

**Site**

Kiln Apartments

**Location**

Portland, Oregon

**Window Film**

Atmosphere TXA80

**Product Series**

Atmosphere Exterior Series



**SITUATION**

The Kiln Apartments are one bedroom passive house apartments located in North Portland, Oregon, an environmentally mindful community where walking and cycling are the norm. The five story, 19-unit building is an incredibly progressive concept, which uses only a fraction of the energy of most multiunit buildings. In fact, it's one of the first of its kind in the United States.

Once tenants had moved into the apartments, the architects learned that the building warmed quicker than anticipated and retained heat throughout the year. This was great for the colder months but not for the warmer months. To remedy the situation, "a number of post-occupancy renovations were evaluated," according to Lead Architect, Agustin Enriquez of GBD Architects Incorporated, "and installing exterior window film was the most cost-effective."

**SOLUTION**

To measure effectiveness, data loggers were placed in bedroom window sills with and without exterior film. "The data loggers gave us real world information about interior air temperature that confirmed what computer modeling indicated," said Agustin Enriquez. "They showed temperature differences up to 12 degrees with the windows where Atmosphere was installed compared to windows without the film and were invaluable in getting to a viable solution." Guided by the positive results, Vista™ by LLumar® Atmosphere™ window film was installed on all window exteriors at The Kiln.

**RESULT**

After the installation of TXA80 Atmosphere window film, residents in the building confirmed the exterior film made a significant impact on the indoor air temperature during the warmer months of the year. With such great success at The Kiln Apartments, architects should consider exterior window film for future renovation and retrofit projects where this type of challenge exists.

**Performance Data**

	% Total Solar Transmittance	% Total Solar Reflectance	% Total Solar Absorbance	% Visible Light Transmittance	% Visible Reflectance (exterior)	% Visible Reflectance (interior)	Winter U-value	Shading Coefficient	% Ultraviolet Ray Protection (wavelengths 280-380nm)	Emissivity	Solar Heat Gain Coefficient	% Total Solar Energy Rejected	Light-to-Solar Heat Gain Ratio (LSG)	% Summer Solar Heat Gain Reduction	% Winter Heat Loss Reduction	% Glare Reduction
Clear Glass	83	8	9	90	8	8	1.03	1.00	29	0.84	0.86	14	1.05	-	-	-
Atmosphere Exterior Series																
Atmosphere TXA80 ER HPR	41	6	53	78	9	9	1.04	0.66	>99	0.89	0.57	43	1.37	34	0	13

**EASTMAN**

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The solar performance data reported for LLumar architectural window films was captured using the National Fenestration Rating Council's (NFRC) standard guidelines for window film solar performance measurement as measured on single pane, 1/8 inch (3 mm), clear glass. Reported values are taken from representative product samples and are subject to normal manufacturing variances. Actual performance will vary based on a number of factors, including glass type and properties. Films do not eliminate fading - they reduce it. UV rays and heat are contributing factors to fading, but other factors exist. For further information, see LLumar.com/download-library. © 2016 Eastman Chemical Company. VISTA™, the VISTA® logo, LLumar®, the LLumar® logo and Enerlogic® are trademarks of Eastman Chemical Company or one of its wholly owned subsidiaries. As used herein, © denotes registered trademark status in the U.S. only. (08/16) SP1116