

**DIVERSIFIED LABORATORIES
FEE SCHEDULE and
RELATED INFORMATION**

2012

**Diversified Laboratories, Inc.
4150 Lafayette Center Drive
Chantilly, VA 20151
703-222-8700
www.diversifiedlaboratories.com**

Diversified Laboratories, Inc.

Diversified Laboratories is an independent USDA Accredited and ISO 17025 Certified laboratory that analyzes tissues, fats, oils, fruits, vegetables, wheat and many other products for contamination from pesticides, PCB's and other industrial chemicals.

The EPA has established limits for these industrial chemicals and the FDA and USDA enforce them. However, it remains the responsibility of companies to comply with these laws. Diversified Laboratories provides its customers with a safety net protecting them from a recall or regulatory action. In over 30 years of operation, no client has ever had a regulatory intervention due to a pesticide contamination issue.

Food and feed suppliers bear responsibility for delivering unadulterated product in compliance with USDA pesticide/PCB tolerance and action levels. The Federal Meat Inspection Act (FMIA) and the Poultry Products Inspection Act (PPIA) makes it illegal "to sell or transport...meat and poultry products that are capable of use as human food that are adulterated. Meat and poultry products are considered adulterated under FMIA and PPIA if they contain illegal amounts of drugs, pesticides, and other chemicals." FSIS routinely conducts sampling across the country for residues.

Companies that distribute contaminated products potentially suffer:

- Lost Sales
- Lost customer confidence
- Lost Brand Image
- Unfavorable publicity
- FDA/USDA investigation and surveillance

We currently offer the most extensive screen in the industry and are adding compounds on a regular basis.

Why Diversified Laboratories?

As an independent laboratory, we specialize in the detection of pesticides, PCBs, and other chlorinated hydrocarbons in food and feed products. Our strengths include:

- ✓ USDA Accreditation for Over 30 Years
- ✓ ISO 17025 Certification
- ✓ Internal QA/QC Practices Which Exceed Regulatory Guidelines
- ✓ Highly Trained, Experienced and Professional Staff
- ✓ Broadest Screen Available – Broader Screen = Broader protection
- ✓ Cost Effective
- ✓ A Corporate Reputation for Value, Quality and Service
- ✓ Same or Next Day Reporting
- ✓ 24 x 7 Round the Clock Availability
- ✓ Complete Confidentiality
- ✓ Completely Independent Reporting

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Analytical Procedures

All analytical procedures are performed according to the highest possible standards. The most up-to-date EPA, USDA, A.O.A.C. and A.O.C.S. methods are employed except where more advanced methodologies have been developed and approved by USDA, FDA, or EPA. Special techniques including confirmation methodologies also are available. All analyses are routinely performed using internal standards and/or duplicate samples to insure superior precision and accuracy.

The laboratory is staffed and equipped to prepare samples and perform analyses on all types of feeds, feed ingredients, byproduct materials, fats, oils and animal tissues. If there is a question regarding the suitability of a sample, sample container or the sampling technique, please contact the laboratory for assistance.

Accreditations

Diversified Laboratories, Inc. is a USDA Accredited and ISO 17025 certified and regularly participates in numerous outside validation and proficiency studies to maintain the highest standards in the industries we serve.

Pricing and Invoicing

Standard prices for analytical procedures are shown on the following fee schedules. Volume discounts are available for long-term commitments. Surcharges will be added to the standard price of each analytical method where the results may serve as data and information in liability suits or other legal matters. These extra charges are intended to defray costs associated with the documentation and confirmation of the analytical results required for actual or anticipated legal proceedings. Invoices are sent bimonthly and payment terms are due upon receipt of invoice.

Technical Consultation

Consultation by the laboratory is available on a wide range of technical matters related to HACCP program design, chemical residue risk analysis, sampling programs and confirmation of results of samples submitted. Consultation by telephone and requiring only a limited amount of time is provided at no cost. However, information related to specific problem-solving or matters requiring significant data development or technical/scientific information searches will be invoiced on a time and related expense basis.

