some containers may be labeled, this does not necessarily mean that employee exposure to VCM will exceed permissible exposure limits. Using "worst case" conditions of thermal processing, studies show that more than 30 ppm of unreacted monomer in vinyl resin is needed to cause 0.5 ppm to be present in the atmosphere of a hot, poorly ventilated workplace. Good ventilation in those areas where VCM might concentrate--such as where containers are stored and first opened, where materials are mixed and where resin is melted--will further ensure a work environment virtually free of VCM.

Hazardous Substances:

None of the following materials designated as toxic and hazardous by the U.S. Department of Labor (OSHA) are used to manufacture vinyl resin nor are they anticipated by-products in our production process:

29CFR1910.

- 1001 Asbestos
- 1002 Coal tar pitch volatiles
- 1003 4-Nitrobiphenyl
- 1004 alpha-Naphthylamine
- 1006 Methyl chloromethyl ether
- 1007 3,3'-Dichlorobenzidine (and salts)
- 1008 bis-Chloromethyl ether
- 1009 beta-Naphthylamine
- 1010 Benzidine.
- 1011 4-Aminodiphenyl
- 1012 Ethyleneimine
- 1013 beta-Propiolactone
- 1014 2-Acetylaminofluorene
- 1015 4-Dimethylaminoazobenzene
- 1016 N-Nitrosodimethylamine
- 1018 Inorganic arsenic
- 1029 Coke oven emissions
- 1043 Cotton dust
- 1044 1,2-Dibromo-3-chloropropane
- 1045 Acrylonitrile
- 1047 Ethylene oxide

No lead, mercury, other heavy metals or heavy metal compounds and no polychlorinated biphenyls (PCB)

or polybrominated biphenyls (PBB) are used to manufacture vinyl resins. These materials are ubiquitous and trace quantities may be found in the environment.

XI. ADDITIONAL INFORMATION

• Transportation:

For domestic transportation purposes, vinyl resins are not classified as hazardous by the U.S. Department of Transportation under Title 49 of the Code of Federal Regulations, 1983 Edition.

DOT Proper Shipping

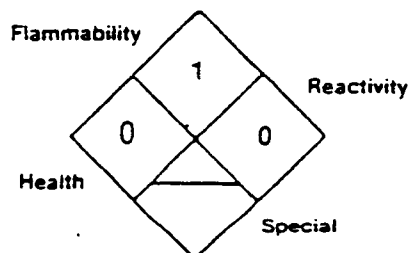
Name:	Not applicable
DOT Hazard Class:	Not applicable
DOT Label:	Not applicable
UN/NA Hazard No.:	Not applicable

Hazard Codes:

Hazard Code Key

4 = Extreme
3 = High
2 = Moderate
1 = Slight
0 = Insignificant

NFPA 704(1)



(1) National Fire Protection Assoc.

• Special Note:

Vinyl chloride and polyvinyl chloride (PVC) are not the same material. Vinyl chloride is a flammable gas that is strictly regulated by DOT, EPA and OSHA. Through a chemical reaction, this gas--known as monomer--is converted to a non-hazardous white granular powder called polyvinyl chloride resin, PVC, or simply, vinyl. Vinyl resin is not a cancer suspect agent. Moreover, the reaction is not reversible. That is, thermal processing or decomposition will

not cause polyvinyl chloride to revert back to vinyl chloride monomer. (See Section II and Appendix .1.)

HMIS Code:

Health Hazard Rating: 0
Flammability Hazard Rating: 1
Reactivity Hazard Rating: 0
Personal Protection Equip.: None

- For PVC Resins With Over 1 PPM of RVCM:

In compliance with the Department of Labor, Occupational Safety and Health Administration Standard "29 CFR 1910.1017 Vinyl Chloride (1)(4)" (published in Federal Register, Friday, October 4, 1974, Vol. 39, No. 194, Part II, page 35890), containers of polyvinyl chloride shall be legibly labeled:

POLYVINYL CHLORIDE (OR TRADE NAME)
CONTAINS
VINYL CHLORIDE
VINYL CHLORIDE IS A CANCER-SUSPECT AGENT

- For PVC Resins With 1 PPM and Under of RVCM:

No additional statements.

Disclaimer of Liability:

IMPORTANT! The information presented herein, while not guaranteed, was prepared by competent technical personnel and is true and accurate to the best of our knowledge. NO WARRANTY, OR GUARANTY, EXPRESS OR IMPLIED, IS MADE REGARDING PERFORMANCE, STABILITY OR OTHERWISE. This information is not intended to be all-inclusive as to the manner and conditions of use, handling and storage. Other factors may involve other or additional safety or performance considerations. While our technical personnel will be happy to respond to questions regarding safe handling and use procedures, safe handling and use remains the responsibility of the customer. No suggestions for use are intended as, and nothing herein shall be construed as, a recommendation to infringe any existing patents or to violate any Federal, State or local laws.

"GENERIC" PVC LABELS

Identity of Product:

Polyvinyl Chloride

Appropriate Hazardous
Warning--All Resins:

This product may contain any one
of the materials shown below:

CAS Number
79-01-6

Common Name
Trichloroethylene

Chemical Name
Ethene. Trichloro-

• Resins Above 1 PPM RVCM:

POLYVINYL CHLORIDE (OR TRADE NAME)
CONTAINS
VINYL CHLORIDE
VINYL CHLORIDE IS A CANCER-SUSPECT AGENT

Resins Below 1 PPM RVCM:

No additional warnings.

Manufacturing Data:

Name of Manufacturer:

As appropriate

• Address:

As appropriate

• Also Suggest 24 Hour Emergency Telephone Contact Data

HMIS Code:

Health Hazard Rating: 0
Flammability Hazard Rating: 1
Reactivity Hazard Rating: 0
Personal Protection Equip.: None

RAP/jn
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