



Trakya Cam Sanayii A.Ş.

ARCHITECTURAL GLASSES



Trakya Cam Sanayii A.Ş.

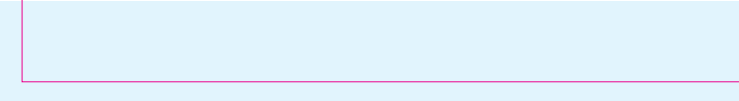
ŞİŞECAM Subsidiary

www.trakyacam.com.tr

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The content of this catalog is valid as of 2010.
Please visit our web site at www.trakyacam.com.tr for the updates.



COMPANY PROFILE

Trakya Cam Sanayii A.Ş., which was founded by Şişecam in 1978, is the leading company of the flat glass market in Turkey and the pioneer in the region.

Trakya Cam that employs the latest technologies in production, operates in the fields of;

- basic glass (flat glass, patterned glass, mirror, laminated glass, coated glass, glass for architectural applications),
- automotive glass and glass for other vehicles,
- energy glass,
- glass for home appliances

and provides input for various sectors including construction, automotive, energy, home appliances, furniture and agriculture.

Trakya Cam is the first company to deploy the "float technology" among the East European, Balkan, Middle Eastern and North African countries with its first float line that became operational in 1981. Trakya Cam has pioneered the development of the flat glass industry in Turkey and in the region with its investments of float glass, automotive glass, processed glasses and through its wide range of product portfolio.

In accordance with its vision of "leadership in the region" and its strategy of "multi-focus production", Trakya Cam inaugurated the first float line of the Balkan Region in March 2006 under the identity of Trakya Glass Bulgaria EAD, which is the subsidiary of Trakya Cam. Afterwards, the mirror and tempered glass lines started operation in the same region. Furthermore, Bulgarian Automotive Glass Factory, where the installation has been completed, will be inaugurated in July 2010.

Moreover, Trakya Cam, via its subsidiary of Trakya Yenişehir Cam Sanayii A.Ş., continues its fast growth in Turkey through its two float lines and a coated glass plant that started operation in 2007 and a laminated glass plant that was inaugurated in 2008.

Trakya Cam ranks among the top eight flat glass companies in the world and top four companies in Europe by its production capacity in seven float lines. Additionally, in the fields of automotive, home appliances and energy, continues its operations as a strong glass supplier to the expanding focal points in Europe and its region. The company has reached the level of \$ 573 million net sales with its 2.688 employees in FY 2009.

Trakya Cam has taken a strategic step in 2009, with the decision to jointly develop its flat glass activities with Saint-Gobain, which is one of the biggest companies of the industry, in Egypt and Russia.

According to this decision, Trakya Cam acquired 14.87% stake in the project that Saint-Gobain had been carrying on with a local investor. The plant in Egypt has been planned to be inaugurated in the second quarter of 2010.

Additionally, these two strong companies of the flat glass industry, keep working to make large-scale investments in the fields of flat glass and automotive glass in the Republic of Tatarstan, Russia.

Through the principles of modern management and industrialization, high extent of institutionalization and market and R&D orientation, which have carried Şişecam Group to its current position, Trakya Cam has the ambition to reinforce its strength while growing further.

COMPANIES / PLANTS



Trakya Cam Sanayii A.Ş.
Head Office

Activity : Marketing and Sales
Address: İş Kuleleri, Kule 3, 34330, 4.Levent-İstanbul/Turkey
Tel : 00 90 212 350 50 50
Fax: 00 90 212 350 44 06

**Trakya Cam Sanayii A.Ş.
Trakya Plant**

Activity : Float glass, coated glass, laminated glass, mirror, varnished glass

Address: Büyükkarıştıran Mevkii, PK 98, 39780 Lüleburgaz, Kırklareli / Turkey

Tel : 00 90 288 400 80 00

Fax: 00 90 288 400 77 99

**Trakya Cam Sanayii A.Ş.
Trakya Auto Glass Plant**

Activity : Automotive Glass

Address: Büyükkarıştıran Mevkii, PK 28, 39780 Lüleburgaz, Kırklareli / Turkey

Tel : 00 90 288 400 85 31

Fax: 00 90 288 400 83 58

**Trakya Cam Sanayii A.Ş.
Mersin Plant**

Activity : Float glass, patterned glass, energy glass

Address: Mersin Tarsus Organize Sanayi Bölgesi, Atatürk Cad. No.1, 33400, Mersin / Turkey

