

Eastman Performance Films

LLumar Clear Safety Film SCL SR PS8 Test Reports Summary

Purpose

The table below shows key test reports / material properties available for LLumar Safety, Security and Blast Mitigation film SCL SR PS8 available from Eastman Performance Films.

Additional information is available on request.

TABLE I - STANDARD TESTS AND SAFETY FEATURES

Standard	Description	SCL SR PS8
GSA-TS01-2003	Blast Test	See Table II
EN 12600	Impact resistance	1B1*
EN 356	Resistance to manual attack	P1A
EN45545 (EN 13501-1)	Fire certificates	HL2 A1
Material Properties	Thickness (μ)	224
	Puncture strength (lbf)	156
	Peel strength (g/in (lbf/in))	>2720 (>6)
Material Properties (Machine Direction)	Tensile strength	204 N/mm2
	Yield strength	104 N/mm2
	Elongation at break	86 %
	Elongation at yield	7 %
Material Properties (Transverse Direction)	Tensile strength n/mm2	167 N/mm2
	Yield strength n/mm2	108 N/mm2
	Elongation at break	108 %
	Elongation at yield	7 %

*on 4mm float glass

Notice: Although the information and recommendations set forth herein (hereafter "Information") are presented in good faith and believed to be correct as of the date hereof, neither Eastman Chemical Company nor any of its subsidiaries or affiliates (collectively, "Eastman") makes any representations or warranties as to the completeness or accuracy thereof and assumes no obligation to update any of the Information. Information is supplied upon the condition that the persons receiving same will make their own determinations as to its suitability for their purposes prior to use. In no event will Eastman be held responsible for damages or liability of any nature whatsoever, including without limitation, for direct, indirect or consequential loss, business interruption, loss of profits, production, goodwill or contracts, or anticipated savings, resulting from the use of or reliance upon the Information or the product to which the Information refers. No representations or warranties, either express or implied, of merchantability, fitness for a particular purpose, or of any other nature are made hereunder with respect to information or the product to which information refers.

TABLE II – GSA-TS01-2003 Blast Tests Report

Window system	Attachment System	Performance Condition (see below Appendix I)	Protection Level
6mm AG**	Frame/lok	3b	High
	Tremco Proglaze	3b	High
6mm TG**	Frame/lok	2	Very High
	Tremco Proglaze	3b	High
6mm 13mm 6mm AG**	Frame/lok	2	Very High
	Tremco Proglaze	2	Very High
6mm 13mm 6mm TG**	Frame/lok	1	Safe
	Tremco Proglaze	1	Safe

** AG – Annealed Glass

TG – Tempered Glass

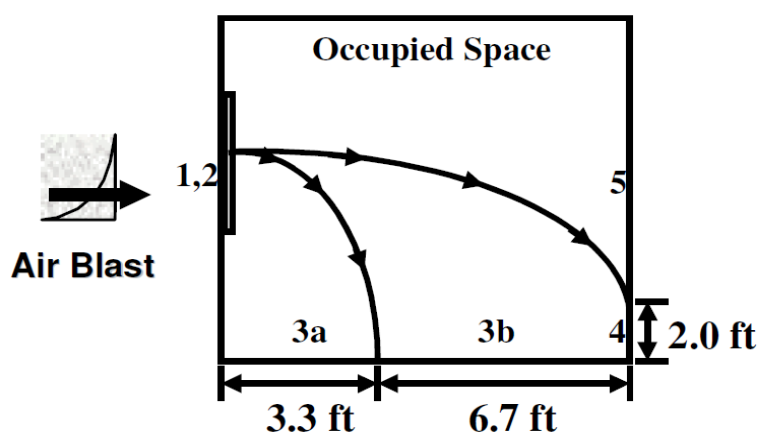
The above results are summarized from test report: Explosive Test for the Evaluation of CPFilms, Inc. Window Systems, Applied Research Associates, Inc, 2004.

As tested, all windows can be developed to provide a high level of protection or greater against the GSA Level C (ISC Medium) loading of 4 psi and 28 psi-msec. Quality control during installation is very important and could drastically affect window response. More information and test reports are available on request.

Notice: Although the information and recommendations set forth herein (hereafter “Information”) are presented in good faith and believed to be correct as of the date hereof, neither Eastman Chemical Company nor any of its subsidiaries or affiliates (collectively, “Eastman”) makes any representations or warranties as to the completeness or accuracy thereof and assumes no obligation to update any of the Information. Information is supplied upon the condition that the persons receiving same will make their own determinations as to its suitability for their purposes prior to use. In no event will Eastman be held responsible for damages or liability of any nature whatsoever, including without limitation, for direct, indirect or consequential loss, business interruption, loss of profits, production, goodwill or contracts, or anticipated savings, resulting from the use of or reliance upon the Information or the product to which the Information refers. No representations or warranties, either express or implied, of merchantability, fitness for a particular purpose, or of any other nature are made hereunder with respect to information or the product to which information refers.

APPENDIX I – GSA-TS01-2003 Protection Levels
Glazing protection levels based on fragment impact locations.

Performance Condition	Protection Level	Hazard Level	Description of Window Glazing Response
1	Safe	None	Glazing does not break. No visible damage to glazing or frame.
2	Very High	None	Glazing cracks but is retained by the frame. Dusting or very small fragments near sill or on floor acceptable.
3a	High	Very Low	Glazing cracks. Fragments enter space and land on floor no further than 3.3 ft. from the window.
3b	High	Low	Glazing cracks. Fragments enter space and land on floor no further than 10 ft. from the window.
4	Medium	Medium	Glazing cracks. Fragments enter space and land on floor and impact a vertical witness panel at a distance of no more than 10 ft. from the window at a height no greater than 2 ft. above the floor.
5	Low	High	Glazing cracks and window system fails catastrophically. Fragments enter space impacting a vertical witness panel at a distance of no more than 10 ft. from the window at a height greater than 2 ft. above the floor.


Glazing protection levels based on fragment impact locations.

Notice: Although the information and recommendations set forth herein (hereafter "Information") are presented in good faith and believed to be correct as of the date hereof, neither Eastman Chemical Company nor any of its subsidiaries or affiliates (collectively, "Eastman") makes any representations or warranties as to the completeness or accuracy thereof and assumes no obligation to update any of the Information. Information is supplied upon the condition that the persons receiving same will make their own determinations as to its suitability for their purposes prior to use. In no event will Eastman be held responsible for damages or liability of any nature whatsoever, including without limitation, for direct, indirect or consequential loss, business interruption, loss of profits, production, goodwill or contracts, or anticipated savings, resulting from the use of or reliance upon the Information or the product to which the Information refers. No representations or warranties, either express or implied, of merchantability, fitness for a particular purpose, or of any other nature are made hereunder with respect to information or the product to which information refers.