



**CALIFORNIA**  
AIR RESOURCES BOARD

**Final**

**2015**

**CONSUMER &**

**COMMERCIAL**

**PRODUCTS**

**SURVEY**

**Updated**

**December 12, 2019**

2015 TOG Speciation  
Summary Report



## Background: 2015 Category Speciation Summary Report

This file includes detailed chemical speciation for consumer products as a whole, as well as each of the consumer product category series. This report identifies and quantifies the chemical ingredients responsible for 95 percent by weight of the TOG of each consumer product category series.

**Category Code** A code used to reference a particular survey category.

**Category Code Series** The consumer products survey categories are grouped into seven different series:

- 10000 - Adhesives, Sealants, and Related Products
- 20000 - Household and Institutional Products
- 30000 - Personal Care Products
- 40000 - Pesticide Products
- 60000 - Solvents and Thinning-Related Products
- 70000 - Vehicle and Marine Vessel Aftermarket Products
- 80000 - Aerosol Coatings (no speciation data reporting required for the survey)

**Speciation Based on Reported Product Formulations** Percent of category series mass that was speciated by matching reported ingredients with products and chemical compounds. The speciated emissions for each category in a series were adjusted to include the assignment of the sales weighted average speciation to the remaining portion of the category mass that had no reported formulations.

**Emissions** The speciated emissions shown (VOC, LVP-VOC, Exempt, TOG, ROG) are the sum of emissions for all categories in each series.

**tpd** Tons Per Day

**VOC** Volatile organic compounds (VOC) as defined under Title 17 California Code of Regulations (CCR), section 94508(a)(138).

**LVP-VOC** Compounds CARB staff identified as a speciated LVP-VOC as per the definition in section 94509(a)(83) of the Consumer Products Regulation. More information regarding how CARB staff speciated LVP-VOC ingredients can be found in a separate attachment named "Draft Consumer Products Survey Chemical List and Assignments".

**Exempt** Compounds exempted from the definition of VOC under Title 17 CCR, section 94508(a)(138).

**TOG** Total Organic Gases (TOG) means "compounds of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate." TOG includes all organic gas compounds emitted to the atmosphere, including VOCs, LVP-VOCs, and Exempt compounds that were speciated by CARB as part of the 2015 Consumer and Commercial Products Survey. During the review of the data, CARB staff evaluated the physical and chemical properties of the ingredients reported and determined if the chemical was a VOC, LVP-VOC, or Exempt for the purpose of the survey, based on the definitions outlined in the Regulation for Reducing Emissions from Consumer Products (title 17, California Code of Regulations, sections 94507-94517, Consumer Products Regulation). More information regarding how CARB staff speciated TOG ingredients can be found in a separate attachment named "Draft Consumer Products Survey Chemical List and Assignments".

**ROG** Reactive organic gases. TOG less exempt compounds.

**PWMIR** Product-Weighted Maximum Incremental Reactivity as defined under Title 17 CCR, section 94521(a)(64).

**Sales Weighted Average PWMIR** The sales weighted average PWMIR for the survey category.

**Ozone Forming Potential** Amount of ozone potentially generated by the release into the atmosphere of the TOG ingredients of all products in a category series. It is equal to the sum of the ozone forming potentials of all categories in a series. The ozone forming potential for a category is equal to the product of total mass (i.e. Sales) times the reactivity (i.e. Sales Weighted PWMIR) of the category.

**Notes:** The Top 95% TOG ingredients are shown for each category series and for all categories reported in the 2015 survey. The identified TOG ingredients are shown with their corresponding weight percent and color-coded speciation.

The sales weighted average speciation for a category was assigned to products with reported sales mass but no reported formulations.

All emissions data reflect fate and transport adjustments applicable to certain categories as detailed in a separate attachment named *Draft Consumer Products Survey Fate and Transport Adjustments*.

