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FROM: J. D. Tanzilli

September 27, 1984

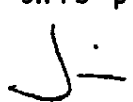
GEON® VINYL SAFETY DATA BULLETIN

Our present safety data bulletin for Geon® vinyls was published in 1980, and republished with minor revisions in January, 1981. As almost four years have passed, it is time to revise this document (i.e., Bulletin G-62, "Material Safety Data, Geon® Vinyl Resins and Compounds").

It has been reported that some customers are confused by Bulletin G-62, which combines resin and compound information into a single document. To eliminate confusion, I am proposing separate documents for resin and compound.

Enclosed are draft copies for the new bulletins. I would appreciate your help by reviewing them and offering comments as you deem appropriate. So the project can move along with minimal delay, please return any comments to me by October 15. At that time, final drafts will be prepared for review/approval.

Thank you for your help with this project.


James D. Tanzilli

*Note comments
Jim.
Note comments in photographs
J.D.*

JDT/jb/VS0184M

Enc.

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REF50461

Resin

Post-processing operations involving temperatures sufficient to generate smoke or fumes should always be conducted so as to avoid significant employee exposure. Provide local exhaust ventilation as the need exists.

Regrinding scrap for reextrusion or waste disposal generally results in 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 from all ingredients being released into the workplace atmosphere which can cause irritation of the respiratory tract, eyes and skin.

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

Compounding vinyl resin. Many of the common compounding ingredients you may purchase to add to 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: Compound at or above normal processing temperature must never be allowed to accumulate in large masses, or it will begin to decompose internally, and to swell due to gassing. Gassing may cause a large mass to explode if its outside surface is hardened by sprinkling with water. 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. Do not touch or attempt to wipe molten plastic from skin; it will stick to skin. Rapidly cool molten plastic on skin with water before attempting removal.

I disagree. Knock it off as soon as possible to avoid a burn. It doesn't stick to the skin that tightly.

SECTION X - TRANSPORTATION

OK 501

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
- ~~US/UN~~ Hazard No. ~~2~~: Not Applicable
UN/NA

• SPECIAL NOTE: Vinyl Chloride Warning Labels on Containers

Based on modeling studies and actual measurements in warehousing, transporting and thermal processing, it is our judgment that Geon® vinyl suspension, dispersion, mass and blending resins whenever they contain less than 8.5 ppm of residual vinyl chloride monomer will not trigger the 0.5 ppm "action level" established by OSHA and therefore do not require labeling. Vinyl prime, off-grade or scrap resin will be labeled with OSHA specified language if residual monomer level exceeds 8.5 ppm. (Please read Appendix.)

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REF50462

Respiratory Protection

Not normally required.

- OSHA 1910.1000(e) requires wearing an approved respirator or implementing appropriate engineering controls if airborne concentrations of dust particles exceed 15 mg/m^3 of total dust, or 5 mg/m^3 of respirable dust. Workplace exposures are easily maintained below these levels with proper industrial ventilation. If respirators are required, comply with OSHA 1910.134.

Health authorities recognize respirable dust to be particles 10 microns or smaller in size. Typical particle size for suspension and mass PVC resin is 130-150 microns; blending resin 25-130 microns. Dispersion resins have an average particle size below 5 microns.

- Abnormal conditions such as equipment malfunction or use of improper equipment or procedures may cause decomposition, resulting in generation of HCl and other gases irritating to skin, eyes or respiratory tract. Employees involved in removing decomposing material should be provided with NIOSH/MSHA-approved respirators.

Protective Equipment

Not normally required. Wear protective gloves when handling hot material during processing. Safety glasses are recommended for all industrial workplaces.

SECTION IX - SPECIAL PRECAUTIONS

Normal Melt Processing. Always use vinyl resins under well-ventilated conditions and avoid continued or prolonged breathing of process vapors. At processing temperatures, the sum total of all ingredients present (e.g., vinyl resin, stabilizer, lubricant, pigment, etc.) may emit odors and vapors irritating to the skin, eyes or respiratory tract of certain individuals. For personal hygiene, wash thoroughly after handling product, 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.

