

About Hanita Coatings

For 30 years, Hanita Coatings, situated in Kibbutz Hanita, Israel, has specialized in the development and manufacture of engineered polyester films for high-end applications.

Hanita is a key provider of energy-efficiency solutions, a market leader in label and print films, and a central player in the field of window films. Hanita's anti-fragmentation safety films and advanced security solutions protect governmental, commercial, retail and industrial buildings across the globe.

Hanita's qualified representatives worldwide are ready to assist you with technical support, advice about combining energy efficiency with security solutions, and whole-building modeling and savings forecasts.

Learn more by calling your local SafetyZone / SolarZone representative.

Check **www.hanitacoatings.com** for more information and local contact details.

SafetyZone Safety & Security Window Films Sample Book

General Contents

Introduction

Accreditations & Testing Methods

Safety Tests

1. Clear films

- 4 mil, 7 mil, 8 mil, 11 mil, 12 mil, 15 mil
- Exterior: 4 mil Xtra, 7 mil Xtra

2. SolarZone Safe films

- Silver 20 (4 mil, 9 mil, 12 mil)
- PerLite - previously Cold Steel - 35 (6 mil, 10 mil)
- PerLite - previously Cold Steel - 50 (6 mil, 10 mil)
- Optitune 22 (5 mil)
- Optitune 30 (10 mil)
- e-Lite 70 (8 mil)
- Exterior: Silver 20 Xtra (5 mil)

3. Anti-Graffiti films

- 4 mil, 6 mil Universal Films

General Contents (Cont.)

4. Specialty films

- Decorative
 - Matte (5 mil, 12 mil)
- Protective Films for rigid plastic glazing
 - PolyZone 4 mil Clear Xtra
 - PolyZone Exterior: 6 mil Anti-Graffiti
- Printable film
 - R14802 – DuraView clear printable

5. Advanced security systems -

mechanical anchoring

- No- Bar™
- Clear-Bar™
- Cable-Catch™

Definitions

Introduction

With over a quarter century of field experience in Israel, Hanita has become a leader in the development and manufacture of safety and security window films. Hanita's security solutions protect governmental, commercial, health and educational buildings across the globe.

SafetyZone™ safety and security films are renowned for their optical clarity and cleanliness - the result of top-grade polyester, Hanita's proprietary transparent adhesive and tight adherence to demanding ISO 9001 quality assurance. Accredited to the most stringent international glass safety standards, SafetyZone films are the professional installer's choice, delivering performance, price, and installation-friendly flexibility.



safety & security



Introduction (Cont.)

Hanita offers an extensive range of glazing security options:

- **SafetyZone Clear window films** available in 4, 7, 8, 11, 12 and 15 mil for interior use, 4 & 7 mil Xtra for exterior application.
- **SolarZone Safe window films** combining shard protection with solar control, delivering high levels of energy savings together with glass safety. Available in different appearances and levels of reflectivity, SolarZone Safe films ensure a positive return on investment for glazing security upgrades.
- **Anti-Graffiti** wipe clean, protective sacrificial window film for interior or exterior use on glass, with PolyZone versions for plastic glazing.
- **Specialty films**
 - **Decorative white Matte** 5 or 12 mil security film providing privacy and personal safety in retail, bathroom and office applications.
 - **PolyZone** clear protective films for rigid plastic glazing, specially developed for exterior application to polycarbonate or PMMA, for protection from graffiti, scratching or yellowing due to sun exposure.
 - **DuraView Safe** printable film, ideal for store front and showcase graphics, shower panels, partitions and glass doors, delivering stunning, vibrant graphics together with enhanced glass security.



Introduction (Cont.)

- **Advanced Security Systems** - security window films combining with mechanical anchoring systems, to ensure the highest levels of blast, impact or break-in protection.

Methods – solar performance

Solar performance results were generated from testing of film applied to 3mm clear single glass and simulated on 3mm double pane glass, using the Lawrence Berkeley National Laboratory (LBNL) Window 5.2 software program and NFRC methodology. Performance results are subject to variations in process conditions within industry standards.

Hanita Coatings is an **ISO 9001:2008**, **ISO 14001:2004** and **OHSAS 18001:2007** certified company



Safety Tests

Hanita SafetyZone security films are certified to a wide range of challenging International Standards.

		4 mil Clear	4 mil Silver 20	4 mil Clear Xtra
Impact	AS/NZS 2208	✓	—	✓
	ANSI Z97.1 (12" pendulum fall)	✓	—	—
	ANSI Z97.1 (18" pendulum fall)	✓	—	—
	ANSI Z97.1 (48" pendulum fall)	—	—	—
	CPSC 1201 Category 1 (18" pendulum fall)	✓	—	—
	CPSC 1201 Title 16 (48" pendulum fall)	✓	—	—
	BS 6206 Class B	✓	—	—
	EN 12600 Class 2B2	✓	✓	✓
	EN 12600 Class 1B1	—	—	—
	EN 356 P2A	—	—	—
	EN 356 P4A	—	—	—
DIN 52290 Part 4, A1	—	—	—	
Anti Graffiti	Paris Metro Anti Graffiti	✓	—	✓
Fire	BS 476 Fire Propagation	—	—	—
	ASTM D1929 Ignition	✓	—	—
	ASTM E84 Surface Burn	✓	—	—
Wind Debris	ASTM E330 (Wind Load) comparative data Hurricane	—	—	—
	TAS 201, 202, Florida Building Code (Dade County Small Missile Test) Hurricane	—	—	—
Robbery	UL 972 Burglary Resisting Glazing Material	—	—	—
Bomb Blast	Siach Gefen IDF testing	—	—	—
	GSA Level C (4 psi, 30psi/msec)	✓(3B)	—	—
	GSA Level D (10.2 psi, 90.6 psi/msec)	—	—	—

