



# ABSOLUTE BARRIER® X40BAL

HIGH PERFORMANCE HDPE/EVOH GEOMEMBRANE GAS BARRIER

		ABSOLUTE BARRIER® X40BAL			
		IMPERIAL		METRIC	
PROPERTIES	TEST METHOD	MINIMUM	TYPICAL	MINIMUM	TYPICAL
APPEARANCE		Black		Black	
THICKNESS	ASTM D5199	40 Mil Average	40 Mil Nominal	1.02 mm Average	1.02 mm Nominal
WEIGHT		203 lbs/msf		991 g/m <sup>2</sup>	
DENSITY	ASTM D792	0.94 g/cm <sup>3</sup>	0.95 g/cm <sup>3</sup>	0.94 g/cm <sup>3</sup>	0.95 g/cm <sup>3</sup>
TENSILE STRENGTH AT YIELD	ASTM D6693	84 lbs/in	110 lbs/in	147 N/cm	193 N/cm
TENSILE STRENGTH AT BREAK	ASTM D6693	60 lbs/in	88 lbs/in	105 N/cm	154 N/cm
TENSILE ELONGATION AT YIELD	ASTM D6693	12 %	15 %	12 %	15 %
TENSILE ELONGATION AT BREAK	ASTM D6693	300 %	430 %	300 %	430 %
TEAR STRENGTH	ASTM D1004	28 lbs	33 lbs	125 N	147 N
PUNCTURE RESISTANCE	ASTM D4833	72 lbs	92 lbs	320 N	409 N
OXIDATION INDUCTION TIME (OIT) OR HIGH PRESSURE OIT (HPOIT)	ASTM D3895 ASTM D5885	100 min 400 min	200 min	100 min 400 min	200 min
CARBON BLACK CONTENT <sup>7</sup>	ASTM D4218	2.0 %	2.3 %	2.0 %	2.3 %
CARBON BLACK DISPERSION	ASTM D5596	Pass			
STRESS CRACK RESISTANCE	ASTM D5397	500 hrs	> 1800 hrs	500 hrs	> 1800 hrs
BENZENE PERMEANCE	See Note <sup>6</sup>	2.83 x 10 <sup>-10</sup> m <sup>2</sup> /sec or 1.45 x 10 <sup>-13</sup> m/s			
TOLUENE PERMEANCE	See Note <sup>6</sup>	3.94 x 10 <sup>-10</sup> m <sup>2</sup> /sec or 5.83 x 10 <sup>-14</sup> m/s			
ETHYLBENZENE PERMEANCE	See Note <sup>6</sup>	3.09 x 10 <sup>-10</sup> m <sup>2</sup> /sec or 1.34 x 10 <sup>-14</sup> m/s			
M & P-XYLENES PERMEANCE	See Note <sup>6</sup>	2.91 x 10 <sup>-10</sup> m <sup>2</sup> /sec or 1.52 x 10 <sup>-14</sup> m/s			
O-XYLENE PERMEANCE	See Note <sup>6</sup>	2.76 x 10 <sup>-10</sup> m <sup>2</sup> /sec or 1.37 x 10 <sup>-14</sup> m/s			
METHANE PERMEANCE	ASTM D1434	< 3.70E <sup>-13</sup> m/s			
TRICHLOROETHYLENE (TCE)	See Note <sup>6</sup>	1.92 x 10 <sup>-10</sup> m <sup>2</sup> /sec or 4.20 x 10 <sup>-15</sup> m/s			
PERCHLOROETHYLENE (PCE)	See Note <sup>6</sup>	1.81 x 10 <sup>-10</sup> m <sup>2</sup> /sec or 4.18 x 10 <sup>-15</sup> m/s			
COLD TEMPERATURE IMPACT	ASTM D746	-40° F		-40° C	
MAXIMUM STATIC USE TEMPERATURE		180° F		82° C	

<sup>6</sup> Aqueous Phase Film Permeance.

Permeation of Volatile Organic Compounds through EVOH Thin Film Membranes and Coextruded LLDPE/EVOH/LLDPE Geomembranes, McWatters and Rowe, Journal of Geotechnical and Geoenvironmental Engineering © ASCE/September 2015. (Permeation is the Permeation Coefficient adjusted to actual film thickness - calculated at 1 kg/m<sup>3</sup>.)  
The study used to determine PCE and TCE is titled: Evaluation of diffusion of PCE & TCE through high performance geomembranes by Di Battista and Rowe, Queens University 8 Feb 2018.

<sup>7</sup> No carbon black in barrier layers.

Absolute Barrier® X40BAL is a seven-layer co-extruded geomembrane consisting of a durable high-density polyethylene (HDPE) with an inner core of highly effective EVOH barrier resin, designed specifically as a barrier against odors, methane, radon, and VOCs. High strength HDPE provides excellent chemical resistance and durability. The combination of these premium resins provide unequalled barrier performance in demanding buried applications.



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Note: To the best of our knowledge, unless otherwise stated, these are typical property values and are intended as guides only, not as specification limits. Chemical resistance, odor transmission, longevity as well as other performance criteria is not implied or given and actual testing must be performed for applicability in specific applications and/or conditions. RAVEN INDUSTRIES MAKES NO WARRANTIES AS TO THE FITNESS FOR A SPECIFIC USE OR MERCHANTABILITY OF PRODUCTS REFERRED TO, no guarantee of satisfactory results from reliance upon contained information or recommendations and disclaims all liability for resulting loss or damage. Limited Warranty available at [www.viaflex.com](http://www.viaflex.com)

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