Tel : 00 90 324 676 40 70

Fax: 00 90 324 676 40 73

**Trakya Glass Bulgaria EAD
Flat Glass Plant**

Activity : Float glass, mirror

Address: District "Vabel" Industrial Area, 7700 Targovishte / Bulgaria

Tel : 00 359 601 4 78 01

Fax: 00 359 601 4 77 97

**Trakya Glass Bulgaria EAD
Glass Processing Plant**

Activity : Home Appliances Glass

Address: District "Vabel" Industrial Area, 7700 Targovishte / Bulgaria

Tel : 00 359 601 4 79 25

Fax: 00 359 601 4 79 26

Trakya Glass Logistics EAD

Activity : Transportation of jumbo-size glass

Address: District "Vabel" Industrial Area, 7700 Targovishte / Bulgaria

Tel : 00 359 601 4 80 31 - 00 359 601 4 80 35

Fax: 00 359 601 4 80 30

Trakya Yenişehir Cam Sanayii A.Ş.

Activity : Float glass, laminated glass, coated glass, glass for architectural applications, home appliances glass

Address: Atatürk Organize Sanayii Bölgesi, 16900, Yenişehir - Bursa / Turkey

Tel : 00 90 224 280 12 02

Fax: 00 90 224 773 27 55

Trakya Cam Investment B.V.

Activity : Finance and investment

Address: The Netherlands

Tel : 00 90 212 350 36 87

Fax: 00 90 212 350 46 87

Trakya Investment B.V.

