Speciation Profiles Used in ARB Modeling

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This is the HOME page for access to the speciation data used by the ARB in its various emissions modeling programs. Please read this page, before navigating the site using the SPECIATION links column at the left of this page.

Speciation profiles provide estimates of the chemical composition of emissions, and are used in the emission inventory and air quality models. ARB maintains and updates estimates of the chemical composition and size fractions of particulate matter (PM) and the chemical composition and reactive fractions of total organic gases (TOG), for a variety of emission source categories.

The DEFINITIONS link explains terms used to describe the profiles and their chemical groupings. The REFERENCES link allows access to consolidated listings of the references used for the speciation profiles. The references can also be accessed, through the profiles that use them, using the INTERACTIVE OPTION portion of this web site.

- SPECIATION PROFILES
- ASSIGNMENTS AND FRACTIONS
- DOWNLOAD OPTION FILE LIST

This is the DOWNLOAD OPTION. From the SPECIATION links column at the left of the page, you can also choose the INTERACTIVE OPTION, which allows the scanning, printing and download of all or selected portions of the data files. The interactive option allows you to search/filter on a variety of data fields.

The DOWNLOAD OPTION allows access to the same information that is available from the INTERACTIVE OPTION pages, as well as some additional data. The DOWNLOAD OPTION files use slightly different terms and data breakdowns from the INTERACTIVE OPTION. Be sure and read the cautions on the INTERACTIVE OPTION and/or DOWNLOAD OPTION pages describing where the data definitions differ, before attempting to combine data from the two approaches. You are probably best to work with one approach or the other, at least until you are familiar with the two sets of data.

The SPECIATION links column at the left of this page also provides background information describing how the speciation data were developed, what the terms used in conjunction with the data mean, and how the data can be used to calculate single compound concentrations from nonspeciated total organic gas (TOG) or particulate matter (PM) emission estimates. The WHAT'S NEW link and the links under RECENT UPDATES allow you to see recent changes to the speciation profiles. The USING DATA link shows example calculations. The SOURCE CODES link explains how the SCC and/or EIC codes are assigned to the speciation profiles. These SCC and/or EIC codes are also assigned to the emission inventory, providing the link between the emissions and the speciation profiles. The DEFINITIONS link explains terms used to describe the profiles and their chemical groupings.

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The ARB's current PM and Organic Gas Speciation Profiles are available for download from this page as Excel spreadsheet files (PMPROF and ORGPROF). Each speciation profile provides weight fraction data of each chemical species making up the total particulate matter of total organic gas, and is designated by an identification code number. The chemical species are identified by a 5-digit SAROAD code, a 9-digit Chemical Abstract Service (CAS) number (where available), and the chemical name. For PM, there are also PM size fraction tables, which provide the particulate mass within each size fraction (PM total, PM 10, or PM 2.5) for individual source categories. The PMSIZE spreadsheet file contains a summary of the PM size fractions for each PM profile. To compute the amount of a specific chemical constituent in the PM size fraction of interest, each PM chemical weight fraction must be multiplied by the appropriate PM size fraction.

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A cross-reference table SCC_ASSIGN_FRACTION is also available that indicates which PM and Organic Gas profile is assigned to each source category in the inventory. This table is partitioned into the following four zipped .xls files (click to download):

- Zero Year (all years);
- 1975-1995;
- 1996-2015;
- 2016-2035.

Partitioning the file was necessary, due to the limitations of the size of Excel spreadsheets. Even though they are split into smaller files, you will still need Excel 2003 or later to open these Excel files.

Note that the contents of the YEAR field in the Zero Year (all years) file is 0 (zero). That means that the SCC codes in this file have the same profile set assigned for all years. By contrast, the files with file names showing a range of years, will have YEAR fields with actual year values. That means that profile set applies for that SCC only for that particular year and MAY change in other years.

If you want to have the complete SCC_ASSIGN_FRACTION file set, then you must download all 4 of the above files. Regardless of whether you want just one, or all three of the year-specific files, you must download the Zero Year file. That is because some of the category entries will only be represented in the Zero Year file. If you do not include the Zero Year file in your analysis, you will also not be including the emissions for the associated categories in your analysis.

The inventory source categories are represented by an 8-digit Source Classification Code (SCC) for point sources, or a 14-digit Emission Inventory Code (EIC) for area and mobile sources. This file also contains the fraction of reactive organic gas (FROG) values for organic profiles, and the PM 10 and PM 2.5 size fraction data for PM profiles. Some of the Organic Gas Speciation Profiles related to motor vehicles and fuel evaporative sources vary by the inventory year of interest, due to changes in fuel composition and vehicle fleet composition over time.

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CHEM (Excel) - Chemical species data for source categories

FRAC (Excel) - Fraction data for source categories

ORGPROF (Excel) - Organic chemical profiles for source categories

PMPROF (Excel) - Particulate matter chemical profiles for source categories

PMSIZE (Excel) - Particle size fraction data for source categories

ORGPROF_REF (Excel) - Reference number for organic gas profiles

PMPROF_REF (Excel) - Reference number for PM profiles

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