April 8, 2015

Sent via Electronic Mail

Ms. Jodi Howard
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RE: Polyvinyl Chloride and Copolymers Resins – Revised Definitions

Dear Ms. Howard:

Following-up on the December 8, 2014, discussions between the Vinyl Institute ("VI") and the Environmental Protection Agency ("EPA"), the VI PVC MACT Copolymer Subgroup[1] has revised its proposed changes and clarifications to the definitions of the resin types and processes in the *National Emission Standards for Hazardous Air Pollutants for Polyvinyl Chloride and Copolymers Production* ("PVC MACT").[2]

As you requested, the Subgroup is proposing that "emulsion and microsuspension" processes be defined under the general Dispersion Process definition according to publicly available information[3] and that the definition for Polyvinyl Chloride Copolymer indicate that one or more monomers comprise a copolymer. We did not propose separate definitions for emulsion or microsuspension out of the concern that such definitions may suggest another subcategory beyond dispersion type for product limits. VI's aggregated resin data base consolidated all these processes under the dispersion subcategory. It makes sense to keep dispersion as a broad subcategory, as some facilities make resins using both types of processes. Attachment A (previously submitted along with VI's November 13, 2014 correspondence) has been revised to incorporate these changes.

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[1] The VI PVC MACT Copolymer Subgroup includes VI members Formosa Plastics Corporation, U.S.A., Mexichem Specialty Resins, Wacker Chemical Corporation, and Lubrizol Corporation.

[2] 77 Fed. Reg. 22,848 (April 17, 2012).

[3] Wilkes, Summers, Daniels (Eds.). 2005. PVC Handbook, p. 80 – 82.

The Vinyl Institute and the VI PVC MACT Copolymers Subgroup appreciate EPA's consideration of this important matter. Please do not hesitate to contact me with any questions.

Sincerely,

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cc: Ms. Penny Lassiter, EPA-RTP

Mr. Mark Kataoka, EPA-OCG
JC Walker, Keller and Heckman
Vinyl Institute PVC MACT Copolymers Subgroup
Vinyl Institute PVC MACT Working Group

Enclosure:

Attachment A (04-08-15 Revision): Definitions and Proposed Changes for Resin Process Types in the PVC MACT

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Attachment A (04-08-2015 Revision)
Definitions and Proposed Changes for Resin Process Types in the PVC MACT

Definitions in the PVC MACT (40 C.F.R. § 63.12005):

Note: Additions to the definitions of "dispersion process, "polyvinyl chloride homopolymer", and "polyvinyl chloride copolymer" are underlined and deletions are in strikethrough. A new term, "latex process" is added.

Dispersion process means a process for producing polyvinyl chloride resin using either the emulsion or microsuspension process. The emulsion process uses water soluble initiators and is distinguished by metering in surfactants as the reaction progresses. In microsuspension, homogenizers are first mixed with the monomer(s) outside of the reactor and oil soluble initiators are then added before charging the reactor. These polymerization techniques produce fine particles (typically less than 10 microns) with little or no porosity. Emulsifier levels vary but agitation is very mild compared to other PVC polymerization processes. The final product is dried to powder form. ~~that is characterized by the formation of the polymers in soap micelles that contain small amounts of vinyl chloride monomer. Emulsifiers are used to disperse vinyl chloride monomer in the water phase. Initiators used in the dispersion process are soluble in water. Resins produced using the dispersion process are referred to as latex or dispersion resins.~~

Grade means the subdivision of PVC resin that describes it as a unique resin, i.e., the most exact description of a type of resin with no further subdivision. Examples include low molecular weight suspension resins and general purpose suspension resins.

Latex process means a process for producing polyvinyl chloride resin that is characterized by metered addition of monomer(s) and other ingredients as the reaction progresses, typically in a modified semi-batch or semi-continuous emulsion polymerization process. This modified emulsion process creates very fine particles that have a typical average particle size of less than 0.5 microns. Latex is stripped using steam, oxidation-reduction, or other method to eliminate residual monomer(s) yet preserve the sensitive latex product form. Polyvinyl chloride resin produced using the latex process is sold in an undried form.

Polyvinyl chloride means either polyvinyl chloride homopolymer or polyvinyl chloride copolymer.

Polyvinyl chloride homopolymer means a synthetic thermoplastic polymer that is derived from the polymerization of vinyl chloride and has the general chemical structure (-H2CCHCl-)n. Polyvinyl chloride homopolymer is typically a white powder or colorless granule. Polyvinyl chloride homopolymer is produced by different processes, including (but not limited to), suspension, dispersion ~~or /emulsion~~, blending, and bulk processes. Polyvinyl chloride homopolymer can also be produced using a latex process and the latex product is sold in an undried form.

Polyvinyl chloride copolymer means a synthetic thermoplastic polymer that is derived from the simultaneous polymerization of vinyl chloride and ~~another~~ one or more additional monomer(s). ~~such as vinyl acetate.~~ These additional monomers are reactive with vinyl chloride and become part of the polymer chain. Additives in the PVC polymerization used for stabilization and/or particle size control are not as reactive, do not become part of the polymer chain, and are not considered to be monomers in the polymerization process. Polyvinyl chloride copolymer is produced by different processes, including, but not limited to, suspension, dispersion ~~or /emulsion~~, suspension blending, latex, and solution processes.

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Product means a polymer produced using ~~the same~~ vinyl chloride monomer and varying in additives (e.g., initiators, terminators, etc.); catalysts; or ~~in~~ the relative proportions of vinyl chloride monomer with one or more other monomers, and that is manufactured by a process unit. With respect to polymers, more than one recipe may be used to produce the same product, and there can be more than one grade of a product. Product also means a chemical that is not a polymer, which is manufactured by a process unit. By-products, isolated intermediates, impurities, wastes and trace contaminants are not considered products.

Suspension process means a process for producing polyvinyl chloride resin that is characterized by the formation of the polymers in droplets of liquid vinyl chloride monomer or other co-monomers suspended in water. The droplets are formed by agitation and the use of protective colloids or suspending agents. Initiators used in the suspension process are soluble in vinyl chloride monomer. Polyvinyl chloride resins produced using the suspension process are referred to as suspension resins.

Suspension blending process means a process for producing polyvinyl chloride resin that is similar to the suspension polymerization process, but employs a rate of agitation that is significantly higher than the highest range for non-blending suspension resins. The suspension blending process uses a recipe that creates extremely small resin particles, generally equal to or less than 100 microns in size, with a glassy surface and very little porosity. The suspension blending process concentrates the resins using a centrifuge that is specifically designed to handle these small particles. Polyvinyl chloride resins produced using the suspension blending process are referred to as suspension blending resins and are typically blended with dispersion resins.

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