Activity : Finance and investment

Address: The Netherlands

Tel : 00 90 212 350 36 87

Fax: 00 90 212 350 46 87

Trakya Glass Kuban 000

Activity : Flat glass production and sales

Address: Russia

Tel : 00 90 212 350 36 87

Fax: 00 90 212 350 46 87

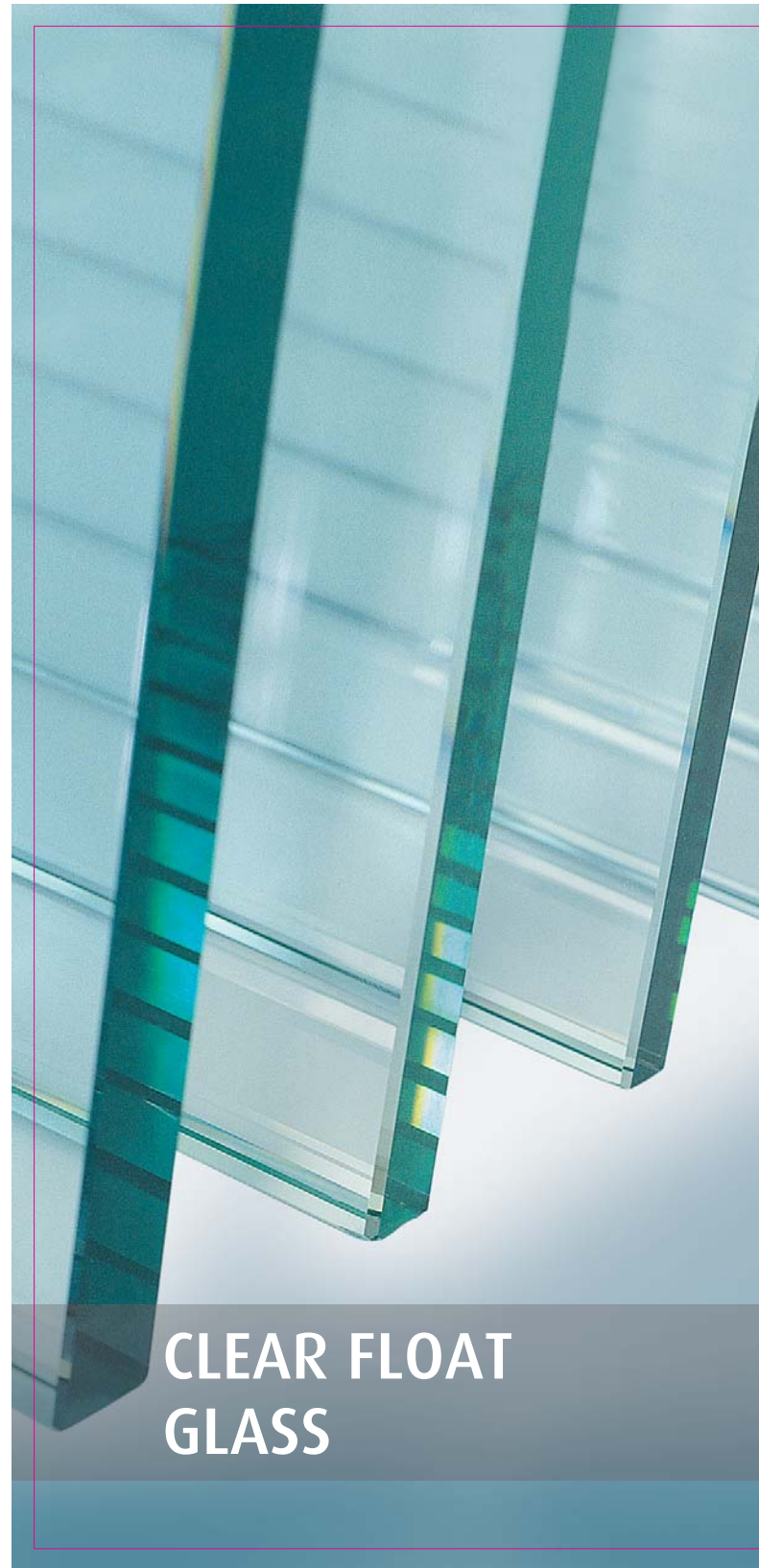
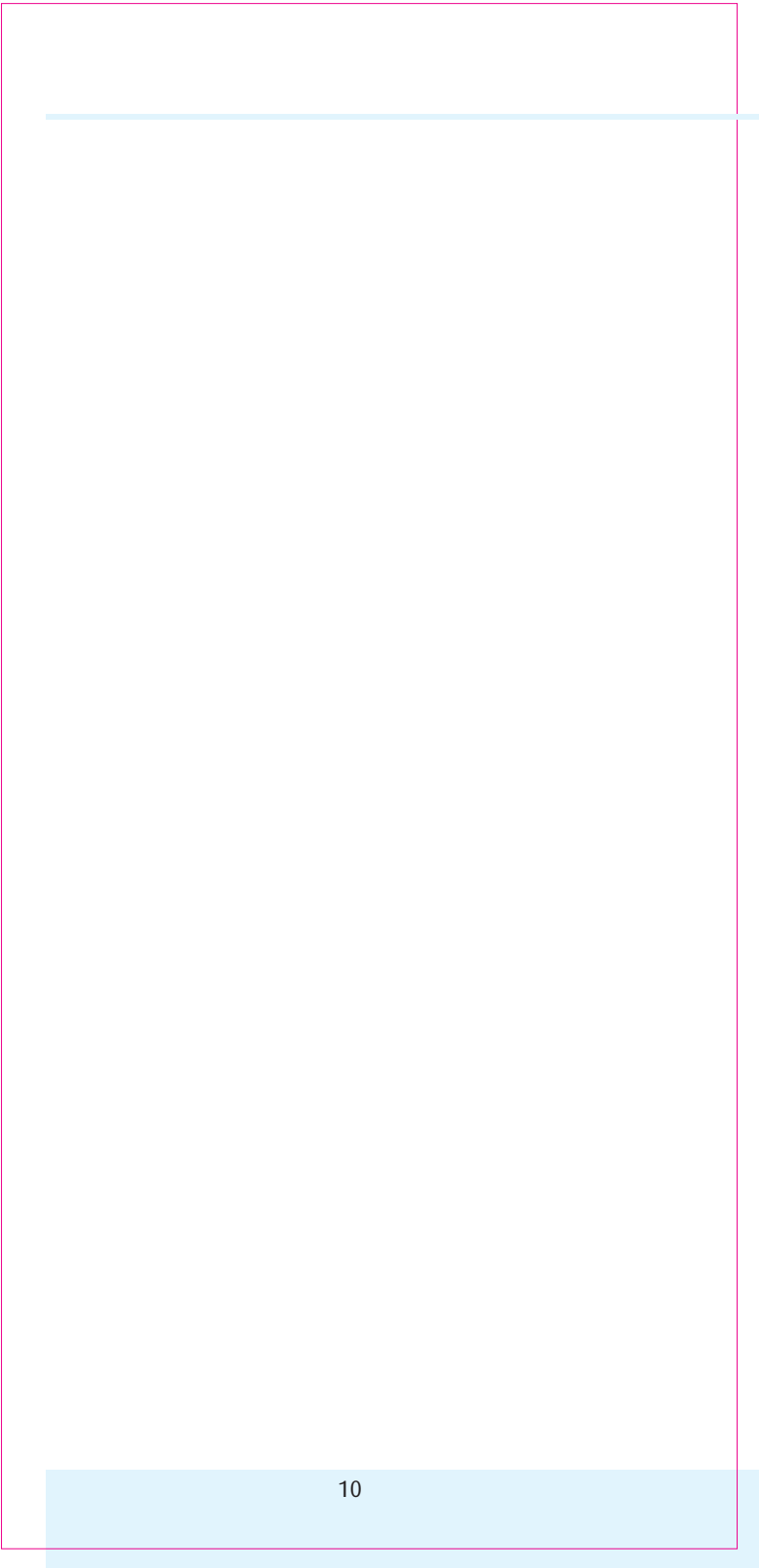
AREAS OF ACTIVITY