Clean-up following normal melt processing should be performed under well-ventilated conditions. Vinyl compounds may be held at process temperatures for a short time without significant decomposition. However, it should be recognized that they are designed for continuous processing, and that exposure for excessive times to processing temperatures may result in decomposition, and generation of HCl and other gases irritating to the skin, eyes and respiratory tract. Equipment should not be shut down for extended time periods with compound in it, or decomposition and possible corrosion of unprotected metal may result.

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Cmp'd

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

SPECIAL NOTE: Compound at or above normal processing temperature must never be allowed to accumulate in large masses, or it will begin to decompose internally, and to swell due to gassing. Gassing may cause a large mass to explode if its outside surface is hardened by sprinkling with water. 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. Do not touch or attempt to wipe molten plastic from skin; it will stick to skin. Rapidly cool molten plastic on skin with water before attempting removal.

SECTION X - TRANSPORTATION

Knock it off as soon as possible to prevent a burn.

For domestic transportation purposes, vinyl compounds 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
- ~~DOT~~ Hazard No.: Not Applicable
UN/NA

• **SPECIAL NOTE: Vinyl Chloride Warning Labels on Containers**

Based on modeling studies and actual measurements in warehousing, transporting and thermal processing, it is our judgment that Geon® vinyl compounds whenever they contain less than 8.5 ppm of residual vinyl chloride monomer will not trigger the 0.5 ppm "action level" established by OSHA and therefore do not require labeling. Vinyl prime, off-grade or scrap compound will be labeled with OSHA specified language if residual monomer level exceeds 8.5 ppm. (Please read Appendix 1.)

SECTION XI - HAZARD CODES

NFPA 704 (1980)¹

Health: 2
Flammability: 1
Reactivity: 1
Special: None

HMIS²

Health: 0
Flammability: 1
Reactivity: 1
Personal Protection: X (Wear safety glasses.
Wear gloves and/or dust
respirator when needed.)

- (1) National Fire Protection Association.
- (2) Hazardous Materials Identification System, National Paint and Coatings Association.

DISCLAIMER OF LIABILITY

As the conditions or methods of use are beyond our control, we do not assume any responsibility and expressly disclaim any liability for any use of this material. Information contained herein is believed to be true and accurate but all statements or suggestions are made without warranty, express or implied, regarding accuracy of the information, the hazards connected with the use of the material or the results to be obtained from the use thereof. Compliance with all applicable federal, state and local laws and regulations remains the responsibility of the user.

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Respiratory Protection

Not normally required.

- If overheating or clean-up results more smoke or fumes than can be adequately exhausted by the plant ventilation system, a NIOSH/MSHA-approved combination high-efficiency particulate filter with organic vapor cartridge can be used.
- OSHA 1910.1000(e) requires wearing an approved respirator or implementing appropriate engineering controls if airborne concentrations of dust particles exceed 15 mg/m^3 of total dust, or 5 mg/m^3 of respirable dust. Workplace exposures are easily maintained below these levels with proper industrial ventilation. If respirators are required, comply with OSHA 1910.134.
- Abnormal conditions such as equipment malfunction or use of improper equipment or procedures may cause decomposition, resulting in generation of HCl and other gases irritating to skin, eyes or respiratory tract. Employees involved in removing decomposing material should be provided with NIOSH/MSHA-approved respirators.

Protective Equipment

Not normally required. Wear protective gloves when handling hot material during processing. Safety glasses are recommended for all industrial workplaces.

SECTION IX - SPECIAL PRECAUTIONS

Normal Melt Processing. Always use vinyl compound under well-ventilated conditions and avoid continued or prolonged breathing of process vapors. At processing temperatures, the sum total of all ingredients present (e.g., vinyl resin, stabilizer, lubricant, pigment, etc.) may emit odors and vapors irritating to the skin, eyes or respiratory tract of certain individuals. For personal hygiene, wash thoroughly after handling product, 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.

