



Capability Statement Food Safety & Food Quality







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ALS is the **global** benchmark for **service** and **integrity**

65+

COUNTRIES COVERED BY THE GLOBAL NETWORK 13k+

COMMITTED STAFF **350**+

LABORATORIES AND OFFICES 40

YEARS OF SUCCESSFUL LABORATORY OPERATION



Company Overview

As a global leader in the testing, inspection and certification industry, ALS is focused on delivering high quality client solutions.

We provide services to government, multi-national companies, manufacturers, retailers, consultants, and mining companies across the world. ALS processes more than 20 million samples per year and is one of the largest TIC companies in the world.

At ALS we are committed to assuring our community by providing high quality, innovative, professional testing services to help our client make informed decisions. We support clients to ensure their businesses operate in the most efficient, environmentally and socially responsible, market competitive way possible.

Our global scale benefits clients through technical leadership, access to emerging technology and regulatory trends, and a large pool of technical experts. This is balanced with a local focus to provide ease of use and market specific knowledge and services.

Core Values

As a company we can trace our history back to 1863, our core values drive the decisions we make today in building on this legacy.



Benefits of using ALS for testing and analysis

"ALS staff are always courteous, and I'm able to quickly reach analysts for discussions to tailor requirements to suit whatever problem I'm working on."

CONSULTING FIRM

At ALS we strive to provide clients with a service that meets and exceeds their expectations.

Our commitment to good science and personal service is backed by a thorough and constantly improving quality management system. We are evolving our services to improve your ALS experience. When working with ALS, clients can expect:

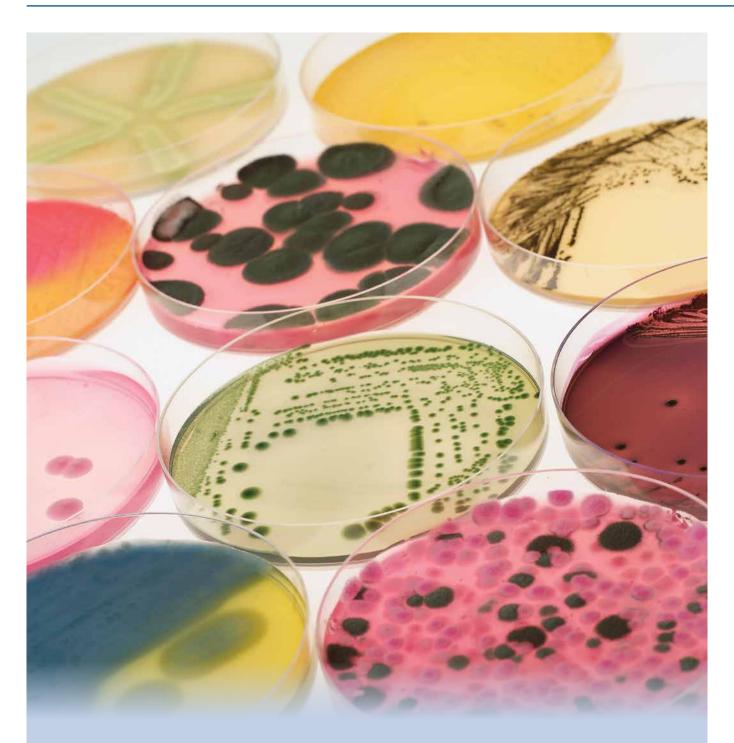
- Service delivery and laboratory result turnaround to meet your project requirements. This includes rapid turnaround on projects which are time sensitive and critical
- Dedicated client and project management to provide ease of use.
- Extensive experience and deep industry knowledge through working with a wide range of clients and programs.
- World class laboratory facilities to provide an environment that supports quality and accuracy, and with a scale to run large client projects.