*will be inaugurated in 2010



Trakya Glass Bulgaria EAD
Targovishte / Bulgaria



CLEAR FLOAT
GLASS

CLEAR FLOAT
GLASS

CLEAR FLOAT GLASS

Description:

- Trakya Cam's high quality float glass production is based on float technology.
- Float glass is manufactured by "floating" the molten glass on molten tin.
- Clear float glass has high light transmittance due to its transparency.
- Float glass, as a basic product for all glazing purposes, offers solutions for various sectors including construction, automotive, home appliances, furniture, energy and agriculture through the application of one or more of the following processes:
 - double glazing,
 - laminating,
 - toughening,
 - heat strengthening,
 - enamelling,
 - bending,
 - coating,
 - varnishing,
 - making into mirror.

Thickness and sizes:

Standard Thickness (mm)	Standard Sizes* (mm)	Thickness Tolerances (mm)
3-6	3210 x 2000, 2100, 2250, 2400, 2550 3210 x 6000	± 0,2
8 & 10	3210 x 2250, 2550 3210 x 6000	± 0,3
12	3210 x 2250, 2550 3210 x 6000	± 0,3

* The tolerances on nominal sizes are ± 5 mm.

In addition to above data for other thickness and size requests, please contact Trakya Cam.

Performance Table:

Glass Thickness (mm)	Daylight (EN 410)		Solar Energy (EN 410)					Thermal Conductivity (U value) (EN 673) W/m ² K
	Transmittance %	Reflectance Outdoor %	Reflectance Outdoor %	Absorption %	Direct Transmittance %	Solar Factor	Shading Coefficient	
3	90	8	8	8	84	0.86	0.99	5.8
4	89	8	7	11	82	0.85	0.98	5.7
5	89	8	7	13	80	0.83	0.95	5.7
6	88	8	7	15	78	0.82	0.94	5.7
8	87	8	7	18	75	0.80	0.92	5.6
10	86	8	6	22	72	0.78	0.90	5.6
12	85	8	6	25	69	0.75	0.86	5.5
15	83	8	6	30	64	0.72	0.83	5.4

Explanations about the table can be found on page 88.

