

# Organic Gas Speciation Profile for Plastics Production—Polystyrene (OG750)

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## 1 Introduction

It has been noticed that the organic gas (OG) speciation profiles assigned for the categories of polystyrene manufacturing are not appropriate. SCC30101821 (Plastics production-Polystyrene-extruding/Pelleting/Conveying/Storage) is associated with OG768 (Fluorocarbon-113), and EIC 41040450460000 (Plastics and Plastic Products Manufacturing – Polystyrene) is associated with OG753 (Styrene) [1]. A new profile OG750 is created for the process of polystyrene manufacturing based on a study conducted in 1985 [2]. The new profile will be used for 30101821 and 41040450460000 to replace the currently assigned profiles.

## 2 Methodology

In the study of *Improvement of the Emission Inventory for Reactive Organic Gases and Oxides of Nitrogen in the South Coast Air Basin* [2], a profile for Polystyrene Resin Manufacturing was created based on survey and literature review. Styrene and ethylbenzene are present in emissions from polystyrene manufacturing, and styrene is the major constituent of these emissions. This result is consistent with what was measured from the vent of a polystyrene facility [3]. The profile created in the South Coast Air Basin study is adopted by CARB as the new profile OG750 for Plastic Production – Polystyrene. The details of the profile are listed in Table 1. For OG750, the ROG/TOG ratio is 1.0 and the ozone forming potential (OFP) is 1.86 g O<sub>3</sub>/g ORG estimated based on SAPRC07.

**Table 1. OG speciation profiles for plastics production - polystyrene (OG750)**

<i>Species</i>	<i>SAROAD</i>	<i>Weight Percentage (%)</i>
styrene	45220	0.9
ethylbenzene	45203	0.1
Total		1.0

## References:

1. *California Air Resources Board Main Speciation Profiles*, 2017, California Air Resources Board, Accessed: July 31, 2017.

2. Oliver, W.R. and S.H. People, *Improvement of the Emission Inventory for Reactive Organic Gases and Oxides of Nitrogen in the South Coast Air Basin*, 1985, California Air Resources Board: Sacramento, CA.
3. Hsu, Y.-C., et al., *Determination of Volatile Organic Profiles and Photochemical Potentials from Chemical Manufacture Process Vents*. Journal of the Air & Waste Management Association, 2007. **57**(6): p. 698-704.