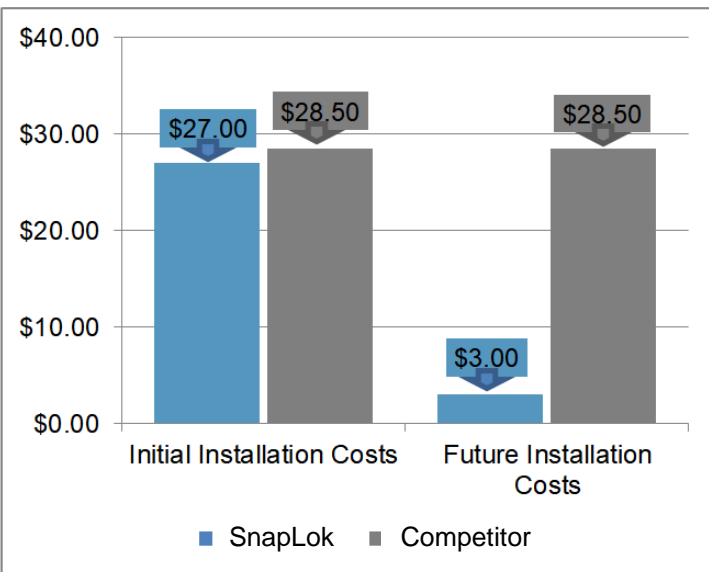




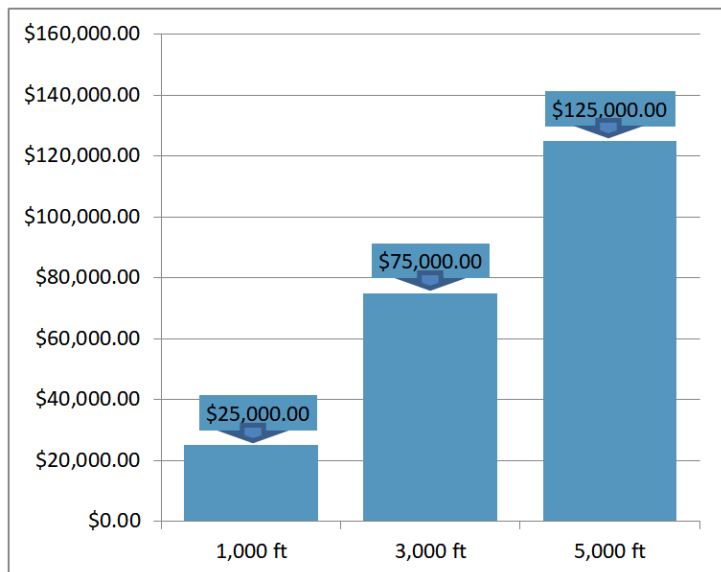
Installation at Tervita in Slave Lake

Durable • Reusable • Cost Effective

Cost Comparison (Future Installation Costs)



Savings with Each Reuse



Polyiso Foam Characteristics

Density		D1622	2.0 lb/ft ³
Thermal Conductivity K	Initial at 75°F (23.9°C)	ASTM C518	0.165 (BTU.in)/(hr.ft ² .F)
	10 days at 158°F (70.0°C)		0.185 (BTU.in)/(hr.ft ² .F)
Thermal Conductivity R per in	Initial at 75°F (23.9°C)	ASTM C518	6.0 (hr.ft ² .F)/BTU
	10 days at 158°F (70.0°C)		5.4 (hr.ft ² .F)/BTU
Compressive Strength/Modulus	Parrallel to Rise	ASTM D1621	27/700 lb/in ²
	Perpendicular to Rise		18/334 lb/in ²
Shear Strength/Modulus	Parrallel to Rise	ASTM C273	24/300 lb/in ²
	Perpendicular to Rise		18/463 lb/in ²
Tensile Strength/Modulus	Parrallel to Rise	ASTM D1623	36/1200 lb/in ²
	Perpendicular to Rise		26/463 lb/in ²
Flexural Strength/Modulus	Parrallel to Rise	ASTM C203	40/760 lb/in ²
	Perpendicular to Rise		28/513 lb/in ²
Dimensional Stability	158°F (70.0°C), 97 +/- 3% relative humidity, 14 days	ASTM D2126	+0.6/+2.6%
	-40°F (-40.0°C), ambient relative humidity, 14 days		-0.5/-0.2%
	+212°F (100.0°C), ambient relative humidity, 14 days		+0.0/+0.8
Hot Surface Performance at 300F		ASTM C411	Pass
Surface Burning Characteristics	Flame Spread, thicknesses up to 6 in	ASTM E84	25
	Smoke Developed, thicknesses up to 6 in		<250
Polyisocyanurate Insulation Requirements		ASTM C591	Grade 2, Type IV compliant
Operating Temp. Range		-85.0°F (-65°C)	350.0°F (176.7°C)

