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DPS
Instruments Europe GmbH

DPS Consumer Products GC Systems - Application Notes

All of these Consumer Products Applications can be analyzed using one of the Custom GC configurations of the Series 600 Lab GC. However, the vast majority can also be analyzed using the Companion 1, or the Companion 2 Portable GC Systems. Best of all, each of these Custom GC Systems gives the same great results. So, whether your analyzing in the Lab, or in the factory, or out in the field, you can rest assured that your Consumer Products results will always be consistent.

Alcohol & Spirits GC

Distilled spirits, wine, and beer all contain flavoring agents, esters, acids, and aldehydes. While the ethanol content is closely monitored and regulated by government agencies, the unique flavor of each spirit is the unique combination of the individual compounds. Other methods can certainly determine the ethanol content, but only Chromatography can measure the ethanol and separate the individual constituents for identification. When you want to know what makes your favorite tequila, rum, or whiskey taste so special you need a DPS Alcohol & Spirits GC System. The latest designed high resolution column and the sensitive FID detector does the hard work for you. The Series 600 GC is for analyses in the lab, or use the Portable Companion 1 GC Systems for analyses right where the samples are taken. The fast heating and rapid

Chiral Separations GC

Basic laws of chemistry state that only a chiral animal, such as Humans, can smell and taste chiral enantiomers. Enantiomeric compounds are structurally equivalent, but are mirror images of one another. An example of chiral objects would be your left and right hands. Tastes and smells of many complex natural food products are dependent on the enantiomeric ratio of chiral compounds. For example, while one enantiomer may be bitter, the other form may be sweet. The ratio of enantiomers in food has become a critical issue over the past few years. We designed the DPS Chiral Separations GC Analyzers specifically to separate the enantiomers and determine the ratios of these compounds. Specially designed columns and the sensitive FID detector do the hard work. The Series 600 GC is for analyses in the lab, or use the

Cleaning Solvents GC

The average cleaning products industry consumer uses a wide range of products to promote both personal and public heath. Soaps, detergents, deodorants, mouthwashes, rug cleaners, drain openers, and a host of other products make up this multi-billion dollar worldwide industry. These products are designed to improve personal hygiene, reduce levels of bacteria, improve personal appearance, and offer cleaning convenience for the consumer. To help ensure consistent product performance and environmental safety there is an ongoing need to test the solvents contained on both the raw and final products. The DPS Cleaning Solvents GC Systems, equipped with a high resolution column and the sensitive FID detector is a great place to start. An extract or a liquid sample can be directly injected by hand, or a flake,

cooling column oven in every DPS GC vastly increases your sample throughput. The fully integrated Alcohol & Spirits GC Analyzer Systems are small and lightweight and all Consumer Products DPS systems are modular for expandability, upgrades, and easy service.

Example Compounds:

Methanol
Ethanol
Acetone
n-Propanol
Ethyl Acetate
sec-Butanol
iso-Butanol
iso-Amyl Alcohol

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Portable Companion 1 GC Systems for analyses right where the samples are taken. The fully integrated Chiral Separations GC Analyzer Systems are small and lightweight and all Consumer Products DPS systems are modular for expandability, upgrades, and easy service.

Example Compounds:

– a Pinene
+ a Pinene
+ b Pinene
– b Pinene
– Limonene
+ Limonene

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solid, or cream sample can be placed in a headspace vial and automatically heated and injected using our built-in Headspace Concentrator. The Series 600 GC is for analyses in the lab, or use the Portable Companion 1 GC Systems for analyses right where the samples are taken. The fully integrated Cleaning Solvents GC Analyzer Systems are small and lightweight and all Consumer Products DPS systems are modular for expandability, upgrades, and easy service.