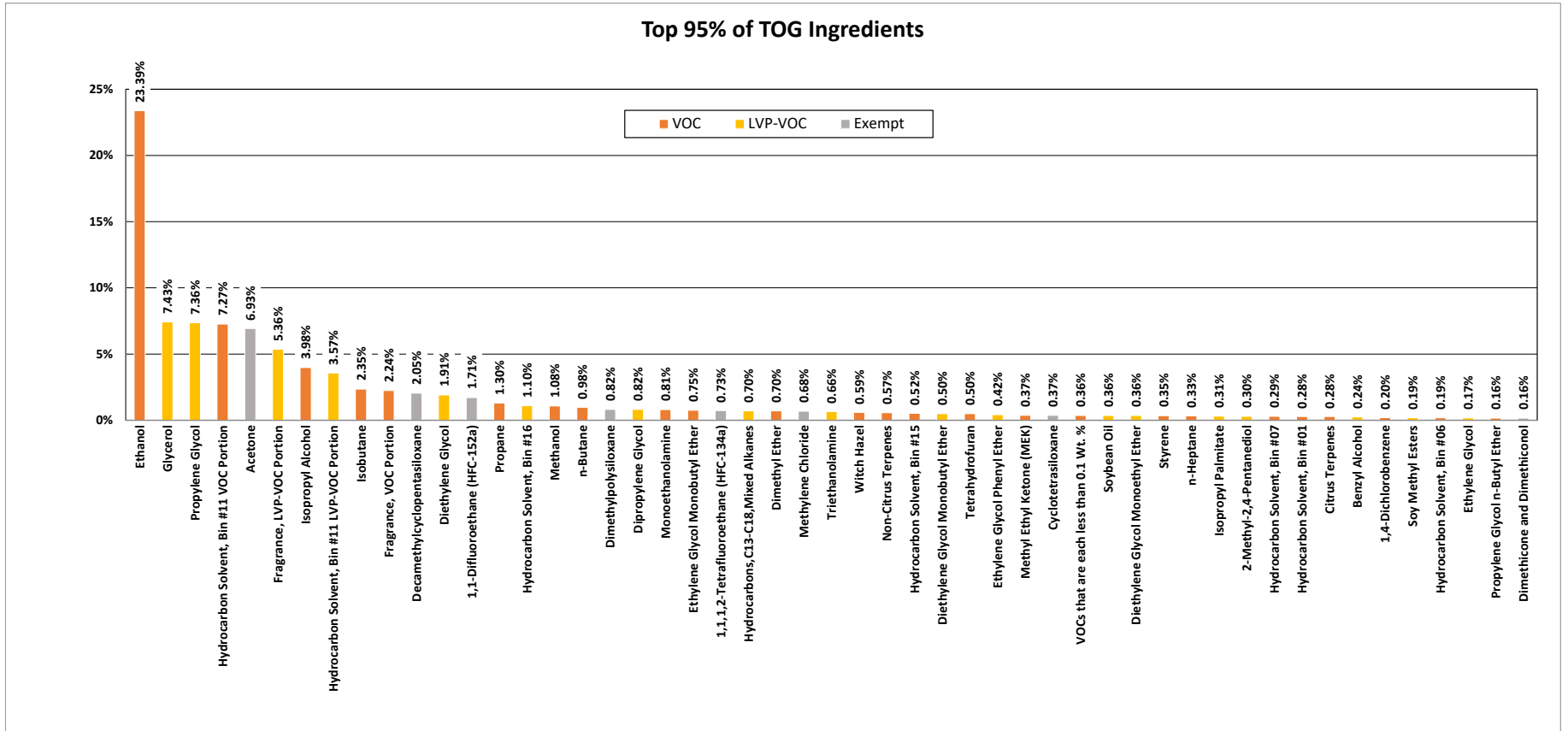
Formulations were not requested for Aerosol Adhesives and Aerosol Coatings products as part of the required 2015 reporting. Product speciation and emission data has therefore been omitted for Aerosol Coatings category series 80000 in 2015. Product speciation and emission data are not reflected in the 10000 series for the 10 Aerosol Adhesives categories.

