



# Your brand is everything

Beverage Testing



Building a brand  
can take years.



# Water should **ONLY** be water.

It takes years of producing a quality product, as well as years of maintaining a quality image and preserving a reputation.

But what may take years to create can be toppled literally overnight with a single bad batch, recall or worse.

Beer, after all, should only be beer. Milk should only be milk. Juice should only be juice.

That's why the ten largest beverage companies in the world rely on Thermo Scientific solutions to help maintain their quality and safety, purity and consistency. And equally important, help maintain their brand.

From bottled water to fruit juices, alcoholic beverages to functional beverages, milk to sodas, we help beverage manufacturers, as well as contract and government labs the world over meet their needs with the widest instrumentation portfolio on earth. A portfolio that includes Ion, Liquid and Gas Chromatography, Metal Analysis and Mass Spectrometry, Discrete Analyzers and Data Management.

With the help of our instrumentation, solutions and application expertise, uniform quality is confirmed in the various phases of the production process.

Because from routine testing to high-end detection, labs know what's riding on each and every determination they make is more than simply the quality of their product. It's also the reputation of their brand.

**YOUR BRAND IS EVERYTHING.**



Nothing compares to a Thermo Scientific Dionex IC system to successfully analyze compounds in beverages.



### Milk

- Choline** in Infant Formula
- Lactose** in Lactose-Free Milk Products
- Dicyandiamide** in Milk Powder
- Perchlorate** in Baby Formula
- Sialic Acid**
- Myo-Inositol** (Free and Bound as Phosphatidylinositol)
- Anions** in Breast Milk



### Juice

- Carbohydrates** Using Capillary IC Adulteration with Medium Invert **Sugar**
- Arsenic** Speciation IC-ICP-MS
- Cations**
- Inorganic Anions**
- Sugar Alcohols**
- Organic Acids**
- Trace Sodium** in Cranberry

# Juice should **ONLY** be juice.

IC innovations that make it easier to get better results.

## Thermo Scientific™ Dionex™ Integrion™ HPIC™ system.

Analyze your beverages for carbohydrates, anions, cations and organic acids with the Dionex Integrion HPIC system. Its high-pressure capabilities enable faster analysis without compromising data quality. Use the system's automated eluent generation (EG) to eliminate error-prone manual eluent preparation and achieve better method reproducibility. Save time and expense with the dedicated Sugar Analyzer that uses electrochemical detection to eliminate the need for sample derivatization.



## Thermo Scientific™ Dionex™ ICS-5000+ Reagent-Free™ HPIC™ system

For more demanding beverage applications, the ICS-5000+ system is the instrument of choice. It's a highly versatile, flexible system with a modular design and configurations to meet your toughest challenges. Take advantage of the speed and resolution that high-pressure systems with 4µm columns have to offer.



### Soda

**Phosphate and Citrate**  
using RFIC

**Phosphate** and **Citrate** Using  
On-Line Degassing

**Inorganic Anions**



### Water

**Trace Chlorite, Bromate  
and Chlorate**

**Sub-µg/L Bromate** Using Two-  
Dimensional IC



### Beer

**Carbohydrates**  
**Organic Acids**  
**Inorganic Anions**  
**Cations**



Our UHPLC and LC-MS systems offer a robust and reliable platform enabling you to successfully screen, identify, analyze and quantify your target analytes in beverages.



### Beer

#### **Isohumulones**

**Isoxanthohumol**, Xanthohumol, Alpha and Beta Bitter Acids, and trans and cis-Iso-Alpha Acids

**Polyphenols**, Proanthocyanidins and **Bitter Acids**



### Juice

**Organic Acids** and Anthocyanins in Cranberry

**Adulteration** and Authenticity By Coulometric Array Detection

**Anthocyanins** in Pomegranate

**Anthocyanins** in Cranberry and Bilberry

**Punicalagins** in Pomegranate

**LC-MS Analysis** of Anthocyanins in Bilberry Extract



### Functional Beverages

**Electrolytes and Sugars** with Charged Aerosol Detection

**Water-Soluble Vitamins** by UHPLC-MS/MS

**Two-Dimensional HPLC** Determination of Water-Soluble Vitamins

# Wine should **ONLY** be wine.

Excellence built into each innovative system.

## Thermo Scientific™ Vanquish™ UHPLC System

Vanquish UHPLC systems leverage the latest, patented LC technology to boost uptime, extend robustness and increase result reliability. Multiple detector options can adapt the system to suit your routine QC or more demanding R&D needs. Outstanding retention time stability, extended sample capacity and simplified operation are just a few areas where your beverage analysis will become not only easier but also more productive than ever before.