Accreditations & Testing Methods

5 mil Matte	5 mil Opti-Tune 22	5 mil Silver 20 Xtra	6 mil PerLite 35	7 mil Clear	7 mil Clear Xtra	8 mil Clear	8 mil e-Lite 70	12 mil Clear	15 mil Clearx2 + 7 mil Xtra
✓	—	—	✓	✓	—	✓	✓	—	—
—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—
—	✓	—	—	✓	—	✓	—	—	—
—	—	—	—	—	—	—	—	—	—
—	✓	—	—	✓	—	✓	—	—	—
—	—	—	—	—	—	—	—	—	—
✓	—	✓	—	—	—	—	—	—	—
—	—	—	—	✓	✓	✓	—	—	—
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—	—	—	—	—	—	—	—	✓	—
—	—	—	—	—	—	—	—	✓	—
—	—	—	—	—	—	—	—	✓x2 + No-Bar	—
—	—	—	—	✓(3B)	—	—	—	✓(3A) x2+ No-Bar on both sides	—
—	—	—	—	—	—	—	—	—	—

SafetyZone Clear



SafetyZone Clear

SafetyZone Clear window films feature exceptional clarity, low reflectance and high levels of UV protection. A full range of film thicknesses from 4-15 mil ensures the appropriate solution for different threats and hazards.

Available in in 4, 7, 8, 11, 12 and 15 mil for interior use, 4 & 7 mil Xtra for exterior application.

Also available in PolyZone Clear 4 & 6 mil for anti-graffiti protection of rigid plastic glazing.

Contents

Clear Films

- Clear 4 mil R12306T
- Clear 7 mil R19801T
- Clear 8 mil R22301T
- Clear 11 mil R29805T
- Clear 12 mil R32303T
- Clear 15 mil R39803T

Exterior Films

- Clear 4 mil Xtra R12100X
- Clear 7 mil Xtra R19600X

4 mil Clear

MECHANICAL PROPERTIES

Thickness	4 mil
Tensile Strength at Break	28,500 PSI
Break Strength	112 lb/inch
Elongation at Break	125 %
Peel Strength	7 lb/inch

OPTICAL & SOLAR PROPERTIES

3mm Single

Visible Light Transmitted	89%
Visible Light Reflected (Int)	10%
Visible Light Reflected (Ext)	10%
Ultra Violet Block	97%
Total Solar Energy Reflected	9%
Total Solar Energy Transmitted	81%
Total Solar Energy Absorbed	10%
Glare Reduction	1%
Shading Coefficient	0.96
Solar Heat Gain Coeff. (G-Value)	0.84
U-Value Winter (IP)	1.07
U-Value Winter (SI)	6.07
Total Solar Energy Rejected	16%

R12306T PS

SAFETY TESTS

Impact	AS/NZS 2208	✓
	ANSI Z97.1 (12" pendulum fall)	✓
	ANSI Z97.1 (18" pendulum fall)	✓
	CPSC 1201 Category 1 (18" pendulum fall)	✓
	CPSC 1201 Title 16 (48" pendulum fall)	✓
	BS 6206 Class B	✓
	EN 12600 Class 2B2	✓
Anti Graffiti	Paris Metro Anti Graffiti	✓
Fire	ASTM D1929 Ignition	✓
	ASTM E84 Surface Burn	✓
Bomb Blast	GSA Level C (4 psi, 30psi/msec)	P(3B)

EG-E DS No 1221, March 2012

safety & security



7 mil Clear

MECHANICAL PROPERTIES

Thickness	7 mil
Tensile Strength at Break	26,000 PSI
Break Strength	180 lb/inch
Elongation at Break	140 %
Peel Strength	7 lb/inch

OPTICAL & SOLAR PROPERTIES

	3mm Single
Visible Light Transmitted	88%
Visible Light Reflected (Int)	11%
Visible Light Reflected (Ext)	11%
Ultra Violet Block	99%
Total Solar Energy Reflected	9%
Total Solar Energy Transmitted	80%
Total Solar Energy Absorbed	11%
Glare Reduction	2%
Shading Coefficient	0.95
Solar Heat Gain Coeff. (G-Value)	0.83
U-Value Winter (IP)	1.07
U-Value Winter (SI)	6.07
Total Solar Energy Rejected	17%

R19801T PS

SAFETY TESTS

Impact	AS/NZS 2208	✓
	ANSI Z97.1 (48" pendulum fall)	✓
	CPSC 1201 Title 16 (48" pendulum fall)	✓
	EN 12600 Class 2B2 , 1B1	✓
Fire	BS 476 Fire Propagation	✓
	ASTM D1929 Ignition	✓
	ASTM E84 Surface Burn	
Bomb Blast	GSA Level C (4 psi, 30psi/msec)	P(3B)

Ed-E DS No.1280, March 2012

safety & security



8 mil Clear

MECHANICAL PROPERTIES

Thickness	8 mil
Tensile Strength at Break	28,500 PSI
Break Strength	224 lb/inch
Elongation at Break	125 %
Peel Strength	7 lb/inch

OPTICAL & SOLAR PROPERTIES

3mm Single

Visible Light Transmitted	88%
Visible Light Reflected (Int)	11%
Visible Light Reflected (Ext)	11%
Ultra Violet Block	99%
Total Solar Energy Reflected	9%
Total Solar Energy Transmitted	80%
Total Solar Energy Absorbed	11%
Glare Reduction	2%
Shading Coefficient	0.95
Solar Heat Gain Coeff. (G-Value)	0.83
U-Value Winter (IP)	1.07
U-Value Winter (SI)	6.07
Total Solar Energy Rejected	17%

R22301T PS

SAFETY TESTS

Impact	AS/NZS 2208	✓
	ANSI Z97.1 (48" pendulum fall)	✓
	CPSC 1201 Title 16 (48" pendulum fall)	✓
	EN 12600 Class 1B1	✓

Ed-E DS No.1231, March 2012

11 mil Clear

MECHANICAL PROPERTIES

Thickness	11 mil
Tensile Strength at Break	28,500 PSI
Break Strength	308 lb/inch
Elongation at Break	125 %
Peel Strength	7 lb/inch