Certain chemical species that were reported as distinct ingredients were grouped into single TOG ingredients for illustrative purposes:

- Citrus Terpenes: Limonene grouped with citrus oils and other citrus extracts
- Hydrocarbons,C13-C18,Mixed Alkanes: Various n-alkane, isoalkane, and cyclic alkane mixtures with initial boiling points > 216° C
- Citronellas: Ingredients reported as variants of citronella oil, citronellal, citronellol, methyl isoeugenol, geraniol, or geranyl acetate.
- Non-Citrus Terpenes: Terpenes not classified as citrus terpenes, including pine oils, pinenes, and VOC linalools.

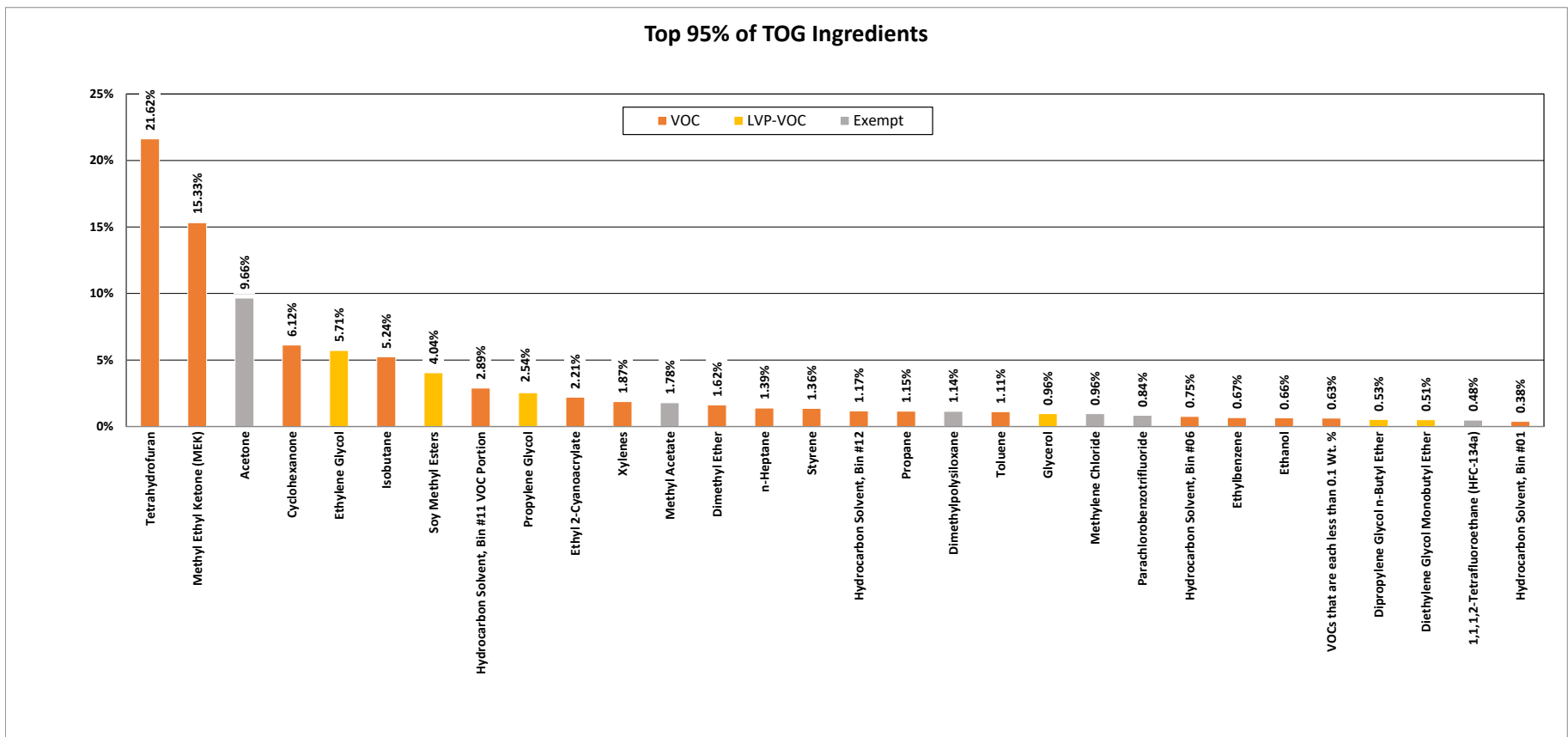
## 2015 CARB Consumer and Commercial Products Survey All Categories