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PESTICIDES AND CHLORINATED HYDROCARBON RESIDUES

	<u>Price Per Sample</u>
Standard Chlorinated Pesticide Screen (See additional information)	\$160
Standard Organophosphate Pesticide Screen (See additional information)	\$295
Dioxin Screen - Chick Edema Factor (CEF) Methodology	\$150
PCB Quantitative Analysis	\$225
Melamine Screen (5 Day turnaround)	\$155
GC-MS Library Search for Unidentified Compounds	\$250

Specialized Screens Available

We have the ability to analyze hundreds of compounds. Please contact us to design a screen that meets your company's needs.

Additional Information:

- There are approximately 50 compounds in the Standard Chlorinated Pesticide Screen. This screen is typically used by the poultry and rendering industries and includes all the compounds that the FDA/USDA routinely tests for. The list of compounds is subject to change based on changes in Federal regulations and compounds that have been detected in customer samples.
- There are approximately 26 compounds in the Standard Organophosphate Pesticide Screen. The list of compounds is subject to change based on changes in Federal regulations and compounds that have been detected in customer samples.
- Sample preparation and extraction charges:
 - Fats and Oils - no charge
 - Feeds and Dry Ingredients - \$10.00
- **Except as noted Prices include routine 24-hour turnaround time.** For faster service the surcharges apply.
 - "Red Dot" Service - Reported Same Day - \$35.00/analysis
 - "Double Rush" Service – Reported Same Day by 2:30 p.m. EST - \$65.00/analysis
- A surcharge of \$35.00 will be added to the list price for analysis of official USDA samples.
- Volume discounts available for regular screening programs.

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SULFONAMIDE RESIDUES IN ANIMAL TISSUES AND FEEDS

Sulfonamide

Price Per Sample

\$295

- For valid results tissue samples must be received in a cold state.
- Standard 72-hour Turnaround
- Price includes analysis for the following compounds:
 - Sulfadimethoxine
 - Sulfamethazine
 - Sulfaquinoxaline
 - Sulfathiazole
- Price available upon request for testing for other sulfa residues not included in the list above.
- Red Dot (2 Day Service) \$100 Additional Charge
- Price available upon request for testing more than one sulfa residue per tissue.
- Limit of detection - <0.01 ppm

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FATS/OILS and OTHER ANALYSIS

	<u>Price Per Sample</u>
Acetone Insoluble	\$25
Hexane Insoluble	\$50
Metabolizable energy (ME) value** (see note 1)	\$395
Fatty acid profile (FAP - Standard Fatty Acids)	\$80
Total fatty acids (TFA)	\$50
Oxidized fatty acids (OFA)	\$60
Gross Energy	\$125
TFA and OFA Package	\$75
Moisture (Oven method)	\$35
Insoluble Matter	\$25
Unsaponifiable Matter	\$50
Total MIU (Including Karl Fischer moisture)	\$75
Free fatty acids (FFA)	\$25
Crude fat	\$35
Saponification value	\$55
Iodine value (IV)	\$55
Free gossypol	\$80
pH	\$25
Peroxide value	\$30
Protein	\$20
Total Solids	\$25
Ash	\$15

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FATS AND OILS ANALYSIS (con't.)

AOM Stability – 20 hour	\$75
AOM Stability – 50 hour	\$75
Acid value	\$25
Acid value and FFA Package	\$25
Titer	\$80
FAC Color	\$15
Free glycerol in soap	\$85
Polyethylene	\$150
Amino Acid Analysis (21 amino acids including tryptophan)	\$295
Salt	\$20

Additional fats and oil analyses Price Available Upon Request

Custom Combinations – Please contact laboratory

Note 1 - METABOLIZABLE ENERGY VALUE – This is a special methodology, proprietary to Diversified Laboratories, Inc., which is based on extensive research on the metabolizable energy values of fats and oils including adjustments for the presence of glyceride and other polymers. Results provided include ME value and other important chemical parameters such as moisture, insoluble matter, unsaponifiables, total fatty acids, free fatty acids, oxidized fatty acids, fatty acid profile and saponification value.

Rush Service Available for an Additional Charge.

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Analytical Procedures

Following is a brief description of the various analytical procedures offered by Diversified Laboratories. Information is presented regarding the reason each procedure is offered to and/or required by clients in the industries served by our laboratory and how the information obtained may be used.