OPTICAL & SOLAR PROPERTIES

	3mm Single
Visible Light Transmitted	87%
Visible Light Reflected (Int)	11%
Visible Light Reflected (Ext)	11%
Ultra Violet Block	99%
Total Solar Energy Reflected	10%
Total Solar Energy Transmitted	78%
Total Solar Energy Absorbed	12%
Glare Reduction	3%
Shading Coefficient	0.94
Solar Heat Gain Coeff. (G-Value)	0.82
U-Value Winter (IP)	1.07
U-Value Winter (SI)	6.07
Total Solar Energy Rejected	18%

R29805T PS

Ed-B DS, No 1263, March 2013

12 mil Clear

MECHANICAL PROPERTIES

Thickness	12 mil
Tensile Strength at Break	28,500 PSI
Break Strength	336 lb/inch
Elongation at Break	125 %
Peel Strength	7 lb/inch

OPTICAL & SOLAR PROPERTIES

3mm Single

Visible Light Transmitted	87%
Visible Light Reflected (Int)	11%
Visible Light Reflected (Ext)	11%
Ultra Violet Block	99%
Total Solar Energy Reflected	10%
Total Solar Energy Transmitted	78%
Total Solar Energy Absorbed	12%
Glare Reduction	3%
Shading Coefficient	0.94
Solar Heat Gain Coeff. (G-Value)	0.82
U-Value Winter (IP)	1.07
U-Value Winter (SI)	6.07
Total Solar Energy Rejected	18%

R32303T PS

SAFETY TESTS

Impact	EN 356 P2A	✓
	DIN 52290 Part 4, A1	✓
	ASTM E330	✓
Wind Debris	TAS 201, 202, 203 Florida Building Code (Dade County Small Missile Test) Hurricane	✓
	Siach Gefen IDF testing	✓x2 + No-Bar
Bomb Blast	UL 972 Burglary Resisting Glazing Material	✓
	GSA Level D (10.2 psi, 90.6 psi/msec)	✓(3A) x2 + No-Bar on both sides

EG-E DS No 1261, March 2012

15 mil Clear

MECHANICAL PROPERTIES

Thickness	15 mil
Tensile Strength at Break	28,500 PSI
Break Strength	420 lb/inch
Elongation at Break	140 %
Peel Strength	8 lb/inch

OPTICAL & SOLAR PROPERTIES

3mm Single

Visible Light Transmitted	87%
Visible Light Reflected (Int)	11%
Visible Light Reflected (Ext)	11%
Ultra Violet Block	99%
Total Solar Energy Reflected	11%
Total Solar Energy Transmitted	77%
Total Solar Energy Absorbed	12%
Glare Reduction	3%
Shading Coefficient	0.94
Solar Heat Gain Coeff. (G-Value)	0.82
U-Value Winter (IP)	1.07
U-Value Winter (SI)	6.07
Total Solar Energy Rejected	18%

R39803T PS

SAFETY TESTS

Impact	EN 356 P4A	✓ 15 mil x 2
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Ed-B DS No 1232, March 2012

4 mil Clear Xtra

MECHANICAL PROPERTIES

Thickness	4 mil
Tensile Strength at Break	28,500 PSI
Break Strength	112 lb/inch
Elongation at Break	125 %
Peel Strength	7 lb/inch

OPTICAL & SOLAR PROPERTIES

	3mm Single
Visible Light Transmitted	88%
Visible Light Reflected (Int)	10%
Visible Light Reflected (Ext)	10%
Ultra Violet Block	99%
Total Solar Energy Reflected	10%
Total Solar Energy Transmitted	80%
Total Solar Energy Absorbed	10%
Glare Reduction	2%
Shading Coefficient	0.96
Solar Heat Gain Coeff. (G-Value)	0.83
U-Value Winter (IP)	1.04
U-Value Winter (SI)	5.91
Total Solar Energy Rejected	17%

R12100X PS

SAFETY TESTS

Impact	AS/NZS 2208	✓
	EN 12600 Class 2B2	✓
	Paris Metro Anti Graffiti	✓ P Exterior

Ed-B DS No.1508, March 2012

7 mil Clear Xtra

MECHANICAL PROPERTIES

Thickness	7 mil
Tensile Strength at Break	26,000 PSI
Break Strength	180 lb/inch
Elongation at Break	140 %
Peel Strength	7 lb/inch

OPTICAL & SOLAR PROPERTIES

	3mm Single
Visible Light Transmitted	88%
Visible Light Reflected (Int)	11%
Visible Light Reflected (Ext)	11%
Ultra Violet Block	99%
Total Solar Energy Reflected	9%
Total Solar Energy Transmitted	80%
Total Solar Energy Absorbed	11%
Glare Reduction	2%
Shading Coefficient	0.95
Solar Heat Gain Coeff. (G-Value)	0.83
U-Value Winter (IP)	1.04
U-Value Winter (SI)	5.91
Total Solar Energy Rejected	17%

R19600X , 7 mil clear Xtra

SAFETY TESTS

Impact	EN 12600 Class 1B1	✓
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Ed-B DS No.1509, March 2012



SolarZone Safe Films



SolarZone Safe

SolarZone Safe window films combine shard protection with high levels of energy savings that can enable a significant return on investment. A full range of film thicknesses from 4-12 mil ensures the appropriate solution for different threats and hazards.

Silver Safe: Combine the reinforced protection of security laminates with the superb heat rejection, UV block and sophisticated appearance of SolarZone Silver films.

PerLite Safe: Neutral grey, ceramic-based security films with excellent solar energy rejection and low reflectance. Effectively cuts heat gain and glare, saving on HVAC costs while providing protection for shattered glass.