Quality:

Float glass is manufactured in accordance with;

- EN 572-2 Glass in building - Basic soda lime silicate glass products - Part 2: Float glass,
- ISO-9000 Quality Management System and ISO-14000 Quality Environmental Management System

Processing:

http://www.trakyacam.com.tr/Mimari_Camlar/en/duzcam_isleme.htm

CE:

http://www.trakyacam.com.tr/CE/index_eng.htm



HEAT CONTROL
GLASS

HEAT CONTROL
GLASS

HEAT CONTROL GLASS

- Glass, when used as single glazing in windows, benefiting from the light and heat of the sun is possible; but high amount of heat loss occurs in winter. Increasing the thickness of glass does not contribute to heat insulation.
- Insulating glass units contribute to energy saving by decreasing heat loss through windows and provide a comfortable environment.
- When conventional double glazing (insulating glass unit) is used instead of single glazing, heat loss halves.
- As a result of intensive studies in glass technology; coated glasses aiming to provide better heat insulation and energy saving are developed. Insulating glass units incorporating Trakya Cam's heat control glass TRC Ecotherm, provide effective heat insulation.

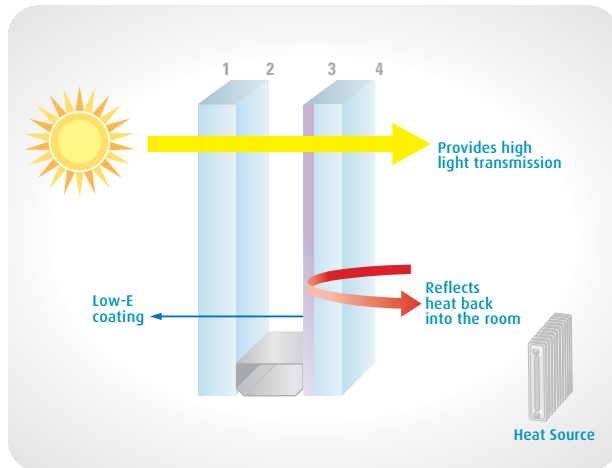


TRC Ecotherm

HEAT CONTROL (LOW-E COATED) GLASS

Description:

- TRC Ecotherm is the trademark of Low-E coated glass of Trakya Cam.
- Manufactured by depositing multi layered metal/metal oxides on float glass through “magnetically enhanced vacuum sputtering technology”.
- Has a neutral appearance closer to clear float glass.
- Enables the sun’s short wave infrared radiation to enter the room while reflecting long wave infrared heat back into the room and therefore heat loss through glass is reduced.



- In winter, cold spots by windows are eliminated.
- Reduces UV transmission which causes fabrics to fade.
- Should be incorporated into insulating glass unit.
- Considering the geographical locations, TRC Ecotherm can be placed on the second or third surface of the insulating glass unit.

- Insulating glass unit incorporating TRC Ecotherm reduces heat loss by;
 - 80% compared to single glazing,
 - 60% compared to traditional insulating glass unit.
- Effective heat insulation is provided and heating expenses are reduced.
- Toughening, heat strengthening, laminating and enamelling must be done prior to coating process.
- Can be used with clear float glass, solar control glass, toughened or laminated glass in insulating glass units.

Thickness and sizes:

Standard Thickness (mm)	Standard Sizes* (mm)
4 & 6	3210 x 2250 3210 x 2500 3210 x 6000

* The tolerances on nominal sizes are ± 5 mm.

In addition to above data for other thickness and size requests, please contact Trakya Cam.

Performance Table:

Configuration	Daylight (EN 410)		Solar Energy (EN 410)					Thermal Conductivity (U value) W/m ² K (EN 673)			
	Transmittance %	Reflectance Outdoor %	Absorption %	Direct Transmittance %	Solar Factor	Shading Coefficient	12 mm Air Space		16 mm Air Space		
							Dry Air	Argon*	Dry Air	Argon*	
Clear Float + Clear Float	80	14	19	69	0.75	0.86	2.9	2.7	2.7	2.6	
	78	14	26	62	0.71	0.82	2.8	2.7	2.7	2.6	
TRC Ecotherm (#2) + Clear Float	79	12	25	51	0.56	0.64	1.6	1.3	1.3	1.1	
	77	12	30	48	0.54	0.62	1.6	1.3	1.3	1.1	
Clear Float + TRC Ecotherm (#3)	79	12	25	51	0.60	0.69	1.6	1.3	1.3	1.1	
	77	11	30	48	0.58	0.67	1.6	1.3	1.3	1.1	

** Gas filling rate 90%

Explanations about the table can be found on page 88.