Example Compounds:

Peak Component
Methanol
Ethanol
iso-propanol
tert-Butanol
n-Propanol
iso-Butanol
Methyl Cellosolve
n-Butanol
Cellosolve
Ethylene Glycol
Butyl Cellosolve
Limonene
DPGMME
DEGEE
Phenyl Cellosolve
TPGMME

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Cork Taint GC

You've opened a bottle of wine that should be outstanding. But when you put your nose to the glass, it smells like something rotting in a damp basement. The problem is most likely TCA, which is 2,4,6-Trichloroanisole,

e-Cigarette GC

Electronic cigarettes do not burn tobacco. Instead they produce an aerosol from a battery powered heating element and liquid-containing cartridge. The liquid typically consists of propylene glycol, glycerin, flavorants, and

Essential Oils GC

Essential oils are used in aromatherapy products, vitamins and food supplements, flavoring agents, and perfumes. There is nothing like the smell of fresh roses in the air, or the taste of spearmint in your favorite chewing

a chemical so powerful that even at parts per billion (ppb). This can cause musty aromas and flavors in wines. The compound forms through the interaction of plant phenols, chlorine, and mold and most frequently occurs in natural corks. DPS has configured the Cork Taint GC System to detect this nasty smell in wine. Our sensitive PID detector and ultra-sensitive BCD detector are ideal for identifying TCA and other Chlorinated Phenols in the low (ppb) to high parts per trillion (ppt) levels. We offer Cork Taint GC Systems with both PID and BCD detectors, or just the BCD alone, which is blind to the non-chlorinated compounds in wine. The fast heating and rapid cooling column oven in every DPS GC vastly increases your sample throughput. The fully integrated Cork Taint GC Analyzer Systems are small and lightweight and all Consumer Products DPS systems are modular for expandability, upgrades, and easy service.

Example Compounds:

Trichloroanisole
Phenol
Trichlorophenol

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nicotine. A heating element vaporizes the liquid to form a mist, which the end user inhales, imitating tobacco smoke visually and replicating the burning sensation in the throat and lungs. These similarities to tobacco smoke, combined with the same hand-to-mouth behaviors, have contributed to it's rapid acceptance. We configure the DPS e-Cigarette GC Analyzers to meet the ever increasing demand for these analysis requirements. The sensitive FID detector and selective capillary column combination easily separate and identify these compounds. The Series 600 GC is for analyses in the lab, or use the Portable Companion 1 GC Systems for analyses right where the samples are taken. The fully integrated e-Cigarette GC Analyzer Systems are small and lightweight and all Consumer Products DPS systems are modular for expandability, upgrades, and easy service.

Example Compounds:

Methanol
Ethanol
Methylene Chloride
Propylene Glycol
Glycerin
Nicotine

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gum. However, since these are naturally occurring products the chemical composition varies through each region and growing season. Maintaining a consistent concentration in your product takes considerable effort and constant monitoring. Unfortunately there are always producers cutting the expensive oils with less expensive fillers. The DPS Essentials Oils GC Analyzers can answer these quality questions and assure you are getting what you are paying for. Specially designed columns and the sensitive FID detector do the hard work. The Series 600 GC is for analyses in the lab, or use the Portable Companion 1 GC Systems for analyses right where the samples are taken. The fully integrated Essentials Oils GC Analyzer Systems are small and lightweight and all Consumer Products DPS systems are modular for expandability, upgrades, and easy service.

Example Compounds:

a-Pinene
b-Pinene
Sabinene
Myrcene
a-Terpinene
Limonene
1,8-Cineole
cis-Ocimene
g-Terpinene
p-Cymene
Terpinolene
3-Octyl Acetate
3-Octanol
Menthone
trans-Sabinenehydrate
b-Bourbonene
Linalool
Terpinene-4-ol
b-Caryophyllene
Dihydrocarvone
trans-Dihydrocarvyl Acetate
trans-b-Farnescene
a-Terpineol
Germacrene
Carvone
cis-carvyl Acetate
trans-Carveol

Fatty Acids GC

The fact is we all need fats to help nutrient absorption, promote nerve transmission, and to maintain cell membrane integrity. However, when consumed in excess amounts, fats contribute to weight gain, heart disease and certain types of cancer. Fats are not created equal. Some fats promote our health positively, while some increase our risks of heart disease. The key is to replace bad fats (trans fat and saturated fat) with good fats (monosaturated and polysaturated fats) in our diet. As much of the world is finally becoming concerned with diet and health, there is an increase needed in the analysis of the components in fats. The DPS Fatty Acid GC Analyzers measures underivatized free fatty acids in oils, animal products such as meat, fish, and dairy, as well as commercial frying oils, and vegetable oils. Capillary columns and the sensitive FID detector do the hard work. The Series 600 GC is for analyses in the lab, or use the Portable Companion 1 GC Systems for analyses right where the samples are taken. Fully integrated Fatty Acid GC Analyzer Systems are small and lightweight and all Consumer Products DPS systems are modular for expandability, upgrades, and easy service.