OptiTune Safe: Dual reflective OptiTune Safe films combine a warm neutral interior with a bold external appearance, delivering high levels of both energy efficiency and shard protection.

e-Lite 70 Safe: Spectrally selective 8 mil film, with exceptional levels of heat rejection, and a near-glass transparency.

Contents

Reflective Films

- Silver 20, 4 mil R12122T
- Silver 20, 9 mil R24603T
- Silver 20, 12 mil R32122T

Neutral Films

- PerLite 35, 6 mil R170L5T
- PerLite 50, 6 mil R169L3T
- PerLite 35, 10 mil R270L5T
- PerLite 50, 10 mil R269L3T

Dual Reflective Films

- OptiTune 22, 5 mil R144R2T
- OptiTune 30, 10 mil R269R3T

Spectrally Selective Films

- e-Lite 70, 8 mil R219IS7

Exterior Films

- Silver 20, 5 mil Xtra R14422X

4 mil Silver 20

MECHANICAL PROPERTIES

Thickness	4 mil
Tensile Strength at Break	28,500 PSI
Break Strength	112 lb/inch
Elongation at Break	125 %
Peel Strength	7 lb/inch

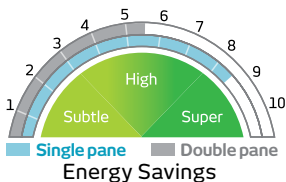
OPTICAL & SOLAR PROPERTIES

	Single Pane	Double Pane
Visible Light Transmitted	19 %	18 %
Visible Light Reflected (Int)	61 %	61 %
Visible Light Reflected (Ext)	60 %	60 %
Ultra Violet Block	99 %	99 %
Total Solar Energy Reflected	53 %	48 %
Total Solar Energy Transmitted	14 %	12 %
Total Solar Energy Absorbed	33 %	40 %
Emissivity (Room Side)	0.74	0.74
Glare Reduction	79 %	78 %
Shading Coefficient	0.27	0.36
Solar Heat Gain Coeff. (G-Value)	0.23	0.31
U-Value Winter (IP)	0.99	0.47
U-Value Winter (SI)	5.62	2.65
Luminous Efficacy	0.70	0.49
Total Solar Energy Rejected	77 %	69 %

R12122T - Safety 4 mil Silver 20 PS

SAFETY TESTS

Impact	EN 12600 Class 2B2	✓
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safety & security



9 mil Silver 20

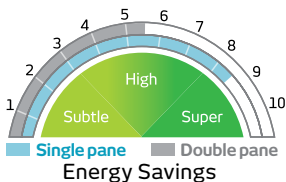
MECHANICAL PROPERTIES

Thickness	9 mil
Tensile Strength at Break	28,500 PSI
Break Strength	245 lb/inch
Elongation at Break	125 %
Peel Strength	7 lb/inch

OPTICAL & SOLAR PROPERTIES

	3mm Single	3mm IGU
Visible Light Transmitted	20 %	19 %
Visible Light Reflected (Int)	61 %	61 %
Visible Light Reflected (Ext)	57 %	56 %
Ultra Violet Block	99 %	99 %
Total Solar Energy Reflected	50 %	46 %
Total Solar Energy Transmitted	15 %	13 %
Total Solar Energy Absorbed	35 %	41 %
Emissivity (Room Side)	0.91	0.91
Glare Reduction	78 %	77 %
Shading Coefficient	0.30	0.40
Solar Heat Gain Coeff. (G-Value)	0.25	0.34
U-Value Winter (IP)	1.08	0.49
U-Value Winter (SI)	6.13	2.78
Luminous Efficacy	0.67	0.48
Total Solar Energy Rejected	75 %	66 %

R24603T PS



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12 mil Silver 20

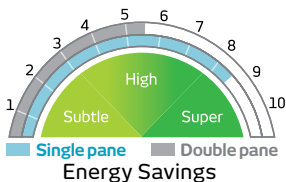
MECHANICAL PROPERTIES

Thickness	12 mil
Tensile Strength at Break	28,500 PSI
Break Strength	336 lb/inch
Elongation at Break	125 %
Peel Strength	7 lb/inch

OPTICAL & SOLAR PROPERTIES

	3mm Single	3mm IGU
Visible Light Transmitted	18 %	17 %
Visible Light Reflected (Int)	62 %	62 %
Visible Light Reflected (Ext)	61 %	61 %
Ultra Violet Block	99 %	99 %
Total Solar Energy Reflected	53 %	48 %
Total Solar Energy Transmitted	13 %	11 %
Total Solar Energy Absorbed	34 %	41 %
Emissivity (Room Side)	0.88	0.88
Glare Reduction	81 %	80 %
Shading Coefficient	0.27	0.37
Solar Heat Gain Coeff. (G-Value)	0.23	0.31
U-Value Winter (IP)	1.06	0.49
U-Value Winter (SI)	6.02	2.76
Luminous Efficacy	0.66	0.46
Total Solar Energy Rejected	77 %	69 %

R32122T PS



safety & security



6 mil PerLite 35

MECHANICAL PROPERTIES

Thickness	6 mil
Tensile Strength at Break	28,500 PSI
Break Strength	145 lb/inch
Elongation at Break	125 %
Peel Strength	7 lb/inch

OPTICAL & SOLAR PROPERTIES

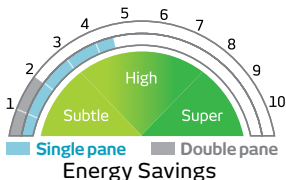
	3mm Single	3mm IGU
Visible Light Transmitted	40 %	36 %
Visible Light Reflected (Int)	16 %	18 %
Visible Light Reflected (Ext)	18 %	24 %
Ultra Violet Block	99 %	99 %
Total Solar Energy Reflected	19 %	22 %
Total Solar Energy Transmitted	29 %	25 %
Total Solar Energy Absorbed	52 %	53 %
Emissivity (Room Side)	0.90	0.90
Glare Reduction	56 %	55 %
Shading Coefficient	0.52	0.63
Solar Heat Gain Coeff. (G-Value)	0.44	0.54
U-Value Winter (IP)	1.07	0.49
U-Value Winter (SI)	6.08	2.78
Luminous Efficacy	0.77	0.58
Total Solar Energy Rejected	56 %	46 %

