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ASAHI GLASS CO., LTD
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David G. Lynch
Economics, Exposure and Technology Division
Office of Pollution Prevention and Toxics
7406M
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

Re: 1. An opinion about some peaks detected on the GPC chromatogram of Asahi's Purified Polymer
2. Characterization of the polymeric product

Dear Mr. Lynch:

As a follow up to recent discussions concerning the oligomeric component containing in our purified polymer, I would like to express our opinion on the issue of several peaks detected on the GPC chromatogram of our purified polymer. In addition, I submit CBI and non-CBI version of characterization reports of our telomer based polymeric product that used to prepare the purified polymer.

According to the page 5 of the report "Purification and characterization of purified polymer by Asahi Glass" we have submitted on May 7th, GPC chromatograms of purified polymer and corresponding product (Fig. 3), have several peaks between 18 and 20 minute. Our opinion is that these peaks are not oligomers in the purified polymer but "system (ghost) peaks", which is always attended with the GPC chromatogram.

As a result of the exhaustive elimination of PFOA and C8 precursors through the Soxhlet's extraction and ultrasonic solvent extraction, PFOA is reduced to less than 1 ppm and C8 precursors are to 30 ppm order in all. Simultaneously with the elimination of C8 precursors (Mw: ca. 500) through these processes, most proportions of the dimer or trimer (Mw: ca. 1500) containing fluoroacrylates, if present, are presumed to be eliminated.

If oligomers were remained in the purified polymer 100 times larger in amount compared to C8 precursors, that is the order of sub %, it is still difficult to obtain their distinct peak by GPC.

Therefore, the peaks may not be assigned to oligomers. These peaks are considered as the "system (ghost) peaks" caused by GPC systematic source such as the difference in dissolved gas (nitrogen, oxygen, carbon dioxide, water) or the amount of antioxidant in THF between sample solution and mobile phase, which is always attended with the chromatogram of GPC.

Molecular weight distribution of the purified polymer is estimated to be shown between 10-17 minutes on the chromatogram. There is a small negative peak at 17.15 minutes, which correspond to 2,624 Da by PMMA equivalent molecular weight. Thus, the distribution is presumed to be larger than 3,000 Da.

Furthermore, since this polymer is manufactured by random copolymerization in a typical emulsion polymerization condition, molecular weight distribution is expected to be monomodal. This supports the estimation that 18-20 minute peaks are not assigned to oligomers.

Though it is very difficult to confirm the content of low molecular weight component by other methods than GPC, one proposition is to separate low molecular weight material corresponding to elution time of 18-20 minute by preparative chromatography.

Meanwhile, in compliance with the request of information regarding the characterization of our telomer based polymeric product that used to prepare the purified polymer, I submit CBI and non-CBI version of the reports.

Please direct any questions about this opinion to me at your convenience.

Sincerely yours,

T. Isemura

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