



CERTIFICATE OF ACCREDITATION

ANSI-ASQ National Accreditation Board

500 Montgomery Street, Suite 625, Alexandria, VA 22314, 877-344-3044

This is to certify that

Collaborative Testing Services, Inc.
21331 Gentry Drive
Sterling VA 20166

has been assessed by ANAB
and meets the requirements of international standard

ISO/IEC 17043:2010

while demonstrating technical competence in the field of

Proficiency Testing Provider

Refer to the accompanying Scope of Accreditation for information regarding the types of proficiency tests to which this accreditation applies.

AP-1884

Certificate Number



ANAB Approval

Certificate Valid: 07/28//2017-07/31/2018

Version No. 004 Issued: 07/28/2017





SCOPE OF ACCREDITATION TO ISO/IEC 17043:2010

Collaborative Testing Services, Inc.

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PROFICIENCY TEST PROVIDER

Valid to: **July 31, 2018**

Certificate Number: **AP-1884**

Agriculture: Chemical

Type of Item	Properties Measured	Procedure for Establishing Assigned Value
Soil	Salinity pH and EC Buffer pH, Lime Req. Inorganic Nitrogen Phosphorus and Sulfur Bases (K, Ca, Mg, N, Al) Mehlich-1 Multi Element Mehlich-3 Multi Element Micronutrients Soil Organic Matter CEC	Consensus Value from Participants
Botanicals	Wet Digestion - Nutrients Dry Ash - Nutrients Heavy Metals	Consensus Value from Participants
Water	pH and EC Cations Anions Other Nutrients	Consensus Value from Participants





Agriculture: Physical

Type of Item	Properties Measured	Procedure for Establishing Assigned Value
Soil	Densities Particle Size Analysis Moisture Related Properties	Consensus Value from Participants
Botanicals	Dry Matter Dry Ash	Consensus Value from Participants

Containerboard: Mechanical

Type of Item	Properties Measured	Test Method	Procedure for Establishing Assigned Value
Linerboard	Burst Strength Ring Crush Strength (RCT) Short Span Compression Strength (STFI) Internal Bonding Strength Coefficient of Friction (Slide Angle) Air Resistance (Gurley Type)	TAPPI T807 TAPPI T822 TAPPI T826 TAPPI T569 TAPPI T815 TAPPI T460	Consensus Value from Participants
Medium	Flat Crush Strength (CMT) Fluted Edge Crush Ring Crush Strength Short Span Compression Strength (STFI)	TAPPI T809 TAPPI T824 TAPPI T822 TAPPI T826	Consensus Value from Participants
Corrugated Boxes	Top-to-Bottom Compression (BCT)	TAPPI T804	Consensus Value from Participants
Corrugated Fiberboard	Edge Crush Compression (ECT)	TAPPI T811 TAPPI T839	Consensus Value from Participants

Containerboard: Physical

Type of Item	Properties Measured	Test Method	Procedure for Establishing Assigned Value
Linerboard	Roughness (Stylus Method) Roughness (Sheffield Method)	TAPPI T575 TAPPI T538	Consensus Value from Participants





Color and Appearance: Optical

Type of Item	Properties Measured	Range	Procedure for Establishing Assigned Value
Color Paint Chip	Directional Color and Color Difference 45-0(0-45) Diffuse Color and Color Difference (Sphere Geometry) Diffuse Spectral Reflectance	N/A	Consensus Value from Participants
Color Paint Chip	Specular Gloss 60 Degrees	30-75 gloss units	Consensus Value from Participants
Color Paint Chip	Specular Gloss 85 Degrees	5-20 gloss units	Consensus Value from Participants

Fasteners and Metals: Chemical

Type of Item	Properties Measured	Procedure for Establishing Assigned Value
Nickel-Based Alloy	Chemical Analysis Percent composition of up to 8 elements	Consensus Value from Participants
Copper-Based Alloy	Chemical Analysis Percent composition of up to 8 elements	Consensus Value from Participants
Carbon and Low Alloy Steel	Chemical Analysis Percent composition of up to 10 elements	Consensus Value from Participants
Corrosion Resistant Steel	Chemical Analysis Percent composition of up to 10 elements	Consensus Value from Participants
Aluminum Alloy	Chemical Analysis Percent composition of up to 8 elements	Consensus Value from Participants

Fasteners and Metals: Dimensional

Type of Item	Properties Measured	Procedure for Establishing Assigned Value
Plain Plug Gage	Dimensional Outside Diameter (OD)	Certified Reference Value