R170L5T PS

US Patented Technology

SAFETY TESTS

Impact	AS/NZS 2208 P	✓
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safety & security



6 mil PerLite 50

MECHANICAL PROPERTIES

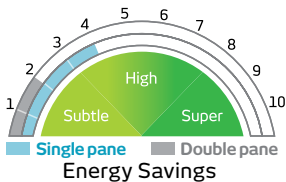
Thickness	6 mil
Tensile Strength at Break	28,500 PSI
Break Strength	145 lb/inch
Elongation at Break	125 %
Peel Strength	7 lb/inch

OPTICAL & SOLAR PROPERTIES

	3mm Single	3mm IGU
Visible Light Transmitted	52 %	48 %
Visible Light Reflected (Int)	16 %	19 %
Visible Light Reflected (Ext)	17 %	23 %
Ultra Violet Block	99 %	99 %
Total Solar Energy Reflected	18 %	22 %
Total Solar Energy Transmitted	42 %	35 %
Total Solar Energy Absorbed	40 %	43 %
Emissivity (Room Side)	0.90	0.90
Glare Reduction	42 %	41 %
Shading Coefficient	0.62	0.67
Solar Heat Gain Coeff. (G-Value)	0.53	0.58
U-Value Winter (IP)	1.07	0.49
U-Value Winter (SI)	6.08	2.78
Luminous Efficacy	0.85	0.71
Total Solar Energy Rejected	47 %	42 %

R169L3T PS

US Patented Technology



safety & security



10 mil PerLite 35

MECHANICAL PROPERTIES

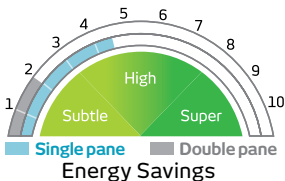
Thickness	10 mil
Tensile Strength at Break	28,500 PSI
Break Strength	270 lb/inch
Elongation at Break	125 %
Peel Strength	7 lb/inch

OPTICAL & SOLAR PROPERTIES

	3mm Single	3mm IGU
Visible Light Transmitted	40 %	37 %
Visible Light Reflected (Int)	17 %	18 %
Visible Light Reflected (Ext)	17 %	23 %
Ultra Violet Block	99 %	99 %
Total Solar Energy Reflected	18 %	21 %
Total Solar Energy Transmitted	30 %	26 %
Total Solar Energy Absorbed	52 %	53 %
Emissivity (Room Side)	0.91	0.91
Glare Reduction	55 %	55 %
Shading Coefficient	0.53	0.64
Solar Heat Gain Coeff. (G-Value)	0.46	0.55
U-Value Winter (IP)	1.08	0.49
U-Value Winter (SI)	6.13	2.78
Luminous Efficacy	0.76	0.58
Total Solar Energy Rejected	54 %	45 %

R270L5T PS

US Patented Technology



safety & security



10 mil PerLite 50

MECHANICAL PROPERTIES

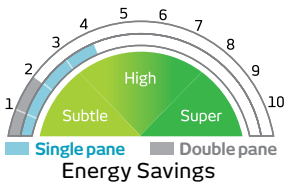
Thickness	10 mil
Tensile Strength at Break	28,500 PSI
Break Strength	245 lb/inch
Elongation at Break	125 %
Peel Strength	7 lb/inch

OPTICAL & SOLAR PROPERTIES

	3mm Single	3mm IGU
Visible Light Transmitted	52 %	49 %
Visible Light Reflected (Int)	16 %	18 %
Visible Light Reflected (Ext)	16 %	22 %
Ultra Violet Block	99 %	99 %
Total Solar Energy Reflected	17 %	20 %
Total Solar Energy Transmitted	43 %	37 %
Total Solar Energy Absorbed	40 %	43 %
Emissivity (Room Side)	0.92	0.92
Glare Reduction	42 %	40 %
Shading Coefficient	0.64	0.69
Solar Heat Gain Coeff. (G-Value)	0.55	0.60
U-Value Winter (IP)	1.08	0.49
U-Value Winter (SI)	6.13	2.79
Luminous Efficacy	0.84	0.71
Total Solar Energy Rejected	45 %	40 %

R269L3T PS

US Patented Technology



safety & security



5 mil OptiTune 22

MECHANICAL PROPERTIES

Thickness	5 mil
Tensile Strength at Break	28,500 PSI
Break Strength	145 lb/inch
Elongation at Break	125 %
Peel Strength	7 lb/inch

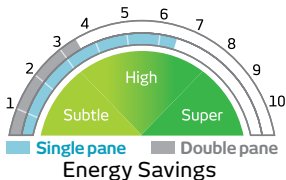
OPTICAL & SOLAR PROPERTIES

	3mm Single	3mm IGU
Visible Light Transmitted	21 %	19 %
Visible Light Reflected (Int)	15 %	15 %
Visible Light Reflected (Ext)	32 %	36 %
Ultra Violet Block	99.9 %	99 %
Total Solar Energy Reflected	32 %	31 %
Total Solar Energy Transmitted	18 %	15 %
Total Solar Energy Absorbed	50 %	54 %
Emissivity (Room Side)	0.82	0.82
Glare Reduction	77 %	76 %
Shading Coefficient	0.38	0.51
Solar Heat Gain Coeff. (G-Value)	0.32	0.44
U-Value Winter (IP)	1.03	0.48
U-Value Winter (SI)	5.85	2.71
Luminous Efficacy	0.55	0.38
Total Solar Energy Rejected	68 %	56 %

