

Development of UV curing type thermoset resin for zero VOC in pipe repair application

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Cured-in-place pipe(CIPP) process is a pipe rehabilitation method, which has used thermoset resin which is diluted with styrene monomer. However, the resin was difficult to use as CIPP method due to odor threshold of SM and uncomfortable storage stability at room temperature. It is necessary to develop zero VOC resins to replace styrene monomer (SM), which violates environmental regulations.

Ultraviolet(UV) capable resins are cured in photo polymer system that harden within seconds or minutes by irradiation. It has excellent storage stability at room temperature and has zero VOC by replacing SM with multifunctional acrylate monomers. In additionally, UV curable resin has excellent adhesiveness, chemical resistance, water-resistance and hardness.

In herein, we developed an UV curable thermoset resin of zero VOC dispersed by multifunctional acrylate monomers. In addition, this research has been studied that the curing behavior of resin according to the photoinitiators(PI), monomers, oligomer and additives.