Example Compounds:

Acetic Acid
Proprionic Acid
Isobutyric Acid
n-Butyric Acid
Isovaleric Acid
n-Valeric Acid
Isocaproic Acid
Caproic Acid

FAME's GC

Fatty Acid Methyl Esters

Fatty acid methyl esters (FAME´s) are used extensively as intermediates in the manufacture of detergents, emulsifiers, wetting agents, stabilizers, textile treatments, and waxes. FAME's are also used in a variety of food additive applications, including the dehydration of grapes to produce raisins, as synthetic flavoring agents, and as intermediates in the manufacture of a variety of food ingredients. The quality of your product is dependent on maintaining the concentrations of specific FAME compounds. We configure the DPS FAME's GC Analyzers specifically to separate these compounds. Specially designed columns and the sensitive FID detector do the hard work. The Series 600 GC is for analyses in the lab, or use the Portable Companion 1 GC Systems for analyses right where the samples are taken. Fully integrated FAME's GC Analyzer Systems are small and lightweight and all Consumer Products DPS systems are modular for expandability, upgrades, and easy service.

Example Compounds:

Methyl-Caproate
Methyl-Caprylate
Methyl-Carpate
Methyl-Laurate
Methyl-Myristate

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cis-Carveol
cis-Jasmone
Viridiflorol

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Flavors & Fragrances GC

Although the perception of flavor is a complex phenomenon, odor is the most important single factor contributing to the overall characteristics of flavor. A large number of hydrocarbons, alcohols, acids, aldehydes, ketones, sulfides, and heterocyclic compounds have been identified as the volatile components contributing to odor in meats and plant foodstuffs. Since it is very difficult for people to eat something that does not smell good the analysis of flavor volatiles is critically important to the perceived quality of food. We configure the DPS Flavors & Fragrances GC Analyzers to analyze the broadest range of flavor volatiles. All of the classes of flavor compounds are easily detected by the sensitive FID detector and the capillary column does a good job of separating the compounds. The Series 600 GC is for analyses in the lab, or use the Portable Companion 1 GC Systems for analyses right where the samples are taken. Fully integrated Flavors & Fragrances GC Analyzer Systems are small and lightweight and all Consumer Products DPS systems are modular for expandability, upgrades, and easy service.

Example Compounds:

a-Thujene
a-Pinene
Camphene
Sabinene
b-Pinene
Myrcene
a-Terpinene
p-Cymene

Heptanoic Acid
Caprylic Acid
Capric Acid
Lauric Acid
Mysteric Acid
Palmitic Acid
Steric Acid
Arachidic Acid
Behenic Acid

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Limonene
g-Terpinene
Terpinolene
Linalool
Citronellal
Terpinene-4-ol
a-Terpineol
Neral
Geranial
Citronellyl Acetate
Neryl Acetate
Geranyl Acetate
b-Caryophyllene
trans-a-Bergamotene
a-Humyulene
b-Bisabolene

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Food Contaminants GC

Volatile compounds from food packaging, sulfur contaminants in beer, and acrylamide in potato chips are all problems facing the quality of prepared and packaged food. Alcohols, aldehydes, ketones, and hydrocarbons all play a role in the odor of the packaged food. These odors coming from the food itself are highly desirable, whereas odors coming from the materials used to prepare, process, and package the foods are always a problem and should be limited as much as possible. The DPS Food Contaminants GC Analyzers are a great starting place. They use a built-in Purge & Trap Concentrator to fully automate the sampling and analysis of these materials and a sensitive FID detector for parts per billion (ppb) level detection of these contaminants. DPS Food Contaminants GC Analyzers are designed to meet your most demanding analysis requirements. The Series 600 GC is for analyses in the lab, or use the Portable Companion 1 GC Systems for analyses right where the samples are taken. Fully