- ▶ Technical resources to help solve problems.
- ► Technology solutions to help manage your projects and laboratory data.
- Access to the latest analytical technology to achieve required limits of reporting.
- A global network that provides knowledge of emerging regulatory trends, and is supported by the release of regular technical bulletins and social media posts.
- A commitment to safety as a priority





Celebrating more than 40 years of



Services

- Consulting services
- Auditing services
- Testing services
 - Microbiological
 - Nutritional
 - Preservatives
 - Vitamins
 - Minerals and Metals
 - Pesticides

- Drug residues
- Adulterants
- ▶ Contaminants
- Allergens
 - Food quality chemistry
 - Migration tests (food packaging)

Product Categories

- Processed foods
- Ready to eat foods
- Dairy products
- Beverages
- Fruit and vegetables
- Meat and poultry
- Seafood
- Bakery items
- Baby Foods
- Packaging materials

experience in the food testing market

Overview of food services

ALS is a global provider of testing, inspection, auditing and consulting services to the food (and related) industry, able to provide high quality solutions across a wide range of services, products and locations. We employ qualified and experienced food industry professionals, have state-of-the-art facilities, and access to technologies to add value to our customer's food quality and food safety programs.

Our food laboratories have the experience and expertise to support a variety of industries, including;

- Dairy producers
- Drinks manufacturers (including water and soft drinks)
- Exporters/Importers
- Food service
- Independent food producers

- Food manufacturers
- Primary producers
- Retailers
- Wholesalers
- ▶ Hotels, restaurants and caterers



Comprehensive Range of Capabilities and Services

"ALS took excellent and prompt care of my requirements with cheerful and professional service."

FOOD MANUFACTURER

Microbiological

Ensuring food is safe from microbiological contamination is a priority and a legislative requirement at all stages of the food chain.

Through our network of accredited laboratories, highly experienced staff and extensive range of microbiological tests, ALS provides customers with cost-effective quality assurance from 'farm to fork'. Microbiological tests include the following:

Pathogens

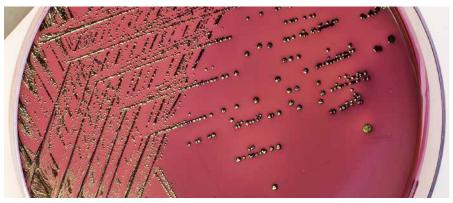
- Salmonella spp
- Listeria spp
- Shiga-Toxin producing Escherichia coli (STEC)
- Campylobacter spp
- Shigella spp
- Vibrio spp

Typical enumerations

- Bacillus cereus
- Cl. perfringens
- Coliforms
- F.coli
- Enterobacteriaceae
- Lactic Acid Bacteria
- Pseudomonas aeruginosa
- Staphylococcus aureus
- Total Viable Count (TVC)
- Yeast and Moulds

Virus

- Norovirus
- Hepatitus A



In addition to routine microbiological analysis of food samples, we also offer the following services:

- Shelf-life evaluation with standard storage conditions (refrigerated or ambient) or bespoke trials to mimic consumer use with package opening and storage temperature changes as required.
- Environmental monitoring using swab samples, contact plates or settle plates.
- Hand swabs
- Water testing

We have a range of test methods available to meet your requirements (traditional or rapid) and to comply with specific retailer standards.

Nutritional

At ALS we can provide a diverse range of chemical and nutritional analyses.

Testing at ALS laboratories can be provided to meet the requirements of most regulatory jurisdictions, including; USFDA, EU/UK, Australia and New Zealand, Asia and South America. Laboratories offer nutrition facts for food labels, analyses for special diets, health claims and studies for substantial equivalence of biotech foods. Testing capabilities include (but are not limited to):

- Ash
- Moisture
- Carbohydrates (by difference)
- Starch
- Dietary Fibre (AOAC or Englyst)
- Total Fat
- Saturated Fat
- Trans Fat

- Calcium
- Sodium
- Iron
- Potassium
- Cholesterol
- Sugar profile
- Protein
- Vitamin A
- Vitamin B1
- Vitamin B2

- Vitamin C
- Vitamin D
- Fatty acid profile
- Energy
- Calories
- Calories from Fat
- Polyols (sugar alcohols)



Our food technologists can also provide services to review legislative requirements for label claims on processed and packaged foods.