## Thermo Scientific LC-MS Systems

From identification to quantitation, from unknown screening to untargeted and targeted quantitation, address your most stringent analytical requirements for beverage testing with our start-to-end workflows comprising an outstanding suite of LC-MS systems. Our high resolution accurate mass Thermo Scientific™ Q Exactive™ Focus Hybrid Quadrupole-Orbitrap™ mass spectrometer allows for efficient screening, identification, confirmation and quantitation of untargeted and targeted compounds in beverages. Thermo Scientific™ TSQ™ Triple Quadrupole LC-MS Systems offer sensitive, fast and robust quantitation workflows to address critical challenges in targeted quantitation of analytes in beverages.



### Milk

**Vitamins A, E and D3** by On-Line Two-Dimensional HPLC  
**Melamine** and Cyanuric Acid  
**Vitamin D** Using Online Sample Preparation with LC-MS/MS  
**Nucleotides** and Nucleosides Using HPLC-UV-MS/MS  
**Melamine** by LC-MS/MS



### Wine

**Catechins** and Phenolic Acids  
**Flavonoids** Using U-HPLC and HRMS  
**Pesticide Residues** by LC-MS  
**Resveratrol**



### Soda

Artificial **Vanilla**  
**Vanilla** Extract  
Artificial and Natural **Sweeteners**  
**Caffeine**



Our GC and GC-MS solutions are used by beverage laboratories to protect people from harmful contaminants.

# Cola should **ONLY** be cola.

A whole new level of usability.

## Thermo Scientific GC and GC-MS Systems

Complete solutions for the analyses of beverages including contaminants, flavors and FAMES. Advanced sampling capabilities, the unique instant-connect injectors and detectors, and no-vent MS column replacement provide maximum flexibility and increased productivity by minimizing maintenance downtime.

## Thermo Scientific™ TRACE™ 1310 GC + Thermo Scientific™ TriPlus™ 300 Headspace AutoSampler

Automate and accelerate organic volatiles determinations with TriPlus 300 Headspace Autosampler coupled to the TRACE 1310 Gas Chromatograph. Ideal for the determination of water quality, alcohol content, flavor and off-odor compounds in beverages, the system offers reliable and unattended high-throughput operation in QC/QA and product development.

## Thermo Scientific GC-MS Systems

Thermo Scientific™ ISQ™ Series Quadrupole GC-MS Systems are ideal for high-throughput laboratories that want to achieve uninterrupted productivity. The TSQ Triple Quadrupole GC-MS/MS Systems are the gold standard for the sensitive and specific quantitation of target compounds. The Thermo Scientific™ Q Exactive™ Mass Spectrometer and Thermo Scientific™ Exactive™ GC Orbitrap™ GC-MS/MS represents the first ever combination of capillary gas chromatography and high-resolution/accurate mass (HRAM) Orbitrap mass spectrometry. A formidable combination that provides screening, identification and quantitation data giving the highest confidence in results for beverage testing.



### Soda

**Brominated Flame Retardants** with High Resolution GC/MS

**Vanillin** using SOLA by GC-MS



### Wine

**Impurities by GC/MS**  
Methoxypyrazines, **Volatile Phenols**, Geosmine, **Haloanisoles**



### Beer

**Vicinal Diketones**  
flavors, aroma, **2,3-butanedione**, **2,3-pentanedione**



### Water

**BTEX and Chlorinated Compounds**  
safety, quality, **benzene, toluene, ethylbenzene, xylenes**



Increased efficiency in quality control measurements reduces costs and improves productivity in beverage manufacturing laboratories.

# Beer should **ONLY** be beer.

Speed and flexibility for beverage testing.

## Thermo Scientific™ Gallery™ Plus Automated Photometric Analyzer

Save time and cost with a fully automated, high-capacity, benchtop photometric analyzer specifically developed for beverage testing. The Gallery Plus Automated Photometric Analyzer covers over 50 analytes for wine, juice and beer testing. Multiple tests can be done on a single sample and ready-to-use liquid reagents reduce errors and save time. Easy to operate and with a broad menu of applications, it performs highly specific colorimetric, enzymatic and electrochemical measurements, accelerating analysis and quality control.



### Juice

#### Sugars

labelling, quality,

**D-Glucose,**  
**D-Fructose,**  
**Sucrose**

**Acids**



### Wine

#### Free Sulfite

#### Acetaldehyde

Total Acidity

#### Glycerol

#### Acids

#### Sugars



### Beer

**Wort Malt** and Quality Control

#### Sulfur Dioxide

#### Beta-Glucan

#### NOPA method



Identify organic and inorganic elements in beverage samples at ppm to sub-ppt levels with our broad portfolio of instrumentation.



### Juice

#### Arsenic Speciation using IC-ICP-MS

Elemental Contaminants

Toxicity, **Lead**, Copper, Zinc, Cadmium, Sodium, **Magnesium**, Calcium, Manganese, Iron

ts drinks should **ONLY** be sports drinks.

Solutions for every laboratory.