Polyurea Coating Characteristics

Tear Strength	ASTM D624	435 lbs/in
Tensile Strength	ASTM D412	2,250 psi
Thermal Conductivity	ASTM E1952-11	.134 W/Km
Elongation	ASTM D412	91.20%
Flexural Strength	ASTM D790	1,160 psi
Flexural Modulus	ASTM D790	.019 msi
Hardness Shore D	ASTM D2240	51 +/- 2
Deformation Resistance	ASTM D2794	101 in-lbs
Flammability	FMVSS 302	Pass

Chemical Name	Hardness Change %	Mass Change %	Volume Change %	Elongation ASTM D412 Change %	Tensile Strenght ASTM D412 Change %
Ammonium Chloride 30%	-6	0.4	-3	-12	-18
Ammonium Hydroxide	-10	3	0.7	16	28
Automotive Oil	-2	0.43	1	-4	-6
Aviation JP Fuel	-9	5	4	-25	-31
Baking Soda 25%	-14	2	-2	0	-19
Benzene	-23	21	16	-34	-57
Boric Acid	2	-12	2	-6	-23
Bleach (Chloride)	-16	1	0.4	-13	-22
Calcium Chloride 50%	-3	-0.73	0.1	-15	-15
Calcium Hypochloride 5%	-9	1	0.3	-8	-12
Citric Acid 10%	-5	2	-0.01	-10	-19
Club Soda	-14	3	-0.9	-12	-24
Cream Soda	-17	4	2	-10	-23
Crude Oil (Heating)	2	0.17	0.2	-3	0.89
Diesel Fuel	-7	3	4	-11	-12
Ethylene Glycol	-4	2	1	-3	-8
Formic Acid 5%	-5	8	4	-19	-37
Hydrochloric Acid	-4	2	2	-14	-23
Hydrogen Peroxide 10%	-7	0.85	4	-6	-28
Kerosene	-6	7	10	-24	-25
Lactic Acid 20%	-4	8	5	-15	-29
Mineral Spirits	-2	-0.1	-0.4	-20	-24
Nitric Acid 10%	-13	14	10	-17	-36
Potassium Hydroxide 50%	-6	0.5	0	-20	-19
Saline Solution 30%	2	1	3	-13	-23
Sea Water	3	2	1	-25	-29
Sodium Carbonate 10%	-14	3	2	-20	-36
Sodium Chloride 30%	14	2	1	-18	-30
Sodium Hydroxide 50%	-6	0.25	-0.3	-18	-11
Sodium Hydroxide 10%	-16	0.25	0.6	-19	-22
Sodium Sulfate 30%	-6	2	0.4	-8	-21
Sodium Sulfate 20%	-13	2	0.3	-16	-29
Sugar Solution 30%	-10	2	0.3	-16	-29
Sulfuric Acid 25%	-7	4	4	-19	-19
Sulfuric Acid 10%	-2	2	0.7	-21	-30
Tannic Acid 40%	-2	4	1	-20	-27
Water (H2O)	-7	2	0.6	-21	-26

Polystyrene Foam Characteristics

Insulation Foam Properties	Value	Test
Thermal Resistance (R) - per 25mm (1")	4.96	CAN/ULC S701
Compressive Strength - kPa	210	ASTM D1621
Flexural Strength - kPa	350	ASTM C203
Water Vapour Permeance (max) (ng/Pa.s.m2)	130	ASTM E96M
Water Absorption (max) (% by volume)	1.9	ASTM C272
Dimensional Stability (max) (% linear change)	1.5	ASTM C272
Fire Performance (max)		
Flame Spread	25	ASTM E84
Smoke Developed	450	ASTM E84
Operating Temp. Range	-59.8°F (-51°C)	158°F (70°C)