Contaminants

Substances which can contaminate foodstuffs range from highly regulated pesticide residues to chance taints which have transferred from packaging materials.

The majority of our work in this area relates to testing for heavy or toxic metal residues and mycotoxins such as aflatoxins, ochratoxin, zearalenone and deoxynivalenol.

Specialist contaminant analysis includes:



Heavy / Toxic Metals

- Aluminium
- Arsenic
- Cadmium
- Lead
- Mercury
- Antimony Barium
- Copper
- Chrome
- Iron
- Nickel
- Selenium
- Zinc

Mycotoxins

- Aflatoxins
- Deoxynivalenol (DON)
- Ochratoxins
- Patulin
- Zearalenone
- Fumonisin
- T-2, HT-2 Toxin

Illegal Colours

- Orange II
- Para Red
- Rhodamine
- Sudan I to IV

Others

- Benzo(a)pyrene
- Melamine
- Potato glycoalkaloids

Analysis of toys and desktop tools for the determination of metals

Antimony

Barium

- Cadmium
- Lead

- Arsenic
- ChromeMercury
- Selenium
- Pesticides and Agrochemicals

Utilising the latest technology, experienced staff and dedicated facilities ALS has been performing pesticide residue analysis for over 20 years and recognise the need for fast, accurate and reliable analysis.

Offering a comprehensive range of accredited tests and a package of tailored services, we provide extensive support to the food, animal feed & agrochemical industries enabling them to deliver the product assurance which the market place demands.

Our team have knowledge and experience of not only the analysis of individual or groups of pesticides but also targeted pesticide testing specific to particular foods or crops. Tests include multi-residue screening by GCMS-MS and LCMS-MS covering in excess of 500 compounds.

We are also prepared to provide studies for agrochemicals and microbial pesticides under GLP to meet international requirements for regulatory purposes of toxicology, ecotoxicology and physical chemistry.

We aim to develop strong working relationships with all our clients and are able to offer technical support and assist in devising tailor-made pesticide residue schedules and protocols.

Residue analysis is available on the following foods:

- Fruit and vegetables
- Finished products
- Feeding stuffs
- Irrigation waters
- Baby food and Infant formula
- Cereals
- Herbs, spices, tea and coffee
- Milk and dairy products
- Fish



Comprehensive Range of Capabilities and Services

"ALS staff are always helpful, and I'm able to quickly reach technical experts who can answer my questions."

RETAILER

Allergens

Allergen and Intolerance Testing

Food allergens can be defined as usually harmless food components or constituents which induce an allergic reaction in a sensitised individual and involve the immune system. Food intolerance takes place in the digestive system due to enzyme deficiencies, sensitivity to food additives or reactions to naturally occurring chemicals in foods.

Testing for the detection of substances that cause allergy or intolerance as part of an effective quality control process allows manufacturers to safeguard against undeclared allergens entering final products, thereby enabling them to comply with current labelling requirements.

At ALS we offer a range of testing to provide the best possible service to our clients. Testing for the presence of substances that cause allergy or intolerance utilises multiple techniques including Automated ELISA (enzyme-linked immunosorbent assay), PCR and analytical chemistry for the detection of allergens.

Allergen Test Methods:

- Gluten ELISA
- Casein ELISA
- Peanut ELISA
- Egg ELISA
- Mustard ELISA
- Histamine HPLC
- Milk Components ELISA
- Nuts PCR
- Soya ELISA

- Sulphites (Sulphur Dioxide)
- Celery
- Sesame
- Lupin
- Fish
- Crustaceans
- Molluscs
- ELISA/PCR
- + Others upon request

Vitamins, Minerals and Additives

ALS offers a comprehensive range of accredited tests, customers receive fast and accurate analysis of their samples through the use of HPLC, GC-MS, GCMS-MS, LCMS-MS, UHPLC, ICP-OES, ICP-MS and Biacore (SPR) technology.