### Thermo Scientific™ iCAP™ RQ ICP-MS

Choose this robust, high-productivity system to simultaneously measure toxic and essential elements for beverage QA/QC, while a suite of integrated software features enable regulatory compliance. Couple with a metal-free IC system to easily and accurately speciate critical elements such as arsenic and chromium.



### Thermo Scientific™ iCAP™ 7400 ICP-OES

This powerful, high-performance solution monitors key toxic elements during beverage production for consumer safety. It ensures accurate labelling of products with nutritional elements while the use of templates, electronic signatures and workflow ensures full traceability of the analytical result.



### Thermo Scientific™ iCE™ 3400 Atomic Absorption Spectrometer

The ideal solution if your laboratory routinely requires ultra-sensitive detection limits from furnace analysis. The dual atomizer flame and Graphite Furnace AAS with both Deuterium and Zeeman background correction ensure accurate detection of toxic elements as well as high concentration elements for labelling of beverage samples.



#### Whiskey

Trace elements using ICP-OES

**Copper, Manganese, Zinc, Lead, Cadmium**



#### Water

Toxic Elements using ICP-OES

Safety  
Quality



#### Wine

Iron, Copper and Zinc using AAS

Trace Elements using ICP-OES

**Arsenic, Chromium, Copper, Nickel, Zinc, Lead**



Achieve reliable, reproducible results with better resolution and sensitivity, faster analysis and consistent performance using our chromatography columns.

# Milk should **ONLY** be milk.

Quality columns you can rely on for quality results.

## Thermo Scientific™ Hypersil GOLD™ HPLC Columns

Hypersil GOLD HPLC columns are available in 12 different chemistries to optimize separations and maximize productivity. The extensive range of Hypersil GOLD columns offers chromatographers outstanding peak shape for reversed phase, ion exchange, HILIC or normal phase chromatography. With all 12 phases available with 1.9  $\mu\text{m}$  particle size, Hypersil GOLD columns offer chromatographers flexibility in choosing the correct column, whether using conventional or ultra-high pressure LC systems.



## Thermo Scientific™ Accucore™ HPLC Columns

Accucore HPLC columns provide a unique chromatography solution to enhance laboratory workflow and efficiency. Available in a wide range of stationary phase selectivities and compatible with almost any instrument, these columns provide an excellent return on investment.



## Thermo Scientific™ Accucore™ XL HPLC Columns

Using 4  $\mu\text{m}$  solid core particles, Accucore XL HPLC columns allow users of conventional HPLC methods to enjoy performance far beyond that of columns packed with 5  $\mu\text{m}$ , 4  $\mu\text{m}$  or even 3  $\mu\text{m}$  fully porous particles.



## Thermo Scientific™ Titan3™ Syringe Filters

Sample preparation is a key stage in successful chromatography. The Titan3 and Target2 syringe filters ensure reliable elimination of both particles and microorganisms in the sample preparation process, providing consistent and reliable experimental results for a range of samples and applications. Titan3 and Target2 syringe filters can also protect chromatography columns by preventing the accumulation of fine particles in the column, which may form premature blockages.





Laboratory and data management solutions for your beverage analysis workflows from sample creation to final results.

# Juice should **ONLY** be juice.

## Informatics and Chromatography Software

### Enterprise-Level Informatics & Chromatography Software

Whether performing routine product analysis, looking for potential contaminants or developing new product formulations, Thermo Fisher Scientific's informatics and chromatography software solutions help you manage your entire laboratory process. Thermo Scientific™ SampleManager™ provides comprehensive data and operations management and lab execution in a single solution. When integrated with Thermo Scientific™ Chromeleon™ Chromatography Data System Software, you'll benefit from a complete software platform that simplifies analysis and unlocks the value of your data.

SampleManager manages the entire lifecycle of your sample data from creation to final result. Scientists and technicians are guided step by step through the execution of methods and processes. Instrument results are pulled in automatically and associated with the correct product batch providing complete traceability of raw ingredients, processed materials and packaged goods for compliance with regulatory, ISO or HACCP requirements. Through sophisticated data processing, visualization and mining capabilities, you're able to optimize your operations and ensure product quality.

Chromeleon CDS software streamlines your entire chromatography workflow, giving you better results faster. Its advanced processing tools ensure quick, consistent results. Chromeleon is also the first CDS software to unify workflows for chromatography and routine quantitative MS analysis. Chromeleon eWorkflows contain everything you need to perform a run including the sequence, instrument and processing methods and final reports simplifying the management and execution of routine analysis.

**Thermo Scientific™ AppsLab Library of Analytical Applications is an online repository for methods created and tested by Thermo Fisher Scientific application chemists. These applications can be downloaded through one-click eWorkflows directly into Chromeleon CDS software and are ready to run.**



[Go to AppsLab Library](#)



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