Polyurea Coating Characteristics

Tear Strength	ASTM D624	435 lbs/in
Tensile Strength	ASTM D412	2,250 psi
Thermal Conductivity	ASTM E1952-11	.134 W/Km
Elongation	ASTM D412	91.20%
Flexural Strength	ASTM D790	1,160 psi
Flexural Modulus	ASTM D790	.019 msi
Hardness Shore D	ASTM D2240	51 +/- 2
Deformation Resistance	ASTM D2794	101 in-lbs
Flammability	FMVSS 302	Pass

Chemical Name	Hardness Change %	Mass Change %	Volume Change %	Elongation ASTM D412 Change %	Tensile Strenght ASTM D412 Change %
Ammonium Chloride 30%	-6	0.4	-3	-12	-18
Ammonium Hydroxide	-10	3	0.7	16	28
Automotive Oil	-2	0.43	1	-4	-6
Aviation JP Fuel	-9	5	4	-25	-31
Baking Soda 25%	-14	2	-2	0	-19
Benzene	-23	21	16	-34	-57
Boric Acid	2	-12	2	-6	-23
Bleach (Chloride)	-16	1	0.4	-13	-22
Calcium Chloride 50%	-3	-0.73	0.1	-15	-15
Calcium Hypochloride 5%	-9	1	0.3	-8	-12
Citric Acid 10%	-5	2	-0.01	-10	-19
Club Soda	-14	3	-0.9	-12	-24
Cream Soda	-17	4	2	-10	-23
Crude Oil (Heating)	2	0.17	0.2	-3	0.89
Diesel Fuel	-7	3	4	-11	-12
Ethylene Glycol	-4	2	1	-3	-8
Formic Acid 5%	-5	8	4	-19	-37
Hydrochloric Acid	-4	2	2	-14	-23
Hydrogen Peroxide 10%	-7	0.85	4	-6	-28
Kerosene	-6	7	10	-24	-25
Lactic Acid 20%	-4	8	5	-15	-29
Mineral Spirits	-2	-0.1	-0.4	-20	-24
Nitric Acid 10%	-13	14	10	-17	-36
Potassium Hydroxide 50%	-6	0.5	0	-20	-19
Saline Solution 30%	2	1	3	-13	-23
Sea Water	3	2	1	-25	-29
Sodium Carbonate 10%	-14	3	2	-20	-36
Sodium Chloride 30%	14	2	1	-18	-30
Sodium Hydroxide 50%	-6	0.25	-0.3	-18	-11
Sodium Hydroxide 10%	-16	0.25	0.6	-19	-22
Sodium Sulfate 30%	-6	2	0.4	-8	-21
Sodium Sulfate 20%	-13	2	0.3	-16	-29
Sugar Solution 30%	-10	2	0.3	-16	-29
Sulfuric Acid 25%	-7	4	4	-19	-19
Sulfuric Acid 10%	-2	2	0.7	-21	-30
Tannic Acid 40%	-2	4	1	-20	-27
Water (H2O)	-7	2	0.6	-21	-26

Polyurethane Foam Characteristics

ASTM D 1622	Density	2.5 lb/ft ³	40 kg/m ³
ASTM C 518	Aged Thermal Resistance (R-value @ 1 inch)	6.5 ft ² h ² F/BTU	1.14 Km ² /W
	Thermal Conductivity	0.159 Btu-in/Hr-Ft ² -°F	0.0230 W/m-k
	Thermal Resistance	6.27 Btu-in/Hr-Ft ² -°F	4.36 W/m-k
ASTM D 1621	Compressive Strength	23.5 psi	162 kPa
ASTM D 2126	Dimensional Stability (% volume change @ 28 days)		
	176°F (80°C), Ambient Relative Humidity	0.19%	
	-22°F (-30°C), Ambient Relative Humidity	-0.59%	
	158°F (70°C), 90% Relative Humidity	2.71%	
	Volume Change at -20°C over 7 days	-2.23%	
	Volume Change at 70°C over 7 days	-1.93%	
ASTM D 2842	Flotation Test (% absorption)		
	Gasoline (30 days)	0.25%	
	Oil (30 days)	-0.31%	
	Bilge Cleaner (30 days)	0.74%	
	Gas Vapor (30 days)	0.30%	
ASTM E 84	Surface Burning Characteristics	Class I	
	Flame Spread Index	0	
	Smoke Developed	0	
Tested in actual end use configuration consisting of 6" of foam injected inside a metal frame covered on both sides by 1/2" gypsum board (a thermal barrier).			
ASTM D 6226	Closed Cell Content	95.4%	
	Operating Temp. Range	-85.0°F (-65°C)	200.0°F (95°C)