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- (10)
- (Cmpd)
- Stabilizer. Stabilizer controls degradation of the entire compound during processing and throughout the service life of the product. Stabilizers may be grouped into four classes: organic tin stabilizers, lead salts, mixed metal salts and special-purpose stabilizers. The most common organic tin stabilizers are tin mercaptides, mainly methyl tin and butyl tin. *One type of tin mercaptide, di-n-octyl, is FDA acceptable for food contact applications.* *Some tin mercaptide stabilizers include di-n-octyl and dimethyl tin mercaptide.* Lead salts like dibasic lead phosphite, are mainly organic lead compounds and include sulfates, silicates, phosphates, stearates, phthalates and maleates. Mixed metal salts include calcium-zinc and barium-cadmium systems. Special-purpose stabilizers include flame retardants such as antimony derivatives and ultraviolet light absorbers. Stabilizer is typically present at less than 5% in PVC compound. *OK 50T*
 - Processing aids. The most common processing aids used with PVC are acrylic polymers present at levels between 0-5.0% depending on processing method (i.e., extrusion, molding, etc.)
 - Impact modifiers. Common impact modifiers for PVC include acrylates, chlorinated polyethylene, methacrylate-butadiene-styrene (MBS), acrylonitrile-butadiene-styrene (ABS), and rubber. Although not present in all compounds, when used, impact modifier concentration may range between 0-14%. *0-20%*
 - Fillers. Most common are metal carbonates, mainly calcium carbonate, which is unusually in the form of ground limestone and coated with stearic acid. Other fillers may be silicates, gypsum, clay, alum and barytes.
 - Plasticizer. Phthalate esters such as dioctyl phthalate are most common. Many kinds of plasticizer are available such as dihexyl and dibutyl phthalates, phosphate esters such as *trioctyl phosphate*, aliphatic alcohol esters such as dioctyl adipate, polymeric plasticizer such as *adipic acid*, and monomeric esters such as trimellitate. *polyesters of*
 - Lubricants. Lubricants include paraffin waxes, mineral oils, polyethylene, and fatty acids, esters and amides. Lubricants would be present at about *5%*, or less. *esters of fatty acids*
 - Pigment. A list of common pigments appears in Section II. Most pigments are present at 0.5-5% to achieve opacity and color. In weatherable compounds, titanium dioxide may be present at concentrations up to 15% to achieve acceptable ultraviolet light screening.

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APPENDIX 1 - VINYL CHLORIDE MONOMER (VCM)

Employee exposure to vinyl chloride monomer (CAS Registry number: 75-01-4) is regulated by OSHA Standard 1910.1017. The current regulation requires that no employee may be exposed to VCM concentrations greater than 1.0 ppm (part 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, reaction, 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 compound are affected by this regulation. Moreover, the regulation requires a program of initial monitoring in each establishment to determine if there is any exposure, without the use of respirators, in excess of the action level. If monitoring does not find VCM above 0.5 ppm, no further action is necessary. Refer to OSHA regulations (including 1910.1017) for complete details.

Monitoring of vinyl processing and fabricating plants and modeling studies show that the action level (0.5 ppm) is not exceeded when residual VCM is below 8.5 ppm in Geon® vinyl compound. Shipping containers for these compounds shall not be labeled by BFGoodrich unless a customer specifies otherwise. Vinyl compound will be labeled if residual monomer exceeds 8.5 ppm. The federal regulation requires that the label say "Polyvinyl chloride contains vinyl chloride. Vinyl chloride is a cancer suspect agent."

Polyvinyl chloride is not a cancer suspect agent. It is the small amount of unreacted 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, our 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 workplace atmosphere as a result of thermal processing. Good exhaust ventilation in those areas where VCM might concentrate -- such as where containers are stored and first opened, where materials are mixed and where compound is first melted -- will further ensure a work environment virtually free of VCM.

APPENDIX 2 - FUNCTIONAL ADDITIVES USED IN PVC COMPOUND

Additives chosen for a specific compound will vary according to processing and final product requirements. The following list does not represent all possible additives but it does represent typical ingredients which may be used in specific Geon® vinyl compounds.

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