Fasteners and Metals: Mechanical

Type of Item	Properties Measured	Test Method	Procedure for Establishing Assigned Value
Flat Steel Tensile Blanks Pre-machined Steel Tensile Specimens Round Steel Tensile Blanks Flat Aluminum Tensile Blanks	Tensile	ASTM E8 ASTM E517 ASTM E646 ASTM B557	Consensus Value from Participants
Fasteners	Wedge Tensile Axial Tensile Rockwell (C) Scale Vickers Hardness Double Shear	ASTM F606 SAE J429 ASTM F606 ASTM F606M ASTM E18 ASTM E92 NASM 1312-13	Consensus Value from Participants
Steel Test Blocks	Rockwell B Scale Hardness Rockwell C Scale Hardness Microhardness (Knoop and Vickers) Brinell Hardness Rockwell Superficial Hardness (30N Scale)	ASTM E18 ASTM E384 ASTM E10	Consensus Value from Participants
Brass Test Blocks	Hardness: Rockwell B Scale	ASTM E18	Consensus Value from Participants
Titanium Cylinders	Alpha Case Depth	ASTM E3 ASTM E407	Consensus Value from Participants
Steel Cylinders	Case Depth	SAE J423 SAE J78	Consensus Value from Participants
Stainless Steel Cylinders Inconel Cylinders	Grain Size	ASTM E3 ASTM E407 ASTM E112 ASTM E1382	Consensus Value from Participants
Inconel	Alloy Depletion Depth	ASTM E3 ASTM E407	Consensus Value from Participants





Forensic: Crime Scene

Type of Test / Sample Type	Test Performed	Procedure for Establishing Assigned Value
Bloodstain Pattern Analysis / Reproductions of Originals	Angle of Impact Determination Pattern Recognition, Identification, and Description	Consensus Value from Participants
Latent Prints Fingerprint Development / Materials with original depositions	Latent Print Processing Latent Print Development	Consensus Value from Participants
Body Fluid Screening / Blood, Semen, Saliva or Other Dried Fluid samples	Body Fluid Screening Body Fluid Identification	Consensus Value from Participants
Shooting (Incident) Reconstruction / Material with bullet hole(s) (Entry/Exit)	Horizontal / Vertical Angle Determination Angle Directionality (Trajectory) Entry/Exit Hole Identification	Consensus Value from Participants

Forensic: Digital and Multimedia Evidence (Computer Forensics)

Type of Test / Sample Type	Test Performed	Procedure for Establishing Assigned Value
Digital Evidence Analysis / Electronic Storage Media Images, Mobile Device Images	Database Analysis Geo-location Metadata Analysis Data Carving Application Analysis Plists (iOS)	Consensus Value from Participants

Forensic: Drug Analysis

Type of Test / Sample Type	Test Performed	Procedure for Establishing Assigned Value
Controlled Substances / Illicit or Prescription Drugs / Chemicals or Botanicals (e.g. Cannabis)	Qualitative Analysis Quantitative Concentration/Purity Analysis	Consensus Value from Participants



Forensic: Firearms and Toolmarks

Type of Test / Sample Type	Test Performed	Procedure for Establishing Assigned Value
Firearms Analysis (Examination) / Fired Bullets, Cartridge Cases (Casings) (FCC), Projectiles	Examination Comparative Analysis	Consensus Value from Participants
Toolmark Analysis (Examination) / Tools and Substrates	Examination Comparative Analysis	Consensus Value from Participants
Serial Number Restoration (SNR) / Obliterated Stamped Bar Stock	Serial Number Restoration Chemical and/or Magnetic Preparation Methods	Consensus Value from Participants
Gunshot Residue (GSR) Distance Determination / Original or Reproductions of Unknown Residue Shot Patterns and Reproductions of Known Residue Shot Patterns	Modified Griess Chemical Processing Sodium Rhodizonate Chemical Processing Muzzle to Target Distance Determination	Consensus Value from Participants
Shooting (Incident) Reconstruction / Material with bullet hole(s) (Entry/Exit)	Horizontal / Vertical Angle Determination Angle Directionality (Trajectory) Entry/Exit Hole Identification	Consensus Value from Participants

Forensic: Forensic Biology (DNA) and Serology

Type of Test / Sample Type	Test Performed	Procedure for Establishing Assigned Value
Body Fluid Screening / Blood, Semen, Saliva or Other Dried Fluid samples	Body Fluid Screening Body Fluid Identification	Consensus Value from Participants
DNA Analysis / Blood, Semen, and/ or Saliva samples Electropherograms	STR (Autosomal) Analysis YSTR Analysis Mitochondrial DNA (mtDNA) Analysis DNA Interpretation Massively Parallel Sequencing	Consensus Value from Participants
DNA Analysis of Parentage or Relationship / Blood and/or saliva samples Paper Challenge	STR (Autosomal) Analysis YSTR Analysis DNA Interpretation Relationship Associations and Statistical Calculations for Paternity and/or other Kinship Types	Consensus Value from Participants