Vitamins

- Vitamin A (Retinol)
- Vitamin B1 (Thiamine)
- Vitamin B2 (Riboflavin)
- Vitamin B3 (Niacin)
- Vitamin B4 (Choline)
- Vitamin B6 (Pyridoxine)
- Vitamin B9 (Folic Acid)
- Vitamin B12 (Cyanocobalamin)
- Vitamin C (Ascorbic acid)
- Vitamin D (Calciferol)
- Vitamin D2 (Ergocalciferol)
- Vitamin D3 (Cholecalciferol)
- Vitamin E (Tocopherol acetate)
- Vitamin H (Biotin)
- Vitamin K1 (Phyllquinonine)
- Vitamin K2 (Menaquinones)
- Vitamin K3 (Menadione)
- Beta carotene (Pro Vitamin A)
- Inositol

winerais

- Calcium
- Cobalt
- Copper
- Iodine
- IronMagnesium
- Manganese
- Phosphorus
- PotassiumSelenium
- Sodium
- Sulphur
- Zinc

Additives

- Amino acids (essential and food intolerance levels)
- Antioxidants (BHA, BHT, ascorbic acid)
- Caffeine, quinine and theobromine
- Preservatives (benzoic and sorbic acids, sulphur dioxide)
- Synthetic sweeteners (aspartame, saccharin, acesulfame K, stevia)



Food Authenticity

Authenticity analyses are now an integral part of most food companies' quality systems so as to guarantee the authenticity of their products and protect their brands.

ALS offers a range of services and techniques including:

- Chemical analysis
- Proteomic meat type and species
- DNA based analysis
- Stable isotope ratio analysis
- Immunoassav
- Audit and Consultancy



Food **Packaging**

Why food packaging testing?

There is increasing regulation associated with food packaging and materials that come into contact with the food product during transport and storage.

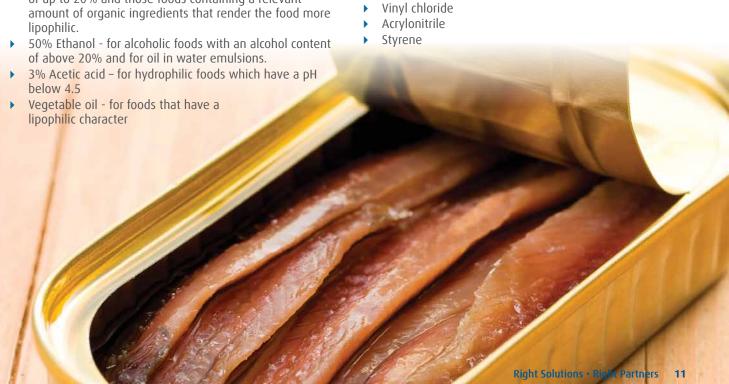
Food packaging has the potential to contaminate or spoil food as molecules from food packaging can migrate into particular food matrix. This extent to which a substance migrates depends on the nature of the migrant (the chemical), the nature of the material from which it can be released, and the nature of the food with which it comes into contact.

ALS offers overall migration testing to determine the quantity of substance that may migrate from food contact materials to foodstuffs, and specific migration testing to determine the amount of a specific component that migrates from food contact material to the food during contact. Specific migration tests are performed with multiple techniques including ICP-OES, GC-MS and HPLC.

Overall migration tests

The food packaging or article is tested for its suitability before use by employing food simulants that are intended to mimic the migration properties of different categories of foods. There are a range of food simulants used in food migration tests including 10% Ethanol, 20% Ethanol, 50% Ethanol, 3% Acetic acid and Vegetable Oil.