TOG (tpd)	252.27	ROG (tpd)	202.03
Sales Weighted Average PWMIR (gO3/g product)	0.00-1.22	VOC (tpd)	134.86
Speciation Based on Reported Product Formulations	81.5%	LVP-VOC (tpd)	67.17
Ozone Forming Potential (tpd)	391.32	Exempt (tpd)	50.24



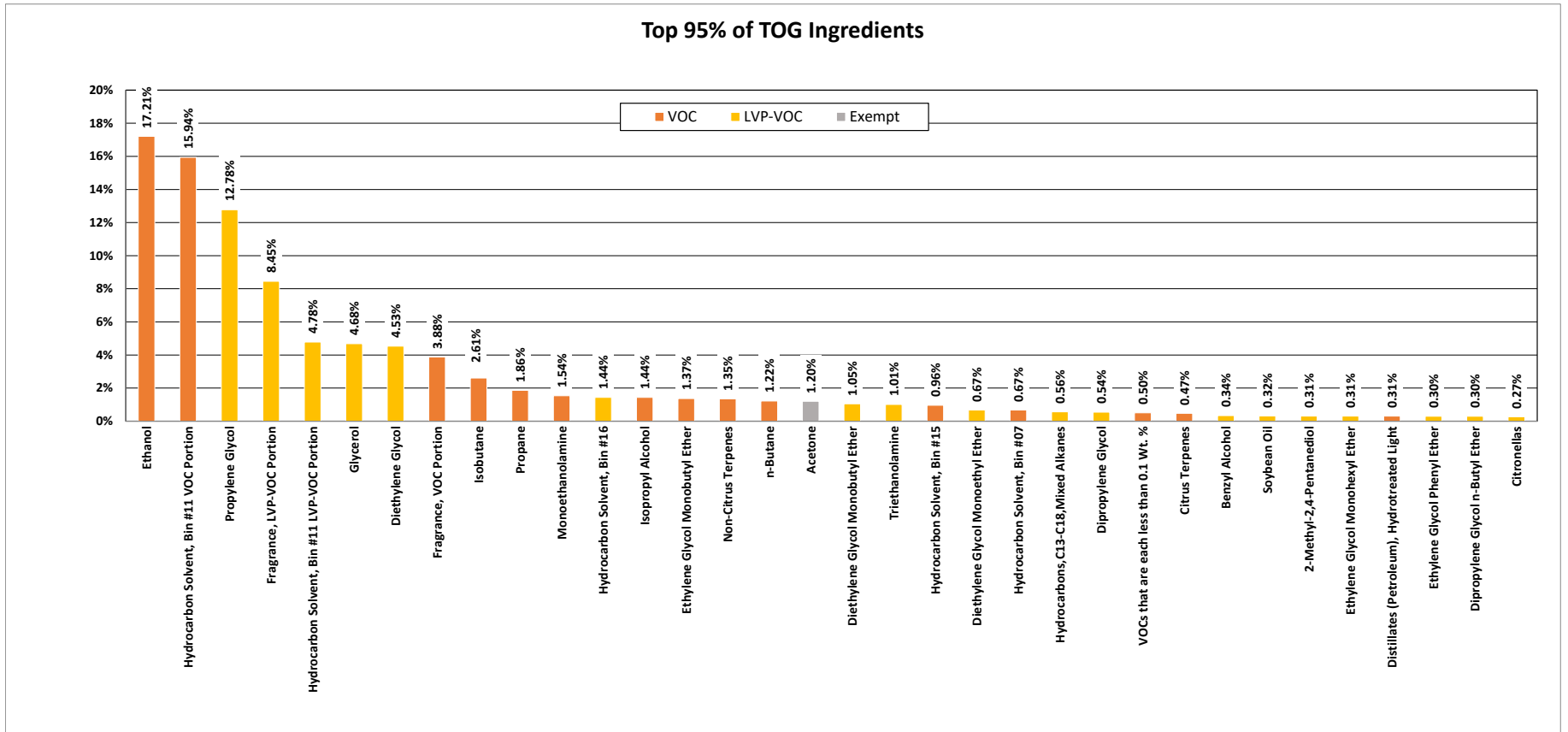
## 2015 CARB Consumer and Commercial Products Survey 10000 - Adhesives, Sealants, and Related Products