R144R2T PS

SAFETY TESTS

Impact	ANSI Z97.1 (48" pendulum fall)	✓
	CPSC 1201 Title 16 (48" pendulum fall)	✓



safety & security



10 mil OptiTune 30

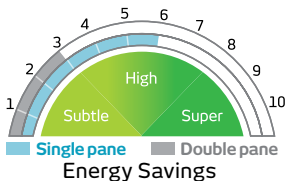
MECHANICAL PROPERTIES

Thickness	10 mil
Tensile Strength at Break	28,500 PSI
Break Strength	260 lb/inch
Elongation at Break	125 %
Peel Strength	7 lb/inch

OPTICAL & SOLAR PROPERTIES

	3mm Single	3mm IGU
Visible Light Transmitted	36 %	33%
Visible Light Reflected (Int)	22 %	23%
Visible Light Reflected (Ext)	25 %	30 %
Ultra Violet Block	99.9 %	99 %
Total Solar Energy Reflected	26 %	27%
Total Solar Energy Transmitted	28 %	24 %
Total Solar Energy Absorbed	46 %	49 %
Emissivity (Room Side)	0.90	0.90
Glare Reduction	60 %	60 %
Shading Coefficient	0.49	0.58
Solar Heat Gain Coeff. (G-Value)	0.42	0.50
U-Value Winter (IP)	1.06	0.49
U-Value Winter (SI)	6.02	2.76
Luminous Efficacy	0.73	0.56
Total Solar Energy Rejected	58 %	50 %

R269R3T PS



safety & security



8 mil e-Lite 70

MECHANICAL PROPERTIES

Thickness	8 mil
Tensile Strength at Break	28,500 PSI
Break Strength	220 lb/inch
Elongation at Break	125 %
Peel Strength	7 lb/inch

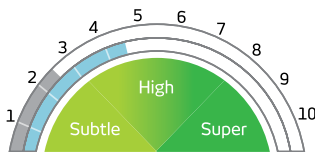
OPTICAL & SOLAR PROPERTIES

	3mm Single	3mm IGU
Visible Light Transmitted	65 %	60 %
Visible Light Reflected (Int)	18 %	21 %
Visible Light Reflected (Ext)	18 %	23 %
Ultra Violet Block	99 %	99 %
Total Solar Energy Reflected	25 %	25 %
Total Solar Energy Transmitted	38 %	33 %
Total Solar Energy Absorbed	37 %	42 %
Emissivity (Room Side)	0.73	0.73
Glare Reduction	27 %	26 %
Shading Coefficient	0.56	0.63
Solar Heat Gain Coeff. (G-Value)	0.49	0.54
U-Value Winter (IP)	1.03	0.48
U-Value Winter (SI)	5.85	2.71
Luminous Efficacy	1.16	0.95
Total Solar Energy Rejected	51 %	46 %

R219IS7 PS

SAFETY TESTS

Impact	AS/NZS 2208 P	✓
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Single pane Double pane
Energy Savings

safety & security



5 mil Silver 20 Xtra

MECHANICAL PROPERTIES

Thickness	5 mil
Tensile Strength at Break	28,500 PSI
Break Strength	145 lb/inch
Elongation at Break	125 %
Peel Strength	7 lb/inch

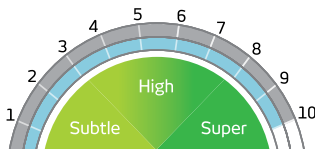
OPTICAL & SOLAR PROPERTIES

	3mm Single	3mm IGU
Visible Light Transmitted	17 %	16 %
Visible Light Reflected (Int)	62 %	62 %
Visible Light Reflected (Ext)	63 %	63 %
Ultra Violet Block	99.9 %	99 %
Total Solar Energy Reflected	64 %	64 %
Total Solar Energy Transmitted	13 %	11 %
Total Solar Energy Absorbed	23 %	25 %
Emissivity (Room Side)	0.84	0.84
Glare Reduction	81 %	80 %
Shading Coefficient	0.23	0.18
Solar Heat Gain Coeff. (G-Value)	0.19	0.15
U-Value Winter (IP)	1.04	0.48
U-Value Winter (SI)	5.91	2.73
Luminous Efficacy	0.76	0.91
Total Solar Energy Rejected	81 %	85 %

R14422X PS

SAFETY TESTS

Impact	EN 12600 Class 2B2	✓
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■ Single pane ■ Double pane
Energy Savings

safety & security





Anti-Graffiti Films



Anti-Graffiti

SolarZone Anti-Graffiti films are wipe-clean, protective sacrificial films providing a tough, invisible layer between vandals and glass. A special surface hard coat enables quick cleaning of spray, paint and pen. Removing and replacing etched or scratched film is swift and simple, thanks to the film's easy-removal adhesive.

The Anti-Graffiti range includes Universal films for indoor or outdoor glass applications, and PolyZone Clear films for PC or Acrylic rigid plastic glazing.

Contents

- 4 mil Anti-Graffiti Universal R123G2X
- 6 mil Anti-Graffiti Universal R173G2X

4 mil Anti-Graffiti Universal

For Interior and Exterior Applications

MECHANICAL PROPERTIES

Thickness	4 mil
Tensile Strength at Break	28,500 PSI
Break Strength	112 lb/inch
Elongation at Break	125 %
Peel Strength	3-4 lb/inch

OPTICAL & SOLAR PROPERTIES

	3mm Single
Visible Light Transmitted	90%
Visible Light Reflected (Int)	11%
Visible Light Reflected (Ext)	11%
Ultra Violet Block	92%
Total Solar Energy Reflected	10%
Total Solar Energy Transmitted	82%
Total Solar Energy Absorbed	8%
Glare Reduction	0%
Shading Coefficient	0.97
Solar Heat Gain Coeff. (G-Value)	0.84
U-Value Winter (IP)	1.04
U-Value Winter (SI)	5.91
Total Solar Energy Rejected	16%

R123G2X PS

Ed B, DS No 1292, November 2014

safety & security



6 mil Anti-Graffiti Universal

For Interior and Exterior Applications

MECHANICAL PROPERTIES

Thickness	6 mil
Tensile Strength at Break	28,500 PSI
Break Strength	112 lb/inch
Elongation at Break	125 %
Peel Strength	2-3 lb/inch