Forensic: Latent Prints and Imprint / Impression Evidence

Type of Test / Sample Type	Test Performed	Procedure for Establishing Assigned Value
Latent Print Examination Fingerprint Comparison / Reproductions of Originals	Comparative Analysis	Consensus Value from Participants
Latent Prints Fingerprint Development / Materials with original depositions	Latent Print Processing Latent Print Development	Consensus Value from Participants
Tenprint Database Examination Fingerprint Comparison / Digital Images	Comparative Analysis Evaluation with Database/Software tools	Consensus Value from Participants
Footwear Imprints Shoe Impressions / Reproductions of Originals	Comparative Analysis	Consensus Value from Participants
Tire Track Imprints Tire Tread Impressions / Reproductions of Originals	Comparative Analysis	Consensus Value from Participants

Forensic: Questioned Documents

Type of Test / Sample Type	Test Performed	Procedure for Establishing Assigned Value
Questioned Documents / Original Materials	Comparative Analysis Ink Identification, Indented Writing, Type set	Consensus Value from Participants
Handwriting Samples Handprinting and Signature Exemplar Comparison / Reproductions of Originals	Comparative Analysis	Consensus Value from Participants

Forensic: Toxicology

Type of Test / Sample Type	Test Performed	Procedure for Establishing Assigned Value
Blood Alcohol Analysis / Alcohol in Blood	Quantitative Analysis to determine Alcohol content in Blood	Consensus Value from Participants
Drug Analysis / Drugs / Metabolites in Urine or Blood	Qualitative and/or Quantitative Analysis of Drug content in Urine or Blood	Consensus Value from Participants
Breath Alcohol Analysis / Ethanol Solution	Quantitative Analysis to determine Alcohol content in Breath Alcohol Simulation Solution	Consensus Value from Participants
Breath Alcohol Analysis / Dry Gas Cylinders	Quantitative Analysis to determine alcohol content in Dry Gas Reference Materials	Certified Reference Value

Forensic: Trace

Type of Test / Sample Type	Test Performed	Procedure for Establishing Assigned Value
Trace Analysis / Glass or Paint	Comparative Analysis	Consensus Value from Participants
Trace Analysis / Fiber	Comparative Analysis Fiber Type Identification	Consensus Value from Participants
Trace Analysis / Ignitable Liquid (Flammables) Sample	Detection/Presence and Classification	Consensus Value from Participants

Paper and Paperboard: Dimensional Measurement

Type of Item	Properties Measured	Range	Test Method	Procedure for Establishing Assigned Value
Printing Paper	Thickness (Caliper)	3-7 mil	TAPPI T411	Consensus Value from Participants
Heavyweight Paper Packaging Paper	Thickness (Caliper)	8-15 mil	TAPPI T411	Consensus Value from Participants

Paper and Paperboard: Mechanical

Type of Item	Properties Measured	Test Method	Procedure for Establishing Assigned Value
Printing Paper	Coefficient of Static Friction Coefficient of Kinetic Friction Folding Endurance	TAPPI T549 TAPPI T511	Consensus Value from Participants
Uncoated Printing Paper	Air Resistance / Porosity	TAPPI T460 TAPPI T547	Consensus Value from Participants
Printing Paper Heavyweight Paper Packaging Paper	Bursting Strength	TAPPI T403	Consensus Value from Participants
Newsprint Printing Paper Heavyweight Paper Packaging Paper	Tearing Strength Tensile Properties	TAPPI T414 TAPPI T494	Consensus Value from Participants
Printing Paper Packaging Paper Paperboard	Bending Resistance (Gurley and Taber)	TAPPI T543 TAPPI T566 TAPPI T489	Consensus Value from Participants
Heavyweight Paper Paperboard	Z-Directional Tensile	TAPPI T541	Consensus Value from Participants
Heavyweight Paper	Internal Bonding Strength (Modified Scott Bond and Classical Scott Bond)	TAPPI T569	Consensus Value from Participants

Paper and Paperboard: Optical

Type of Item	Properties Measured	Range	Test Method	Procedure for Establishing Assigned Value
Low FWA Paper	Color and Color Difference Brightness	N/A	TAPPI T524 TAPPI T527 TAPPI T452 TAPPI T525	Consensus Value from Participants
Printing Paper	Opacity	N/A	TAPPI T425	Consensus Value from Participants
Printing Paper Newsprint	Opacity	N/A	TAPPI T519	Consensus Value from Participants
Glossy Coated Paper	Specular Gloss	50 to 95 gloss units	TAPPI T480	Consensus Value from Participants
Matte / Dull Coated Paper	Specular Gloss	10 to 50 gloss units	TAPPI T480	Consensus Value from Participants