Pesticides and Chlorinated Hydrocarbon Residues

Chlorinated Pesticides Screen

Chlorinated pesticides and other chlorinated compounds are fat-soluble, highly toxic chemicals that can last for decades in the environment, affect the health of food-producing animals, cause disease in humans and accumulate in fatty tissues and oils. FDA and EPA hold suppliers and food producers responsible for contamination of their products by these substances. Regular periodic testing of feeds, feed ingredients, rendered products and animal tissues, insures and protects a company's brand, avoids costly recalls and regulatory intervention.

Organophosphate Pesticides Screen

Organophosphate pesticides are also fat-soluble compounds that can be as toxic as chlorinated compounds with similar ill effects on animals and humans. However they don't accumulate as readily in fat tissues and oils nor do they last as long in the environment.

Using proprietary, specialized extraction techniques Diversified Laboratories Organophosphate Pesticide Screen is able to offer analysis and detection of numerous organophosphate compounds.

Dioxin Screen - (CEF)

Dioxins are a fat-soluble group of compounds created as a by-product of numerous chemical manufacturing processes and the incineration of waste. A highly toxic chemical compound group, dioxins in poultry feed can cause the accumulation of fluid in the sac surrounding the heart causing heart failure. Dioxins have caused the large-scale death among broiler chickens.

Diversified Laboratories screen uses an official AOAC method that measures certain dioxin isomers at parts per billion (ppb) levels.

Polychlorinated Biphenyls (PCBs) Screen

PCBs are a fat-soluble group of chemicals typically used as an insulation material in electric transformers. They are highly persistent in the environment and have numerous toxic effects. PCBs accumulate in the fat tissues of humans and animals. If an initial screen of feed grade fats and oils and animal tissues determines the presence of PCBs, additional procedures are used to confirm the results and quantify the amount of PCBs present.

Sulfonamide Residues

Sulfa drugs are approved for use as feed additives in poultry and livestock to control specific infections. Federal regulation requires that poultry and livestock products have no detectable residues of these compounds. If growers withdraw these drugs from the feed 5 days prior to slaughter, there should be no detectable tissue residue. However there have been numerous instances of the improper use of these compounds and their subsequent detection.

Diversified Laboratories uses an advanced USDA approved method to assay specific tissues for the presence or absence of sulfa drug residues.

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Fats and Oils Analyses

Rendered fats, vegetable oils, and vegetable oil byproducts are used as supplements in poultry and livestock feeds. Diversified Laboratories offers a variety of analytical procedures that provide information concerning the safety, quality, physical/chemical properties, and nutritional value (efficacy) of these products.

Acetone/Hexane Insolubles

Measures the amount of lecithin present in a fat or vegetable oil such as soybean oil. Lecithin is used as a fat emulsifier; high levels can reduce the energy content of a fat or oil.

Gross Energy

Measures the total potential caloric value of a fat used in a feed prior to ingestion, absorption, and utilization by poultry or livestock.

Metabolizable Energy Value (ME Value)

Measures the useful caloric value of a fat available to poultry or livestock. Diversified Laboratories algorithm is a very careful calculation of the energy value based on numerous chemical parameters. The Diversified Laboratories ME Value was developed after many years of research and comparative evaluation with the standard bioassay method. It has been shown to be the most reliable measure of the energy value of a feed grade fat. The higher the ME Value the greater the potential conversion of feed to weight gain.

Fatty Acid Profile or Fatty Acid Composition (FAP)

Identifies the relative concentrations of fatty acids present in a fat or oil. This information is useful to buyers and sellers of fats and oils and to nutritionists trying to establish the potential energy value for a fat prior to use. A fatty acid profile reveals information about the amount of dietary essential fatty acids and the saturated, monounsaturated, and polyunsaturated fatty acids present in a fat. The ratio of unsaturated to saturated fatty acids can then be used to estimate the energy value the fat may have for poultry or livestock. The FAP can also be used to help identify the source of a fat or oil and determine if it was derived from a single source.

Total Fatty Acids (TFA)

Measures fat quality and is commonly used to adjust prices when purchasing vegetable oils and vegetable oil byproducts. The TFA quantifies all the fatty acids present in any fat or oil. Lower TFA values suggest the fat would have a lower energy value.