- 10% Ethanol for aqueous foods that have a hydrophilic character
- 20% Ethanol for alcoholic foods with an alcohol content of up to 20% and those foods containing a relevant
- Specific migration tests include
- Bisphenol A
- Heavy metals (Ba, Co, Cu, Fe, Li, Mn, Zn)



Consultancy and Training Services

At ALS we have a pool of experienced food industry experts and food technicians who can assist with your food safety and quality program.

Our consultants have a wealth of experience in both laboratory and food manufacturing environments that enable us to offer you a comprehensive and tailored solution in the application of the HACCP principles, Food Safety Standards such as BRC and local regulatory requirements.

We can help to develop a custom sampling and analysis plan for your business to meet the local and international regulations required of your product. Our consultants can also assist with the interpretation of your results and highlight areas of concern in your production.

Specific training courses with customised presentation materials can be designed for all levels of staff and / or type of manufacturing environment.

Our service is targeted to NPD, Quality & Technical departments, and laboratories within a food manufacturing environment.



Technical Advice, Courses and Presentations

- > Microbiology
- > Nutritional Chemistry
- > Vitamins
- > Contaminants
- > Allergens and Adulteration
- > Pesticides and herbicides
- > Food and Feed Labelling
- > Sampling
- > Food Fraud

Food Safety

- > BRC Food Safety Standard
- > HACCP Principles
- > ISO 22000
- > Factory Audit
- > Hygiene Management
- > Allergen Management
- > Risk Zones Management
- > Cooking Validation

Laboratory Accreditation

- > ISO 17025 requirements
- > Preparation for Accreditation
- > Uncertainty of Measurement
- > Method Development, Validation and Transfer

SCOPE OF OUR SERVICES

ALS Food Consultancy Solutions

Management and Interpretation of **Testing Results**

- > Shelf life
- > Dilution
- > Limit of Detection
- > Units and Unit Conversions
- > Legislation
- > Results Explanation
- > Correlation of Results

Quality Management Systems

- > Continuous Improvement
- > Trending
- > Change Control
- > Document Control
- > Risk Management
- > Root Cause Analysis
- > Audits and Auditing

Benchmarking

- > Sensory Testing
- > Consumer Testing
- > Marketing Reports
- > Expert Panels

Trouble Shooting

- > Microbiological and Chemical Contamination
- > Pathogen Management
- > Food Technology and New Product Development

Quality assurance program built for **client needs**

"If I ever have questions about sampling or analysis, I go directly to ALS. The staff are extremely knowledgeable and helpful."

FOOD MANUFACTURER

Quality Management System

The integrity of our test results is of paramount importance, allowing our customers to make informed decisions.

Customers work with us safe in the knowledge that their results are reliable, repeatable and meet legislative standards. At ALS we operate to ISO 17025 and are accredited in each location by the local regulatory authority. Quality Managers maintain the quality system, conduct internal audits, and assist in training and compliance. The ALS Quality Management System utilises a tiered approach to documentation:

Quality Manual

Provides consistent information about the company management systems. The QM also acts as a directory to related quality documentation, especially quality procedures and work instructions.

Quality Procedures

Provide information about how to undertake various activities covered by the management system. These documents may be company-wide or location-specific.

Service Approach and Value Adds

At ALS our growth has been built on long-term relationships. Our clients are accustomed to receiving high quality data, technical support and open communication.

This approach includes project and client managers, skilled and qualified client services teams, access to technical experts and a management team committed to service delivery.

We have a range of customer value added services available to assist clients with their analytical programs.

- Sample collection and pick-up services
- Preformatted sample submission paperwork
- Industry standard or customer specific analytical methods
- Electronic data reporting
- On-line data access modules for customers
- Project managers for large accounts or specific work programs
- Consultancy and training services
- Technical bulletins

Standard Operating Procedures

Provide directions for undertaking test procedures and administrative activities. These documents may be companywide or location-specific.

Quality Records

Provide objective evidence of activities performed or results achieved (workbooks and worksheets, certificates of analysis, calibration data, method validation, corrective actions and audit reports).

Quality Plan

Describes how a management system is applied to a specific project.