Quality:

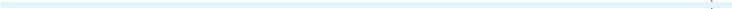
TRC Ecotherm is manufactured in accordance with EN 1096 Glass in building - Coated glass.

Processing:

http://www.trakyacam.com.tr/Mimari_Camlar/en/isi_kontrol_isleme.htm

CE:

http://www.trakyacam.com.tr/CE/index_eng.htm



SOLAR CONTROL
GLASSES

SOLAR CONTROL
GLASSES

SOLAR CONTROL GLASSES

- Solar control glasses,
 - enable a comfortable environment by limiting solar heat gains to the interior and by controlling the sun's excessive glare,
 - provide reduction in cooling energy consumption and expenses in air-conditioned environments.
- Solar control glass range of Trakya Cam offering various alternatives to users in terms of solar control performance, color, reflection and benefit from sunlight includes following products:
 - TRC Helio, body tinted glasses,
 - TRC Aura Reflekt, on-line coated reflective solar control glass,
 - TRC Tentesol and TRC Tentesol T, on-line pyrolytic coated reflective solar control glasses.
- Solar control performance of glass is determined by the total amount of solar radiant energy entering the room through the glass and is expressed as solar factor. Solar factor varies according to the quantity of energy transmitted directly and the quantity of energy absorbed.



TRC Helio®

BODY TINTED FLOAT GLASSES

Description:

- TRC Helio is the trademark of body tinted float glass range of Trakya Cam.
- Manufactured by adding coloring agents to the raw batch before melting process.
- Green, gray, bronze and blue colors are available.
- Basic product for solar control.
- Edgeworking can be applied.
- Can be used as single glazing.
- Can be incorporated into insulating glass unit with clear float glass or TRC Ecotherm (Low-E coated glass).
- By applying secondary processes to TRC Helio; laminated glass, toughened glass, heat strengthened glass, enamelled glass, bent glass, coated glass, acid etched glass, sandblasted glass and mirror can be produced.
- Solar control glasses are subject to thermal breakage risks (see page 86). In order to avoid thermal breakage risks, toughening or heat strengthening is recommended.
- TRC Helio is intended;
 - primarily for non-residential buildings with curtain walls, which require solar control for windows, spandrels, facade claddings, overhead glazing and balustrades,
 - additionally for interior applications such as tabletops, shelves, doors, shower cabins and partitions.



Thickness and sizes:

Product	Standard Thickness (mm)	Standard Sizes* (mm)	Thickness Tolerances (mm)
TRC Helio Green	3-6	3210 x 2250 3210 x 6000	± 0,2
	8 & 10	3210 x 2250 3210 x 6000	± 0,3
TRC Helio Gray	4-6	3210 x 2250 3210 x 2500 3210 x 6000	± 0,2
	8 & 10	3210 x 2250 3210 x 6000	± 0,3
TRC Helio Bronze	4 & 6	3210 x 2250 3210 x 2500 3210 x 6000	± 0,2
TRC Helio Blue	4 & 6	3210 x 2250 3210 x 2500 3210 x 6000	± 0,2
	8	3210 x 2250 3210 x 2500 3210 x 6000	± 0,3

* The tolerances on nominal sizes are ± 5 mm.

In addition to above data for other thickness and size requests, please contact Trakya Cam.