Paper and Paperboard: Physical

Type of Item	Properties Measured	Range	Test Method	Procedure for Establishing Assigned Value
Coated Printing Paper	Roughness	0.5 - 4.0 microns	TAPPI T555	Consensus Value from Participants
Printing Paper	Roughness	2.5 - 6.5 microns	TAPPI T555	Consensus Value from Participants
Printing Paper	Roughness (Sheffield) Moisture Content Grammage Hercules Sizing Test (HST)	N/A	TAPPI T538 TAPPI T412 TAPPI T410 TAPPI T530	Consensus Value from Participants

Plastics: Mechanical

Type of Item	Properties Measured	Test Method	Procedure for Establishing Assigned Value
Molded Bars ASTM Type 1 Tensile ISO Multipurpose	Tensile	ASTM D638 ISO 527	Consensus Value from Participants
Molded Bars ASTM Flex ISO Multipurpose	Flexural Izod Impact	ASTM D790 ISO 178 ASTM D256 ISO 180/A	Consensus Value from Participants
Molded Bars ISO Multipurpose	Charpy Impact	ISO 179	Consensus Value from Participants
Films	Tensile Tear Resistance	ASTM D882 ASTM D1922	Consensus Value from Participants

Plastics: Optical

Type of Item	Properties Measured	Test Method	Procedure for Establishing Assigned Value
Films	Haze and Transmittance	ASTM D1003	Consensus Value from Participants

Plastics: Physical

Type of Item	Properties Measured	Test Method	Procedure for Establishing Assigned Value
Molded Bars ASTM Flex ISO Multipurpose	Specific Gravity	ASTM D792 ASTM D1505 ISO 1183	Consensus Value from Participants
Thermoplastic Pellets	Moisture Content Ash Content	ASTM D6869 ASTM D6980 ASTM D7191 ISO 15512 (B) ASTM D5630	Consensus Value from Participants
Thin Plastic Films	Coefficient of Friction	ASTM D1894	Consensus Value from Participants

Plastics: Thermal

Type of Item	Properties Measured	Test Method	Procedure for Establishing Assigned Value
Molded Bars ASTM Flex ISO Multipurpose	Deflection of Temperature Under Load	ASTM D648 ISO 75 (Af)	Consensus Value from Participants
Molded Bars ASTM Flex	Vicat Softening	ASTM D1525	Consensus Value from Participants
Thermoplastic Pellets	Flow Rate Differential Scanning Calorimetry	ASTM D1238 ISO 1133 (A/B) ISO 11357	Consensus Value from Participants

Rubber: Mechanical

Type of Item	Properties Measured	Test Method	Procedure for Establishing Assigned Value
Vulcanized Rubber Dumbbells	Tensile Hardness (Type A)	ASTM D412 ASTM D2240	Consensus Value from Participants
Rubber Discs	Hardness (Type D)	ASTM D2240	Consensus Value from Participants
Participant-Cured Rubber	Tensile	ASTM D3182 ASTM D412	Consensus Value from Participants



Rubber: Physical

Type of Item	Properties Measured	Test Method	Procedure for Establishing Assigned Value
Vulcanized Rubber Dumbbells	Density	ASTM D297	Consensus Value from Participants
Rubber Polymer (e.g. SBR, NBR, Butyl)	Mooney Viscosity and Stress Relaxation (ASTM and ISO)	ASTM D1646 ISO 289	Consensus Value from Participants
Unvulcanized Rubber (EPDM)	Vulcanization Characteristics using Oscillating Disk Rheometer (ODR), Rotorless Cure Meter (MDR) or RPA Rheological Properties	ASTM D2084 ASTM D5289 ASTM D6204	Consensus Value from Participants

Wine: Chemical

Type of Item	Properties Measured	Procedure for Establishing Assigned Value
Wine Red, white, or blush wines	Alcohol by Volume Total Sulfur Dioxide Free Sulfur Dioxide Titratable Acidity Volatile Acidity pH Residual Sugar L-Malic Acid Glucose + Fructose Copper (Cu) Content Potassium (K) Content	Consensus Value from Participants

Wine: Optical

Type of Item	Properties Measured	Procedure for Establishing Assigned Value
Wine Red, white, or blush wines	Absorbance - A420 Absorbance - A520	Consensus Value from Participants



Wine: Physical

Type of Item	Properties Measured	Procedure for Establishing Assigned Value
Wine Red, white, or blush wines	Specific Gravity	Consensus Value from Participants

Note:

1. This scope is formatted as part of a single document including Certificate of Accreditation No. AP-1884.



Vice President