Insurances

ALS ensures that all appropriate liability and indemnity requirements are met with care and consideration. We have appropriate levels of insurances to meet industry requirements; these include Combined General Liability and Professional Indemnity. Copies of these insurance certificates are available upon request.

Health, **Safety** and the **Environment** as a **priority**

ALS is committed to a safe work culture. Our global minimum standard assists in managing health, safety and environment risks. ALS employs a team of Health and Safety professionals at both regional and corporate level to support continual improvement and best practice.

ALS believes the meeting of its safety and environmental obligations is essential to our long-term success. The company imparts its safety and environmental values from the first day the employee commences work with the company and throughout their term as a valued employee.

We do this by:

- Comprehensive safety training as part of the employee onboarding process
- Ongoing training, including formal training on core topics and personalised training based on risk assessments
- Integration with our day-to-day operations through our "Safety First" program and quality management system
- Auditing, reporting and review at all levels of the organisation

ALS has a core value of "**Safety as a Priority**". Being an employee of ALS is about putting safety first. This approach is identical for staff working in ALS Lima, Vancouver, Johannesburg, Hong Kong, or Sydney.

As part of this global approach, the minimum standard is driven by an ethic to deliver a consistently friendly and safe approach to work, regardless of differences in local laws.

The ALS HSE Foundation Standards require each business to manage key risks by adopting the following:

- Ensuring health, safety and environmental resources are available.
- Ensuring managers are aware of their responsibilities;
- Implementing a plan for managing injuries and site emergencies;
- Ensuring contractors work safely;
- Ensuring that key safety information is available for all staff to view;
- Providing training on key safety risks;
- Ensuring that staff have an opportunity to provide feedback:
- Ensuring that work areas are designed and maintained in a safe manner
- Ensuring that all incidents are reported so we can learn from our experiences;
- Completing a review of health and safety issues on a regular basis; and
- Ensuring that a monthly site audit of Safety issues is conducted.

Fixed schedules are in place for auditing, reporting and review of the HSE management system by staff, supervisors, and management.

Environment

ALS is committed to minimizing its environmental footprint. To support this goal, each laboratory adheres to relevant legislation in their jurisdiction for waste storage and

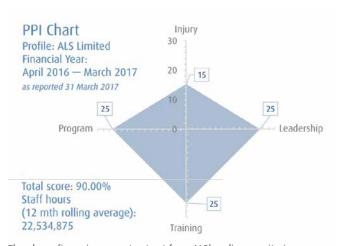
disposal. Samples and wastes are recycled or disposed in an environmentally responsible manner. Containers and packaging are recycled wherever possible.

ALS Group Compliance Portal PPI Chart

Profile: ALS Limited

Financial Year: April 2016 - March 2017

Total Score: 90.00%



The above figure is a recent extract from ALS's online monitoring program of positive performance indicators. Please note final results against the indicators are calculated in March hence the relative scores demonstrated in this extract in June.



EXPERIENCE and **EXPERTISE** with many **INDUSTRIES**

ALS provides a broad range of sophisticated, state-of-the-art services to a wide variety of market segments.

Industries

Aerospace & defence

Agriculture

Civil Infrastructure

Commodity trading

Construction

Consumer Products

Environmental health & safety

Food safety & food quality

Marine

Mining & exploration

Oil & gas

Petrochemicals

Pharmaceutical

Power generation

Pulp & Paper

Smelting & refining

Transportation

Water

Ask your ALS consultant for more information about our other services.



ALS clients benefit from experts who not only offer the highest levels of service, but can also draw on countless years of experience and knowledge within the

The following is a guide to the testing and analysis services that ALS is recognised globally for:

Services

Coal Quality

Commodity trade & inspection

Consumer products

Environmental testing

Food safety & food quality

Geochemistry

Industrial hygiene Laboratory design & build Metallurgy Oil, fuel & coolant analysis Oil & gas





















Pharmaceutical





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