Fruit Ripening GC - Ethylene

Ripening agents are used to speed up fruit ripening. This allows many fruits to be picked prior to being fully ripe, which is useful since many ripe fruits do not ship well. For example, bananas are picked when green and artificially ripened after shipment, by being gassed with the ripening agent ethylene. In nature, ethylene is produced and released by rapidly-growing plant tissues, such as the tips of roots, flowers, and damaged tissue. This hormone promotes the starch in the fleshy part of the fruit to be converted to sugar. DPS has configured the Ethylene GC Analyzer Systems to detect this hormone in the air surrounding the fruit. Our Air Concentrator automatically samples and traps the Ethylene, which is then detected by the sensitive FID detector in the low parts per billion (ppb) levels. The Series 600 GC is for analyses in the lab, or use the Portable Companion 1 GC Systems for analyses right where the samples are taken. Fully integrated Ethylene Analyzer GC Analyzer Systems are small and lightweight

Packaging Contaminants GC

Alcohols, aldehydes, ketones, and other hydrocarbons all play a role in the odor of packaged food and beverages. These odors coming from the food itself are highly desirable, whereas odors coming from the materials used to package the foods, or from beverage containers are always a problem. DPS Instruments has designed and developed a convenient way to determine the contribution from the packaging materials used in food preparation. DPS Packaging Contaminants GC Analyzers use a built-in Headspace Concentrator to fully automate the sampling and analysis of these materials and a sensitive FID detector for ppb to ppm level detection of these hydrocarbons contaminants. They can determine the concentration of volatile compounds in everything from potato chip bags to PET bottles for the beverage industry. The Series 600 GC is for analyses in the lab, or use the Portable Companion 1 GC Systems for analyses right where the samples are taken. Fully integrated Packaging Contaminants GC

integrated Food Contaminants GC Analyzer Systems are small and lightweight and all Consumer Products DPS systems are modular for expandability, upgrades, and easy service.

Example Compounds:

Tetrahydrofuran
1-Butanol
Toluene
Hexanal
Ethylbenzene
Butyl Ether
Styrene
1-Methylethylbenzene
Propylbenzene
Benzaldehyde
Benzeneacetaldehyde
Acetophenone
Benzoic Acid
Decanal

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Personal Care Fragrances GC

Eucalyptol, menthol, and camphor can be used in a surprising variety of ways. These aromatic and medicinal plants extracts enhance the flavor of many dishes, but their therapeutic virtues have been known for years. Among the best-known uses are rubbing these compounds on to soothe aching muscles, inhaling them to free up the sinuses, and also as an antiseptics. Consequently, they are found in a variety of creams, ointments, and other personal care products. DPS Personal Care Fragrances GC Systems are designed to check the purity of the plant extract and verify the concentration of these compounds in the final product. A

and all Consumer Products DPS systems are modular for expandability, upgrades, and easy service.

Example Compound:

Ethylene

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Preservatives GC

Fats play an important role in nutrient absorption, nerve transmission, and to maintain cell membrane integrity. However, fats in foods are subject to oxidation and can turn rancid. Oxidation reactions still occur relative rapidly even in frozen or refrigerated foods. Antioxidants, such as tocopherols and other active Vitamin E compounds, are used as food additives and as food preservatives to prevent oils from going rancid. Vitamin E is also widely used as an inexpensive antioxidant in cosmetics. DPS Preservatives GC Analyzers measures antioxidant compounds in oils, animal products such as meat, fish, and dairy, as well as commercial frying oils, and vegetable

Analyzer Systems are small and lightweight and all Consumer Products DPS systems are modular for expandability, upgrades, and easy service.

Example Compounds:

Acetylaldehyde
Benzene
Toluene
Limonene
etc.

