PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

Perry Johnson Laboratory Accreditation, Inc. has assessed the Laboratory of:

PSILab, Inc.

117 S. Sunset Street, Suite I, Longmont, CO 80501

(Hereinafter called the Organization) and hereby declares that Organization is accredited in accordance with the recognized International Standard:

ISO/IEC 17025:2017

This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system
(as outlined by the joint ISO-ILAC-IAF Communiqué dated April 2017):

Environmental, Mechanical, Thermodynamic, Chemical Testing

(As detailed in the supplement)

Accreditation claims for such testing and/or calibration services shall only be made from addresses referenced within this certificate. This Accreditation is granted subject to the system rules governing the Accreditation referred to above, and the Organization hereby covenants with the Accreditation body's duty to observe and comply with the said rules.

For PJLA:

Tracy Szerszen
President/Operations Manager

Perry Johnson Laboratory Accreditation, Inc. (PJLA)
755 W. Big Beaver, Suite 1325
Troy, Michigan 48084

Initial Accreditation Date:	*Issue Date:*	*Expiration Date:*
Decmeber 23, 2015	October 13, 2019	January 31, 2022
Revision Date.:	*Accreditation No.:*	*Certificate No.:*
December 23, 2019	86043	L19-519

The validity of this certificate is maintained through ongoing assessments based on a continuous accreditation cycle. The validity of this certificate should be confirmed through the PJLA website: www.pjlabs.com

Certificate of Accreditation: Supplement

PSILab, Inc.
117 S. Sunset Street, Suite I, Longmont, CO 80501
Contact Name: Steve Ferry Phone: 720-204-1573

Accreditation is granted to the facility to perform the following testing:

FIELD OF TEST	ITEMS, MATERIALS OR PRODUCTS TESTED	SPECIFIC TESTS OR PROPERTIES MEASURED	SPECIFICATION, STANDARD METHOD OR TECHNIQUE USED	RANGE (WHERE APPROPRIATE) AND DETECTION LIMIT
Mechanical[F]	Polymers, Pipe Materials, etc.	Izod Impact Resistance	ASTM D256	5.5 J
		Pipe Stiffness and Flattening	ASTM D2412	10 lbf to 22,500 lbf
		Pipe Impact	ASTM D2444	10 ft·lb to 360 ft·lb
		PVC Cell Classification	ASTM D1784	Izod Impact, Tensile Strength and Modulus, DTUL, and Flammability; See D256, D638, D648 and D635 for specific ranges
		PE Cell Classification	ASTM D3350	Density, Melt Index, Flexural Modulus, Tensile Strength, Slow Crack Growth and HDB; See D1505, D1238, D790, D638, F1473 and D2837 for specific ranges
		Slow Crack Growth Resistance of PE Materials	ASTM F2136	100 psi to 1,200 psi
		Stress Crack Resistance of PE Materials	ASTM F3181	100 psi to 1,200 psi
		Slow Crack Growth Resistance of PE Materials	ASTM F1473	100 psi to 1,200 psi
		Tensile Properties	ASTM D638	10 lbf to 11,000 lbf
		Flexural Properties	ASTM D790	10 lbf to 11,000 lbf
		Flexural Properties	ISO178	10 lbf to 11,000 lbf
		Flexural Properties – Curved Hoop Samples	ISO11296	10 lbf to 11,000 lbf
		Deflection Temperature Under Load	ASTM D648	Method A and B
		PE and PVC Molding for Test Specimen Preparation	ASTM D4703	Annex A1, Procedure C for PE Materials and Appendix X2 for PVC Materials