OPTICAL & SOLAR PROPERTIES

	3mm Single
Visible Light Transmitted	90%
Visible Light Reflected (Int)	12%
Visible Light Reflected (Ext)	12%
Ultra Violet Block	97%
Total Solar Energy Reflected	11%
Total Solar Energy Transmitted	82%
Total Solar Energy Absorbed	7%
Glare Reduction	2%
Shading Coefficient	0.97
Solar Heat Gain Coeff. (G-Value)	0.84
U-Value Winter (IP)	1.07
U-Value Winter (SI)	6.05
Total Solar Energy Rejected	16%

R173G2X PS

Ed-8, DS No. 1291, November 2014

safety & security



Specialty Films



Specialty films

SafetyZone Decorative

White matte 5 or 12 mil security film provides privacy and personal safety in retail, bathroom and office applications. The product combines anti-fragmentation security with an attractive sand-blasted effect, delivering a safe and cost-effective alternative to privacy glass or partitions.

PolyZone Clear

PolyZone Clear protective films are specially developed for application to rigid plastic glazing.

The 4 mil version provides protection for vulnerable Polycarbonate, which is easily scratched and damaged, either accidentally during cleaning, or at the hands of a graphic vandal. It also protects the substrate from yellowing due to sun exposure.

The 6 mil PolyZone Clear also delivers Anti-Graffiti protection, with an easy-wipe-clean surface, and a thicker construction to protect from gouging and acid attacks.

Removing and replacing scratched or scuffed PolyZone film is simple—any adhesive residue rubs off without damaging the plastic. Recommended for exterior use on bus shelters, safety guards, stadiums or acoustic barriers.

Printable Safety Film - DuraView Safe

DuraView Safe is a 5 mil safety film printable by Solvent, Eco-solvent, UV and Latex based wide format inkjet printers. Ideal for store front and showcase graphics, shower panels, partitions and glass doors, DuraView Safe delivers stunning, vibrant graphics together with enhanced glass security.

See the DuraView Safe Application Note for process advice.



Contents

SafetyZone Decorative

- 5 mil Matte R14811
- 12 mil Matte R32311C

PolyZone Clear

- PolyZone 4 mil Clear Xtra R1210XP
- PolyZone 6 mil Anti-Graffiti R1731XP

Printable Safety Film - DuraView Safe

- Clear Printable R14802

5 mil Matte

MECHANICAL PROPERTIES

Thickness	5 mil
Tensile Strength at Break	25,000 PSI
Break Strength	140 lb/inch
Elongation at Break	140 %
Peel Strength	5-7 lb/inch

OPTICAL & SOLAR PROPERTIES

3mm Single

Visible Light Transmitted	58 %
Visible Light Reflected (Int)	
Visible Light Reflected (Ext)	25 %
Ultra Violet Block	98 %
Total Solar Energy Reflected	20 %
Total Solar Energy Transmitted	55 %
Total Solar Energy Absorbed	25 %
Glare Reduction	36%
Shading Coefficient	0.90
Solar Heat Gain Coeff. (G-Value)	0.72
U-Value Winter (IP)	1.07
U-Value Winter (SI)	6.05
Total Solar Energy Rejected	38%

R14811 PS

SAFETY TESTS

Impact	AS/NZS 2208	✓
	EN 12600 Class 2B2	✓

Ed-B D No 1183, August 2011

12 mil Matte

MECHANICAL PROPERTIES

Thickness	12 mil
Tensile Strength at Break	28,500 PSI
Break Strength	336 lb/inch
Elongation at Break	125 %
Peel Strength	7 lb/inch

OPTICAL & SOLAR PROPERTIES

3mm Single

Visible Light Transmitted	55 %
Visible Light Reflected (Int)	
Visible Light Reflected (Ext)	28 %
Ultra Violet Block	99 %
Total Solar Energy Reflected	23 %
Total Solar Energy Transmitted	51 %
Total Solar Energy Absorbed	26 %
Glare Reduction	38%
Shading Coefficient	0.90
Solar Heat Gain Coeff. (G-Value)	0.69
U-Value Winter (IP)	1.07
U-Value Winter (SI)	6.08
Luminous Efficacy	0.80
Total Solar Energy Rejected	40%

R32311C PS

ED-B DS No 1284, August 2011

PolyZone 4 mil Clear Xtra

Protective Film for Exterior Application to Rigid Plastic Glazing

MECHANICAL PROPERTIES

Thickness	4 mil
Tensile Strength at Break	28,500 PSI
Break Strength	112 lb/inch
Elongation at Break	125 %
Peel Strength	1-2 lb/inch

OPTICAL & SOLAR PROPERTIES

	3mm Single
Visible Light Transmitted	88%
Visible Light Reflected (Int)	10%
Visible Light Reflected (Ext)	10%
Ultra Violet Block	99%
Total Solar Energy Reflected	10%
Total Solar Energy Transmitted	80%
Total Solar Energy Absorbed	10%
Glare Reduction	2%
Shading Coefficient	0.96
Solar Heat Gain Coeff. (G-Value)	0.83
U-Value Winter (IP)	1.04
U-Value Winter (SI)	5.91
Total Solar Energy Rejected	17%

R1210XP PS

Ed-B DS No 1908, March 2012

safety & security



PolyZone 6 mil Anti-Graffiti

Anti-Graffiti Film for Application to Rigid Plastic Glazing

MECHANICAL PROPERTIES

Thickness	6 mil
Tensile Strength at Break	28,000 PSI
Break Strength	125 lb/inch
Elongation at Break	150 %
Peel Strength	1-2 lb/inch