<b>TOG (tpd)</b>	8.15	<b>ROG (tpd)</b>	6.93
<b>Sales Weighted Average PWMIR (gO3/g product)</b>	0.06-0.14	<b>VOC (tpd)</b>	5.65
<b>Speciation Based on Reported Product Formulations</b>	91.0%	<b>LVP-VOC (tpd)</b>	1.28
<b>Ozone Forming Potential (tpd)</b>	17.78	<b>Exempt (tpd)</b>	1.22



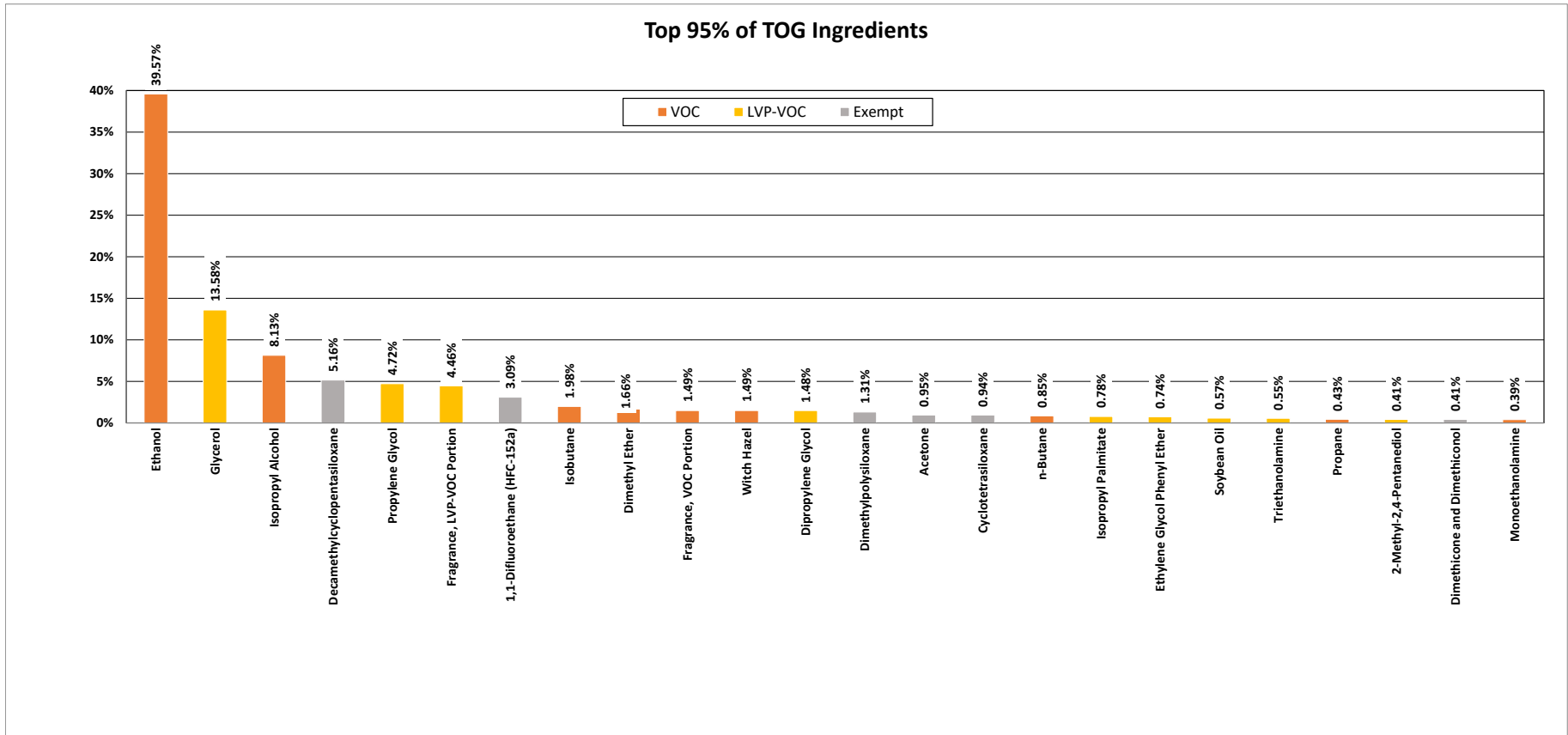
## 2015 CARB Consumer and Commercial Products Survey 20000 - Household and Institutional Products