Performance Table:

Configuration	Daylight (EN 410)		Solar Energy (EN 410)				Thermal Conductivity (U value) W/m ² K (EN 673)				
	Transmittance %	Reflectance Outdoor %	Reflectance Outdoor %	Absorption %	Direct Transmittance %	Solar Factor	Shading Coefficient	12 mm Air Space		16 mm Air Space	
Single Glazing - 4 mm											
TRC Helio Green	78	7	6	42	52	0.63	0.72	Argon**	Dry Air	Argon**	Dry Air
TRC Helio Gray	57	6	6	36	58	0.67	0.77	Argon**	Dry Air	Argon**	Dry Air
TRC Helio Bronze	61	6	6	35	59	0.68	0.78	Argon**	Dry Air	Argon**	Dry Air
TRC Helio Blue	66	6	5	42	53	0.64	0.74	Argon**	Dry Air	Argon**	Dry Air
Single Glazing - 6 mm											
TRC Helio Green	72	7	5	52	43	0.56	0.64	Argon**	Dry Air	Argon**	Dry Air
TRC Helio Gray	44	5	5	49	46	0.59	0.68	Argon**	Dry Air	Argon**	Dry Air
TRC Helio Bronze	50	5	5	47	48	0.60	0.69	Argon**	Dry Air	Argon**	Dry Air
TRC Helio Blue	55	6	5	53	42	0.56	0.64	Argon**	Dry Air	Argon**	Dry Air

Single Glazing - 8 mm											
TRC Helio Green	68	7	5	58	37	0.52	0.60	Argon**	Dry Air	Argon**	Dry Air
TRC Helio Gray	35	5	5	57	38	0.53	0.61	Argon**	Dry Air	Argon**	Dry Air
TRC Helio Bronze	41	5	5	56	39	0.53	0.61	Argon**	Dry Air	Argon**	Dry Air
TRC Helio Blue	48	5	5	61	34	0.50	0.57	Argon**	Dry Air	Argon**	Dry Air
Insulating Glass Unit with TRC Helio + Clear Float Glass (6+6)											
TRC Helio Green	64	11	7	57	36	0.46	0.53	2.8	2.7	2.7	2.6
TRC Helio Gray	39	7	7	56	37	0.48	0.55	2.8	2.7	2.7	2.6
TRC Helio Bronze	45	8	7	54	39	0.49	0.56	2.8	2.7	2.7	2.6
TRC Helio Blue	49	9	8	57	35	0.45	0.52	2.8	2.7	2.7	2.6
Insulating Glass Unit with TRC Helio + TRC Ecotherm (Low-E Coated Glass) (6+6)*											
TRC Helio Green	64	9	8	61	31	0.39	0.45	1.6	1.3	1.3	1.1
TRC Helio Gray	39	6	12	61	27	0.37	0.43	1.6	1.3	1.3	1.1
TRC Helio Bronze	44	7	12	59	29	0.38	0.44	1.6	1.3	1.3	1.1
TRC Helio Blue	49	8	9	62	29	0.37	0.43	1.6	1.3	1.3	1.1

* Low-E coating is on the 3rd surface.

** Gas filling rate 90%

Explanations about the table can be found on page 88.

Quality:

Helio range is manufactured in accordance with EN 572-2 Glass in building - Basic soda lime silicate glass products - Part 2: Float glass.

Processing:

http://www.trakyacam.com.tr/Mimari_Camlar/en/helio_isleme.htm

CE:

http://www.trakyacam.com.tr/CE/index_eng.htm

TRC Aura Reflekta

ON-LINE COATED SOLAR CONTROL GLASS

Description:

- Aura Reflekta is the trademark of the on-line coated reflective solar control glass of Trakya Cam.
- Manufactured by applying a silver reflective coating on one surface of the clear glass through LVC (Laminar vapor coating) process during the production of float glass.
- Can be incorporated into insulating glass unit with clear float glass or TRC Ecotherm (Low-E coated glass).
- Can be used as single glazing, the coated surface should be placed facing inside (surface no:2) of the building. Mild detergents and gentle solvents should be used for cleaning. Sharp objects and abrasives should be avoided on the coated surface. Thus assembling into insulating glass unit is recommended.
- Can be toughened under certain conditions (please visit http://www.trakyacam.com.tr/Mimari_Camlar/en/aura_isleme.htm).
- Lamination is possible. When laminating TRC Aura Reflekta, all panes of the laminated glass should be either toughened or heat strengthened in order to avoid thermal breakage risks.
- Can be enamelled (please visit http://www.trakyacam.com.tr/Mimari_Camlar/en/aura_isleme.htm).
- For spandrel and facade cladding applications, special polyester opacifier film can be bonded to the coated surface. The opacifier film manufacturer should approve conformity of polyester opacifier film and coated surface.
- TRC Aura Reflekta solar control glass is subject to thermal breakage risks (see page 86). In order to avoid thermal breakage risks, toughening or heat strengthening is recommended.
- TRC Aura Reflekta is intended primarily for non-residential buildings with curtain walls, which require solar control and visible reflectance for windows, spandrels, facade claddings and overhead glazing.
- During daytime due to the reflectance it offers a mirror-like appearance to the exterior of buildings, however during night time with internal lighting, inward vision occurs.