OPTICAL & SOLAR PROPERTIES

	3mm Single
Visible Light Transmitted	88%
Visible Light Reflected (Int)	10%
Visible Light Reflected (Ext)	10%
Ultra Violet Block	99%
Total Solar Energy Reflected	9%
Total Solar Energy Transmitted	80%
Total Solar Energy Absorbed	11%
Glare Reduction	2%
Shading Coefficient	0.95
Solar Heat Gain Coeff. (G-Value)	0.82
U-Value Winter (IP)	1.07
U-Value Winter (SI)	6.05
Total Solar Energy Rejected	18%

R1731XP PS

Ed-D DS No 1907, March 2012

safety & security



DuraView Safe 5 mil Printable Safety

MECHANICAL PROPERTIES

Thickness	5 mil
Tensile Strength at Break	28,500 PSI
Break Strength	112 lb/inch
Elongation at Break	125 %
Peel Strength	7 lb/inch

OPTICAL & SOLAR PROPERTIES

	3mm Single
Visible Light Transmitted	89%
Visible Light Reflected (Int)	11%
Visible Light Reflected (Ext)	11%
Ultra Violet Block	97%
Total Solar Energy Reflected	10%
Total Solar Energy Transmitted	82%
Total Solar Energy Absorbed	8%
Glare Reduction	1%
Shading Coefficient	0.97
Solar Heat Gain Coeff. (G-Value)	0.84
U-Value Winter (IP)	1.08
U-Value Winter (SI)	6.15
Total Solar Energy Rejected	16%

R14802 PS

Ed-A, No 8/11, April 2011



Advanced Security Systems



Advanced Security Systems

WinBar, part of the Al-Sorag Group, is an international, highly experienced leader in the field of safety and security for building envelopes and facades. Combined with SafetyZone security films, WinBar's unique and patented solutions upgrade the physical safety and security of structures, protecting from threats including shattering glass, forced entry, bomb blasts, extreme weather, or accidental impact. Installing WinBar advanced security solutions does not require structural change, making them significantly more cost-effective than other systems on the market.



No-Bar™

The No-Bar™ patented anchoring system works in combination with SafetyZone window film, strengthening windows by holding the glass securely to the existing wall-mounted window frame, enabling it to better withstand threats including impact, forced entry, bomb blast and natural disaster. The system provides a substitute for metal bars.



Clear-Bar™

The Clear Bar™ solution of attractive transparent bars gives a sense of openness and spacial continuity in homes and offices. This unique Al-Sorag product is an ideal retrofit solution for existing building windows and balcony railings. Made of a polymer alloy that is extremely tough and durable while being completely transparent, **Clear Bar™** with SafetyZone security films provides one of the best options for the security of buildings, banks, offices and homes against theft and forced entry.



Cable-Catch™

The Cable Catch™ system offers an additional layer of security to enhance the protection provided by SafetyZone films: an energy-absorbing steel cable prevents window panes and frames from turning into dangerous projectiles in the event of a powerful blast or extreme weather.



Definitions (1)

Visible Light Transmitted (VLT): The percent of total visible light (380-780 nanometers) to be passed through a glazing system. Test method - ASTM E 903-96.

Visible Light Reflected (VLR): The percent of total visible light to be reflected by a glazing system. Test method - ASTM E 903-96.

Total Solar Energy Reflected: The percent of total solar energy (300-2500 nanometers) to be reflected by a glazing system. Test method - ASTM E 903-96.

Total Solar Energy Transmitted: The percent of total solar energy (300-2500 nanometers) to be passed through a glazing system.

Total Solar Energy Absorbed: The percent of total solar energy (300-2500 nanometers) to be absorbed by a glazing system. Solar absorption is that portion of total solar energy neither transmitted nor reflected. Since solar transmittance and reflectance are measured directly, the following equation is used for calculating solar absorption. Test method - ASTM E 903. Total solar energy absorbed = $100\% - (\text{Total solar energy reflected}) - (\text{Total solar energy transmitted})$.

Ultra Violet Block: The percent of Ultra Violet radiation (300-380 nanometers) to be blocked by a glazing system. Ultra-violet is one portion of the total solar energy spectrum which greatly contributes to fading and deterioration of fabric and furnishings.

Definitions (2)

Emissivity: A measurement of a surface's ability to absorb or reflect radiant energy. For windows with film, emissivity refers to the heat reflected back into the room. The lower the emissivity rating, the better the insulation characteristic of the glazing system in regard to heat loss.

Shading Coefficient (SC): The ratio of the solar heat gain through a given glazing system to the solar heat gain under the same conditions for clear, unshaded double strength window glass (DSA). Shading coefficient defines the sun control capability or efficiency of the glazing system.

Glare reduction: Glare is usually defined as the difficulty of seeing in the presence of bright light such as direct or reflected sunlight. Window film can provide glare reduction of up to 95%.

Solar Heat Gain Coefficient (SHGC, or G-value): The percentage of solar energy directly transmitted into, or absorbed and re-radiated into a building. The lower the SHGC, the better the solar control properties of the film.

Definitions (3)

Total Solar Energy Rejected (TSER): Measures the window film's ability to reject solar energy in the form of visible light, infrared radiation and ultraviolet light. The higher the TSER number, the more solar energy is rejected away from the window.

Light to Solar Heat Gain Ratio: A measure of the ability of a glazing to provide light without excessive solar heat gain. It is the ratio between the visible transmittance of a glazing and its solar heat gain coefficient.

Luminous Efficacy Constant: Indicates a window's relative performance in rejecting solar heat while transmitting daylight. It is the ratio of the visible transmittance to the shading coefficient.

U-value (U-factor): The overall coefficient of heat transfer is a measure of the insulation level, mainly as applies to heat loss through glazing. Expressed in this sampler in both metric (SI) $W/(^{\circ}K \times m^2)$ and imperial (IP) $BTU/(hr \times ^{\circ}F \times ft^2)$ units, and given as center-of-glass value in winter conditions. The lower the U-value, the better the insulation qualities of the glazing system. U-value is the reciprocal of R value (thermal resistance).