FOR25048

PVC - File

UNIROYAL CHEMICAL
Division of UNIROYAL, Inc.

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AD&K - "1230"

Subject: Vinyl Chloride Content of PVC

I promised that I would provide you with a technical discussion of the relationship of residual VC in PVC resins to levels of VC in air. An understanding of this relationship requires some discussion of both the term, "ppm" and an understanding of chemistry.

First, it is important to understand that 1 ppm of residual VC in PVC resins means 1 gram of VC in one million grams of PVC. Conversely 1 ppm of vinyl chloride in air means 1 volume of VC in one million volumes of air, i.e., 1 cm^3 per million cm^3. The use of the term ppm for a weight ratio, as well as for a volume ratio, is perhaps unfortunate but ratios have no units.

Second, it is important to know that 1 gram of vinyl chloride will occupy approximately 378 cm^3 as vapor at a temperature of 60°F and a pressure of 30 inches of mercury (standard temperature and pressure). It happens that 1 gram of VC per million grams of PVC is almost exactly equal to 1 gram of VC per 2,200 pounds of PVC. Therefore, 2,200 pounds of PVC, containing 1 ppm of residual vinyl chloride, could yield 378 cm^3 of VC vapor if it all escaped. This amount of vinyl chloride vapor is approximately 1 ppm in an air-tight room of dimensions 12' x 24' x 46'. It is a relatively hugh volume compared with the container necessary to hold 2,200 pounds of PVC resin (about 4' x 4' x 6'). 12 x 33 x 33

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If the residual VC were 10 ppm, the calculation for 2,200 pounds shows a room 12' x 12' x 9' would contain 1 ppm in air if it all vaporized. As you can see, the effect of residual VC in PVC resin has a very tenuous relationship to VC in a plant which uses the PVC resin if there is any air exhaust system in use in the using plant. The PVC industry has monitored many operations where PVC is used and found that in most cases the VC present does not exceed the "action level" of 0.5 ppm.

WRONG

12 x 12 x 9

12' x [illegible] x 90 x 124

12' x 105' x 105'

BR Leach
B. R. Leach

cc: WDHarris
EJSowinski
BRL
Chrono

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