Polyurea Coating Characteristics

Tear Strength	ASTM D624	435 lbs/in
Tensile Strength	ASTM D412	2,250 psi
Thermal Conductivity	ASTM E1952-11	.134 W/Km
Elongation	ASTM D412	91.20%
Flexural Strength	ASTM D790	1,160 psi
Flexural Modulus	ASTM D790	.019 msi
Hardness Shore D	ASTM D2240	51 +/- 2
Deformation Resistance	ASTM D2794	101 in-lbs
Flammability	FMVSS 302	Pass

Coating Chemical Resistance Chart					
Chemical Name	Hardness Change %	Mass Change %	Volume Change %	Elongation ASTM D412 Change %	Tensile Strenght ASTM D412 Change %
Ammonium Chloride 30%	-6	0.4	-3	-12	-18
Ammonium Hydroxide	-10	3	0.7	16	28
Automotive Oil	-2	0.43	1	-4	-6
Aviation JP Fuel	-9	5	4	-25	-31
Baking Soda 25%	-14	2	-2	0	-19
Benzene	-23	21	16	-34	-57
Boric Acid	2	-12	2	-6	-23
Bleach (Chloride)	-16	1	0.4	-13	-22
Calcium Chloride 50%	-3	-0.73	0.1	-15	-15
Calcium Hypochloride 5%	-9	1	0.3	-8	-12
Citric Acid 10%	-5	2	-0.01	-10	-19
Club Soda	-14	3	-0.9	-12	-24
Cream Soda	-17	4	2	-10	-23
Crude Oil (Heating)	2	0.17	0.2	-3	0.89
Diesel Fuel	-7	3	4	-11	-12
Ethylene Glycol	-4	2	1	-3	-8
Formic Acid 5%	-5	8	4	-19	-37
Hydrochloric Acid	-4	2	2	-14	-23
Hydrogen Peroxide 10%	-7	0.85	4	-6	-28
Kerosene	-6	7	10	-24	-25
Lactic Acid 20%	-4	8	5	-15	-29
Mineral Spirits	-2	-0.1	-0.4	-20	-24
Nitric Acid 10%	-13	14	10	-17	-36
Potassium Hydroxide 50%	-6	0.5	0	-20	-19
Saline Solution 30%	2	1	3	-13	-23
Sea Water	3	2	1	-25	-29
Sodium Carbonate 10%	-14	3	2	-20	-36
Sodium Chloride 30%	14	2	1	-18	-30
Sodium Hydroxide 50%	-6	0.25	-0.3	-18	-11
Sodium Hydroxide 10%	-16	0.25	0.6	-19	-22
Sodium Sulfate 30%	-6	2	0.4	-8	-21
Sodium Sulfate 20%	-13	2	0.3	-16	-29
Sugar Solution 30%	-10	2	0.3	-16	-29
Sulfuric Acid 25%	-7	4	4	-19	-19
Sulfuric Acid 10%	-2	2	0.7	-21	-30
Tannic Acid 40%	-2	4	1	-20	-27
Water (H2O)	-7	2	0.6	-21	-26