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Sterols GC

Cholesterol and other sterols are naturally occurring compounds from fats in many plant and animal extracts. With the global rise in heart and other diseases, primarily due to the increased consumption of dietary fats, the concentrations of cholesterol and other sterols in food products are monitored by many government agencies. The increase in awareness from consumers has also fueled the food industry to respond by reducing health related compounds, such as cholesterol and trans fats in processed foods. DPS Sterols GC Analyzers are configured with the sensitive FID detector to meet the ever increasing need for cholesterol analysis. The Series 600 GC is for

latest designed high resolution column and the sensitive FID detector does the hard work for you. The Series 600 GC is for analyses in the lab, or use the Portable Companion 1 GC Systems for analyses right where the samples are taken. The fast heating and rapid cooling column oven in every DPS GC vastly increases your sample throughput. Fully integrated Personal Care Fragrances GC Analyzer Systems are small and lightweight and all Consumer Products DPS systems are modular for expandability, upgrades, and easy service.

Example Compounds:

Eucalyptol
Camphor
Menthol
etc.

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oils. A sensitive FID detector and analytical column combination separate and detect these preservatives. The Series 600 GC is for analyses in the lab, or use the Portable Companion 1 GC Systems for analyses right where the samples are taken. Fully integrated Preservatives GC Analyzer Systems are small and lightweight and all Consumer Products DPS systems are modular for expandability, upgrades, and easy service.

Example Compounds:

d-Tocopherol
b-Tocopherol
g-Tocopherol
dl-d-Tocopherol
a-Tocopherol
dl-d-Tocotrienol
dl-g-Tocotrienol
dl-a-Tocotrienol

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analyses in the lab, or use the Portable Companion 1 GC Systems for analyses right where the samples are taken. The fast heating and rapid cooling column oven in every DPS GC vastly increases your sample throughput. Fully integrated Sterols GC Analyzer Systems are small and lightweight and all Consumer Products DPS systems are modular for expandability, upgrades, and easy service.

Example Compounds:

Cholesterol
Brassicasterol
Campesterol
Stigmasterol
b-Sitosterol
Erythrodiol
Uvacol

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Sugar Alcohols GC

Sugar alcohols are neither sugars nor alcohols. They are carbohydrates with a chemical structure that partially resembles sugar and partially resembles alcohol, but they don't contain ethanol as alcoholic beverages do. The body absorbs and metabolizes them incompletely, so they consequently contribute fewer calories, which is why they have recently been used in new products. Technical advances have added to the range of sugar alcohols available for food use and they are found in sugar-free and reduced-sugar products, and in foods intended for individuals with diabetes. Since the general population over the last few decades has developed a sweet tooth, the replacement of sucrose with sugar alcohols has become a big business. We configure the DPS Sugar Alcohols GC Analyzers to meet the demand of ever

Triglycerides & Fats GC

Triglycerides are the chemical form in which most fat exists in food as well as in the body. They're also present in blood plasma and, in association with cholesterol, form the plasma lipids. Triglycerides in plasma are derived from fats eaten in foods or made in the body from other energy sources like carbohydrates. Calories ingested in a meal and not used immediately by tissues are converted to triglycerides and transported to fat cells to be stored. In other words, triglycerides are the energy storehouses of the body. DPS Triglycerides GC Analyzers are a necessary component of any laboratory monitoring the fat content of foods. A FID detector is sensitive to the hydrocarbon backbone structure of the triglycerides and the analytical column separates the fat matrix. The Series 600 GC is for analyses in the lab, or use the Portable Companion 1 GC

increasing sugar alcohol analysis requirements. A sensitive FID detector and selective capillary column combination easily separate and identify these compounds. The Series 600 GC is for analyses in the lab, or use the Portable Companion 1 GC Systems for analyses right where the samples are taken. Fully integrated Sugar Alcohols GC Analyzer Systems are small and lightweight and all Consumer Products DPS systems are modular for expandability, upgrades, and easy service.

Example Compounds:

Rhamnitol
Fucitol
Ribitol
Arabinitol
Mannitol
Galactitol
Glucitol
Inositol

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Systems for analyses right where the samples are taken. Fully integrated Triglycerides GC Analyzer Systems are small and lightweight and all Consumer Products DPS systems are modular for expandability, upgrades, and easy service.

Example Compounds:

T26 – T54

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