<b>TOG (tpd)</b>	78.27	<b>ROG (tpd)</b>	75.60
<b>Sales Weighted Average PWMIR (gO3/g product)</b>	0.00-0.39	<b>VOC (tpd)</b>	45.07
<b>Speciation Based on Reported Product Formulations</b>	78.6%	<b>LVP-VOC (tpd)</b>	30.52
<b>Ozone Forming Potential (tpd)</b>	167.29	<b>Exempt (tpd)</b>	2.67



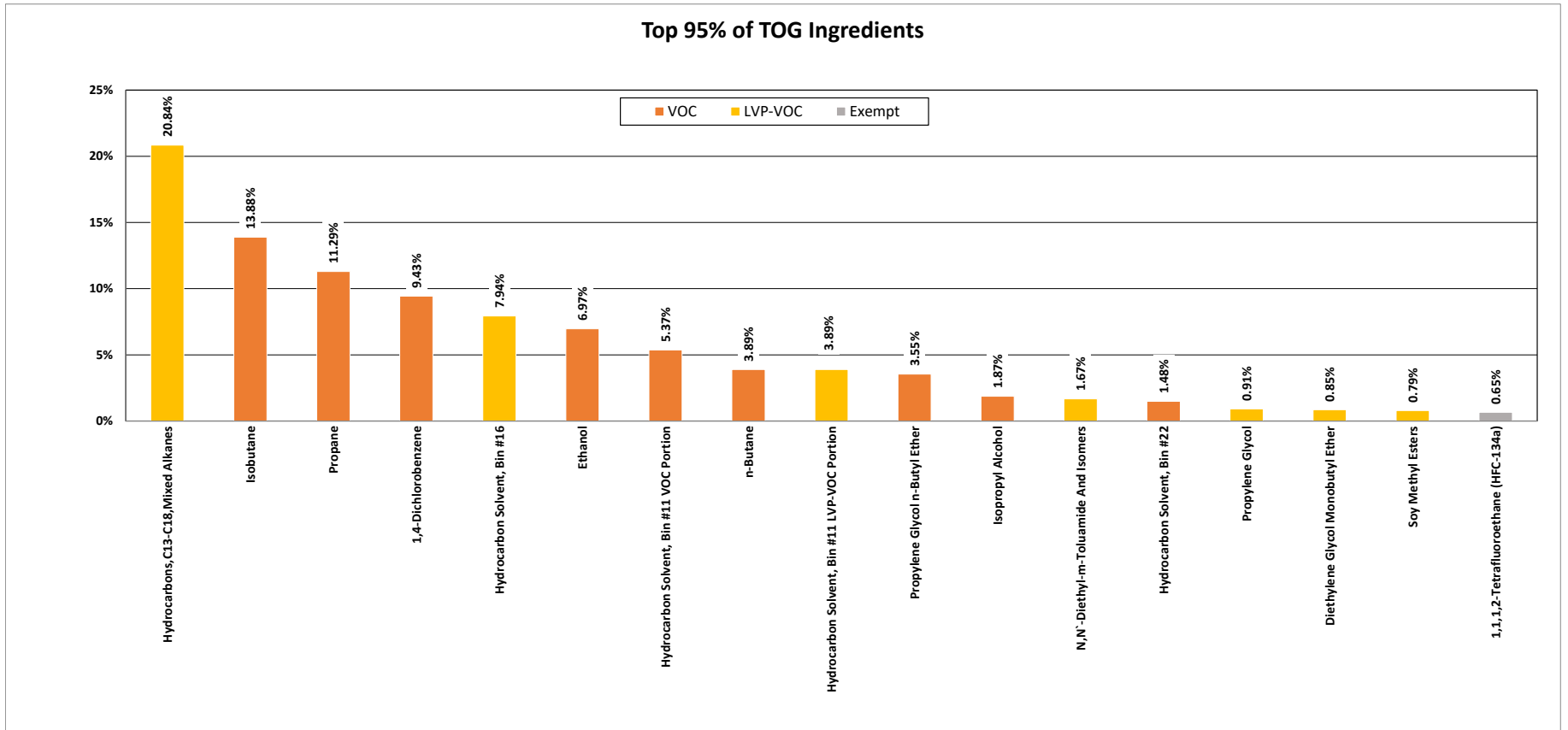
## 2015 CARB Consumer and Commercial Products Survey 30000 - Personal Care Products