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Mechanical[F]	Polymer and Composite Materials	Flexural Creep	ASTM D2990	10,000 psi to 2,000,000 psi
	Pipe	Sustained Pressure	ASTM D1598	Ambient to 95 °C; 2,150 psi maximum
		Sustained Pressure	ISO1167	Ambient to 95 °C; 2,150 psi maximum
	Thermoplastic Pipe	Hydrostatic Design Basis/Pressure Design Basis	ASTM D2837	Ambient to 95 °C; 2,150 psi maximum
		Long-term Hydrostatic Strength (e.g. HDB)	ISO9080	Ambient to 95 °C; 2,150 psi maximum
		Pressure Pipe Joints using Flexible Elastomeric Seals	ASTM D3139	Copper tube size through 36 in; 2,150 psi maximum
		Drain and Sewer Pipe Joints using Flexible Elastomeric Seals	ASTM D3212	Copper tube size through 36 in; 100 psi maximum
		Complete Specification	AASHTO M252	3 in to 10 in (nominal diameter)
		Complete Specification	AASHTO M294	12 in to 60 in (nominal diameter)
		Complete Specification	AASHTO M304	4 in through 48 in (nominal diameter)
		Complete Specification	AASHTO M330	12 in to 60 in (nominal diameter)
	Thermoplastic or Reinforced Plastic Pipe	Apparent Tensile Strength (Hoop Tensile Strength)	ASTM D2290	10 lbf to 11,000 lbf
	Thermoplastic Piping Materials or Pipe	Hydrostatic Design Basis/Pressure Design Basis	PPI TR-3	Ambient to 95 °C; 2,150 psi maximum
	Fiberglass Pipe	Hydrostatic Design Basis/Pressure Design Basis (Static only)	ASTM D2992	Ambient to 95 °C; 2,150 psi maximum
	Pipe	Quick Burst Pressure	ASTM D1599	Ambient to 95 °C; 2,750 psi maximum

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Mechanical[F]	PVC Pipe	Dimensions, Sustained Pressure, Burst Pressure, Flattening, Extrusion Quality, Ring-Tensile	AWWA C900	4 in to 48 in (nominal diameter pipe)
	Oriented PVC Pipe	Dimensions, Accelerated Regression, Sustained Pressure, Burst Pressure, Flattening, Extrusion Quality, Apparent Hoop Tensile	AWWA C909	4 in to 24 in (nominal diameter pipe)
	CIPP Thermosetting Resin Sewer Pipe	Wall Thickness, Flexural and Tensile Properties	ASTM D5813	10 lbf to 11,000 lbf
	Pulled-in-Place CIPP Thermosetting Resin Pipe	Wall Thickness, Flexural and Tensile Properties	ASTM F1743	10 lbf to 11,000 lbf
	CIPP Thermosetting Resin Sewer Pipe	Wall Thickness, Flexural and Tensile Properties	ASTM F1216	10 lbf to 11,000 lbf
	Thermosetting Pipe and Fittings	Dimensions	ASTM D2122	0.001 in to 48 in
	Fiberglass Pipe	Dimensions	ASTM D3567	0.001 in to 48 in
Environmental[F]	Polymers	Density by Water Weighing	ASTM D792	0.5 kg/m³ to 5 kg/m³
		Density by Gradient Column	ASTM D1505	0.941 g/cm³ to 0.960 g/cm³
		Melt Flow Rate	ASTM D1238	0.01 g/10 min to 25 g/10 min
		Loss of Ignition	ASTM D2584	0.1 % to 85 %
		Ash Content	ASTM D5630	Minimum 0.01 %
		Flammability of Plastics	ASTM D635	2.5 ipm Maximum Burn Rate
	PVC Pipe	Heat Reversion	ASTM F1057	Copper tube size through 63 in
	PVC Fittings	Heat Reversion	ASTM F610	8 ft³ Maximum
	PE Pipe and Materials	Carbon Black Content	ASTM D4218	0.01 % Minimum
	Fiberglass Pipe	Strain Corrosion	ASTM D3681	4 in through 48 in (nominal diameter)

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Environmental[F]	PVC Pipe and Fittings	Acetone Immersion	ASTM D2152	Copper tube size through 63 in
	Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents	Chemical exposure of Plastics	ASTM D543	Procedure 1 & 2 Method A & B
Thermodynamic[F]	Polyolefin Pipe and Materials	Oxidative-Induction Time by DSC	ASTM D3895	0.05 Minute Minimum
	Polymers, Pipe Materials, etc.	Transition Temperatures and Enthalpies of Fusion of Polymers by DSC	ASTM D3418	-90 °C to 725 °C
	Polymers, Pipe Materials, etc.	Glass Transition Temperatures by DSC	ASTM E1356	-90 °C to 725 °C
Chemical[F]	Polymers, Unknown Materials, etc.	Fourier-Transition Infrared Spectroscopy	ASTM E334	Wave number 4,000 cm^{-1} to 400 cm^{-1}
	Polymers	PEX Crosslinking Content	ASTM D2765	1 % to 99 %

1. The presence of a superscript F means that the laboratory performs testing of the indicated parameter at its fixed location. Example: Outside Micrometer [F] would mean that the laboratory performs this testing at its fixed location.