

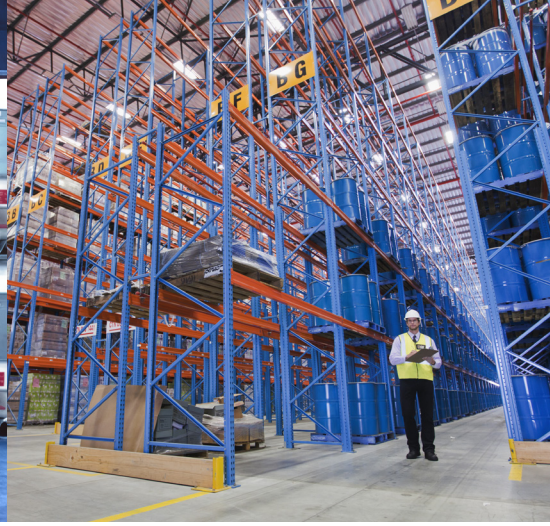

TECHNICAL BULLETIN

Storage and Handling of Vinyl Plastisols

A vinyl plastisol is a liquid dispersion of polyvinyl chloride (PVC) resins, plasticizers, and miscellaneous additives. When baked, this liquid plastic becomes a fused solid plastic.

Plastisols can separate and tend to become more viscous over time. Proper handling and storage can help minimize these characteristics, in turn, maximizing the utility of the plastisol and minimizing potential manufacturing issues and their associated costs.

It is common for plastisols to increase in viscosity (thicken) over time. The rate of increase is dependent upon a number of factors, including the plastisol formula, age and storage conditions.

As a result of these plastisol aging characteristics and the potential differences in testing methodology, it is strongly recommended that incoming quality control (QC) specifications not be established based on plastisol Technical Data Sheets (TDS), or Certificates of Analysis (COA). QC specifications should be based on the needs of the process and end product. The useful life of plastisol is dependent upon the specific formulation.

Plastisols will most likely change over time and material should be used on a first-in-first-out (FIFO) basis as quickly as possible. The typical shelf life of most plastisols will be 60 days, depending upon the plastisol formulation. Some plastisol formulations may stay usable for considerably longer periods when stored under good warehousing practices. Good warehousing practices include keeping the container tightly closed when not in use, storing the plastisol at room temperature and away from heat sources or direct sunlight, and avoiding exposure to water.

Product contamination, including water, is minimized by keeping the container tightly closed when the plastisol is not in use. In large enough quantities, the presence of water will result in the formation of blisters during fusion. In smaller quantities, the presence of water may create cloudiness in fused parts, especially those parts produced from clear or transparent plastisols. Other contaminants may affect product quality in various ways depending on the contaminant type and level.

As the temperature of the plastisol is increased, the viscosity of the plastisol will decrease. While at times this may seem desirable, exposure to sources of heat will result in a faster rate of viscosity increase, or even gelation (solidification) of the plastisol.

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Decreased plastisol temperatures will result in higher plastisol viscosities. Large temperature shifts in the plastisol should be avoided, as they can lead to condensation and moisture build-up. Exposure to cold itself will generally not harm the plastisol. If exposed to cold temperatures, it is recommended that the container of plastisol be stored at room temperature for 1–2 days before the plastisol is used.

Depending upon the plastisol formula, separation or settling may occur. The timing of separation will vary. Upon initially opening the container, and on some routine frequency thereafter, the plastisol should be gently stirred. Stirring should be done gently so as not to introduce air or heat into the plastisol, but forceful enough to re-disperse any settled material on the bottom. The frequency of the need for re-mixing will typically vary between 1 week and 1 month.

A visual examination of the plastisol is key in determining the proper re-mixing frequency, or if separation has occurred. The visual appearance of a clear surface layer, or the formation of sediment on the bottom of the container, is an indication that separation has occurred and the plastisol needs to be re-mixed. Sediment on the bottom of the container can be determined by inserting a clean pole, of sufficient length, into the container and pushing the end to the bottom.

Using plastisol that has separated will have serious ramifications on the manufacturing process. Utilizing separated plastisol from the top of the container will result in a part that has poor strength and will take additional time to fuse, if fusion occurs. Utilizing separated plastisol from the bottom of the container will result in a part that is harder than normal and may even exhibit brittleness in severe cases of separation.

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