Polyiso Foam Characteristics

Density		D1622	2.0 lb/ft ³
Thermal Conductivity K	Initial at 75°F (23.9°C)	ASTM C518	0.165 (BTU.in)/(hr.ft ² .F)
	10 days at 158°F (70.0°C)		0.185 (BTU.in)/(hr.ft ² .F)
Thermal Conductivity R per in	Initial at 75°F (23.9°C)	ASTM C518	6.0 (hr.ft ² .F)/BTU
	10 days at 158°F (70.0°C)		5.4 (hr.ft ² .F)/BTU
Compressive Strenght/Modulus	Parrallel to Rise	ASTM D1621	27/700 lb/in ²
	Perpendicular to Rise		18/334 lb/in ²
Shear Strength/Modulus	Parrallel to Rise	ASTM C273	24/300 lb/in ²
	Perpendicular to Rise		18/463 lb/in ²
Tensile Strength/Modulus	Parrallel to Rise	ASTM D1623	36/1200 lb/in ²
	Perpendicular to Rise		26/463 lb/in ²
Flexural Strength/Modulus	Parrallel to Rise	ASTM C203	40/760 lb/in ²
	Perpendicular to Rise		28/513 lb/in ²
Dimensional Stability	158°F (70.0°C),97 +/- 3% relative humidity, 14 days	ASTM D2126	+0.6/+2.6%
	-40°F (-40.0°C), ambient relative humidity, 14 days		-0.5/-0.2%
	+212°F (100.0°C), ambient relative humidity, 14 days		+0.0/+0.8
Hot Surface Performance at 300F		ASTM C411	Pass
Surface Burning Characteristics	Flame Spread, thicknesses up to 6 in	ASTM E84	25
	Smoke Developed, thicknesses up to 6 in		<250
Polyisocyanurate Insulation Requirements		ASTM C591	Grade 2, Type IV compliant
Operating Temp. Range		-85°F (-65°C)	300.02°F (148.9°C)

Polyurea Coating Characteristics

Tear Strength	ASTM D624	435 lbs/in
Tensile Strength	ASTM D412	2,250 psi
Thermal Conductivity	ASTM E1952-11	.134 W/Km
Elongation	ASTM D412	91.20%
Flexural Strength	ASTM D790	1,160 psi
Flexural Modulus	ASTM D790	.019 msi
Hardness Shore D	ASTM D2240	51 +/- 2
Deformation Resistance	ASTM D2794	101 in-lbs
Flammability	FMVSS 302	Pass

Chemical Name	Hardness Change %	Mass Change %	Volume Change %	Elongation ASTM D412 Change %	Tensile Strenght ASTM D412 Change %
Ammonium Chloride 30%	-6	0.4	-3	-12	-18
Ammonium Hydroxide	-10	3	0.7	16	28
Automotive Oil	-2	0.43	1	-4	-6
Aviation JP Fuel	-9	5	4	-25	-31
Baking Soda 25%	-14	2	-2	0	-19
Benzene	-23	21	16	-34	-57
Boric Acid	2	-12	2	-6	-23
Bleach (Chloride)	-16	1	0.4	-13	-22
Calcium Chloride 50%	-3	-0.73	0.1	-15	-15
Calcium Hypochloride 5%	-9	1	0.3	-8	-12
Citric Acid 10%	-5	2	-0.01	-10	-19
Club Soda	-14	3	-0.9	-12	-24
Cream Soda	-17	4	2	-10	-23
Crude Oil (Heating)	2	0.17	0.2	-3	0.89
Diesel Fuel	-7	3	4	-11	-12
Ethylene Glycol	-4	2	1	-3	-8
Formic Acid 5%	-5	8	4	-19	-37
Hydrochloric Acid	-4	2	2	-14	-23
Hydrogen Peroxide 10%	-7	0.85	4	-6	-28
Kerosene	-6	7	10	-24	-25
Lactic Acid 20%	-4	8	5	-15	-29
Mineral Spirits	-2	-0.1	-0.4	-20	-24
Nitric Acid 10%	-13	14	10	-17	-36
Potassium Hydroxide 50%	-6	0.5	0	-20	-19
Saline Solution 30%	2	1	3	-13	-23
Sea Water	3	2	1	-25	-29
Sodium Carbonate 10%	-14	3	2	-20	-36
Sodium Chloride 30%	14	2	1	-18	-30
Sodium Hydroxide 50%	-6	0.25	-0.3	-18	-11
Sodium Hydroxide 10%	-16	0.25	0.6	-19	-22
Sodium Sulfate 30%	-6	2	0.4	-8	-21
Sodium Sulfate 20%	-13	2	0.3	-16	-29
Sugar Solution 30%	-10	2	0.3	-16	-29
Sulfuric Acid 25%	-7	4	4	-19	-19
Sulfuric Acid 10%	-2	2	0.7	-21	-30
Tannic Acid 40%	-2	4	1	-20	-27
Water (H2O)	-7	2	0.6	-21	-26