Oxidized Fatty Acids (OFA)

Measures oxidation in fats or oils. Fats that have been oxidized may cause animals to avoid it and effect feed consumption and therefore animal performance.

Moisture

Measures the amount of moisture. High amounts of moisture are undesirable and lower a fat's nutritional value. High amounts of moisture can also accelerate oxidation and rancidity.

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Insoluble Matter

Measures the physical contaminants such as bone, teeth, hide, hair, dirt and metal fragments in fats or vegetable oils. High amounts of insoluble matter in a fat dilute its energy value and can have a detrimental effect on its characteristics.

Unsaponifiable Matter

Measures the fraction of a fat or oil that cannot be converted into water-soluble soaps. Includes sterols, pigments, vitamins, and other compounds. A high unsaponifiable fraction dilutes the energy value of the fat.

Total MIU

Measures the total amount of moisture, insoluble matter and unsaponifiable matter in a feed grade fat. A high MIU dilutes the energy value of a fat.

Acid Value and Free Fatty Acids (FFA)

Measures the amount of free fatty acids present in a fat or oil. A material with a high degree of free fatty acids is an indication of rancidity and may reduce the energy value of a feed grade fat. A fat containing high levels of free fatty acids indicates the product was treated harshly and is therefore considered undesirable for many uses.

Crude Fat

Estimates the useful fat present. Frequently used to determine the fat content in vegetable oil byproducts and recovered oils in the presence of high levels of moisture and insoluble impurities.

Saponification Value

Measures the chain length of all fatty acids present in a fat. A very low saponification value indicates polymerization lowering the quality and energy value of the fat.

Iodine Value (IV)

Estimates the unsaturation of a fat without regard to the specific fatty acids present. The higher the iodine value, the greater the degree of unsaturation in the fat. Fats containing a high degree of unsaturated fatty acids are usually higher in energy value.

Free Gossypol

Gossypol is a pigment found in cottonseed or cottonseed by-products, such as cottonseed oil, which can be toxic at high concentrations. Gossypol poisoning occurs most often in pigs, chickens, and immature ruminants.

pH

Measures acidity or alkalinity. pH is used to determine if excess acids are present in vegetable oil by-products. Vegetable oil by-products with high acid values can cause reduced feed consumption in poultry and livestock.

Peroxide Value (PV)

Measures the amount of oxidation (degradation) in a fat or oil. It is used as one parameter to determine the quality of a fat or oil. Fats with high peroxide values can cause reduced feed consumption in poultry and livestock.

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Active Oxygen Method (AOM)

Measures the resistance of a fat to oxidation. This test is frequently used to determine antioxidant levels in a fat or oil. The use of an antioxidant product such as ethoxyquin or tertiary butyl hydroquinone (TBHQ) will inhibit the oxidation process of the fat.

Titer

Measures the temperature at which melted fatty acids (obtained by hydrolysis of the fat source) solidify when cooled. Titer affects hardness quality of soap and is important for fatty acid manufacturing. Nutritionists may use titer as an indicator of the handling properties of a fat source.

FAC (Fat Analysis Committee)

Measures color based on a scale from 1 (lightest) to 45 (darkest) using only odd numbers. A low FAC color is important in the production of white colored bath soaps. Since pure fat is almost colorless, a high FAC indicates the presence of dissolved foreign material in the fat.

Free Glycerol in Soap

Glycerin is an important ingredient in the production of soap. It also has little energy value and therefore high levels of glycerin in vegetable oils can significantly reduce the available energy.

Polyethylene

Measures polyethylene, usually in tallow, originating from meat wrappers. The soap-making industry has limitations concerning the amount of polyethylene that can be tolerated in the manufacture of bar soap.

Amino Acid Analysis

Certain rendered products, such as meat meals, or meat and bone meals, are used in livestock and poultry diets as sources of specific essential amino acids. Modern livestock and poultry diets are formulated using information obtained from an amino acid profile of a given feed ingredient.

Salt

Measures the chloride and sodium contribution to a diet formulation by various ingredients (e.g. bone meals, feather meals, and mineral supplements.)