<b>TOG (tpd)</b>	109.47	<b>ROG (tpd)</b>	91.82
<b>Sales Weighted Average PWMIR (gO3/g product)</b>	0.01-1.22	<b>VOC (tpd)</b>	66.27
<b>Speciation Based on Reported Product Formulations</b>	86.4%	<b>LVP-VOC (tpd)</b>	25.55
<b>Ozone Forming Potential (tpd)</b>	164.55	<b>Exempt (tpd)</b>	17.65



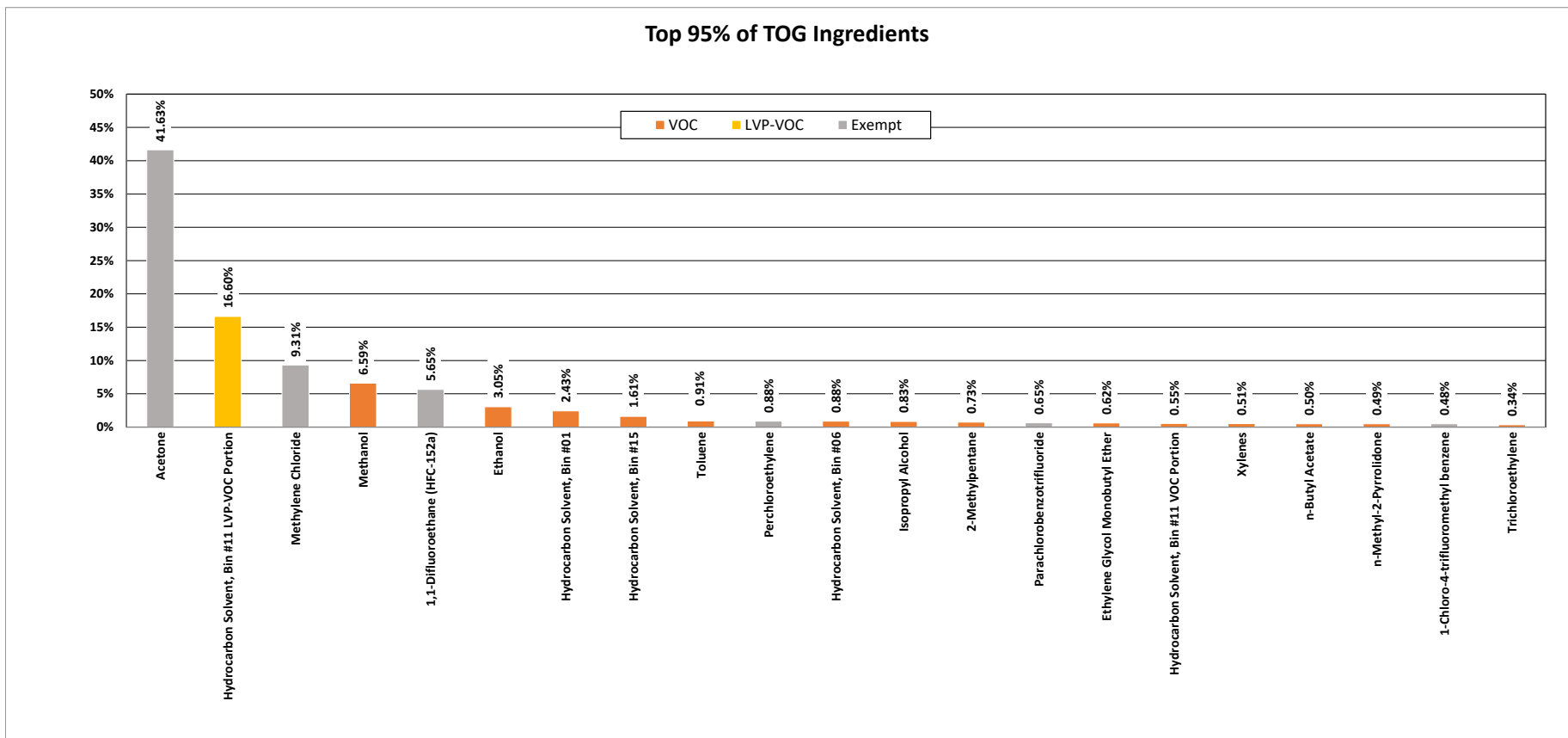
## 2015 CARB Consumer and Commercial Products Survey 40000 - Pesticide Products

<b>TOG (tpd)</b>	7.51	<b>ROG (tpd)</b>	7.43
<b>Sales Weighted Average PWMIR (gO3/g product)</b>	0.01-0.08	<b>VOC (tpd)</b>	4.49
<b>Speciation Based on Reported Product Formulations</b>	82.3%	<b>LVP-VOC (tpd)</b>	2.94
<b>Ozone Forming Potential (tpd)</b>	8.39	<b>Exempt (tpd)</b>	0.08



## 2015 CARB Consumer and Commercial Products Survey 60000 - Solvents and Thinning-Related Products

TOG (tpd)	25.08	ROG (tpd)	10.19
Sales Weighted Average PWMIR (gO3/g product)	0.23-0.61	VOC (tpd)	5.75
Speciation Based on Reported Product Formulations	79.8%	LVP-VOC (tpd)	4.44
Ozone Forming Potential (tpd)	16.52	Exempt (tpd)	14.89





## 2015 CARB Consumer and Commercial Products Survey 70000 - Vehicle and Marine Vessel Aftermarket Products

<b>TOG (tpd)</b>	23.79	<b>ROG (tpd)</b>	10.07
<b>Sales Weighted Average PWMIR (gO3/g product)</b>	0.09-0.12	<b>VOC (tpd)</b>	7.63
<b>Speciation Based on Reported Product Formulations</b>	78.8%	<b>LVP-VOC (tpd)</b>	2.44
<b>Ozone Forming Potential (tpd)</b>	16.80	<b>Exempt (tpd)</b>	13.73