Performance Table:

Configuration	Coated Surface	Daylight (EN 410)		Solar Energy (EN 410)				Thermal Conductivity (U value) W/m ² K (EN 673)				
		Transmittance %	Reflectance Outdoor %	Absorption %	Reflectance Outdoor %	Direct Transmittance %	Solar Factor	Shading Coefficient	12 mm Air Space	16 mm Air Space	Dry Air	Argon**
Single Glazing - 4 mm												
TRC Aura Reflekta	#2	34	44	24	31	45	0.51	0.59				5.8
Single Glazing - 6 mm												
TRC Aura Reflekta	#2	34	43	29	28	43	0.51	0.59				5.7
Insulating Glass Unit with TRC Aura Reflekta + Clear Float Glass (6+6)												
TRC Aura Reflekta	#2	31	44	36	30	34	0.42	0.48	2.8	2.7	2.7	2.6
Insulating Glass Unit with TRC Aura Reflekta + TRC Ecotherm (Low-E Coated Glass) (6+6)*												
TRC Aura Reflekta	#2	30	44	39	38	23	0.30	0.34	1.6	1.3	1.3	1.1

* Low-E coating is on the 3rd surface.

** Gas filling rate 90%

Explanations about the table can be found on page 88.

Thickness and sizes:

Standard Thickness (mm)	Standard Sizes* (mm)	Thickness Tolerance (mm)
4 & 6	3150 x 2250 3150 x 2500 3150 x 6000	± 0,2

* The tolerances on nominal sizes are ± 5 mm.

In addition to above data for other thickness and size requests, please contact Trakya Cam.

Quality:

TRC Aura Reflekta is manufactured in accordance with EN 1096 Glass in building - Coated glass.

Processing:

http://www.trakyacam.com.tr/Mimari_Camlar/en/aura_isleme.htm

CE:

http://www.trakyacam.com.tr/CE/index_eng.htm

TRC Tentesol®

ON-LINE PYROLYTIC COATED SOLAR CONTROL GLASSES

Description:

- TRC Tentesol is the trademark of the on-line pyrolytic (hard) coated solar control glasses of Trakya Cam.
- Manufactured by applying a thin, reflective and highly durable metal oxide coating on clear or tinted glass during the production of float glass.
- The pyrolytic coating provides high mechanical and chemical durability.
- Silver, green and blue colors are available.
- With its high reflectance, TRC Tentesol offers a uniform appearance for buildings with curtain walls by covering background features such as spandrels, columns, beams, suspended ceilings, etc.
- Assembling into insulating glass units is recommended. Can be used as single glazing. Mild detergents and gentle solvents should be used for cleaning. Sharp objects and abrasives should be avoided on the coated surface.
- Can be incorporated into insulating glass unit with clear float glass or TRC Ecotherm (Low-E coated glass). Therefore solar control and heat control properties can be provided.
- The coating can be placed facing outside (surface:1) or inside (surface: 2) of the building. Reflectance is emphasized with first; and color is emphasized with second surface applications.
- If the coating is exposed to the outside (surface:1) dirt accumulation on the reflective surfaces will be more visible, the cleaning of the glass will be required more often regarding the air pollution and amount of dust in the atmosphere. Therefore glazing with the coating on surface 2 is recommended.
- Can be toughened, heat strengthened and bent.
- Lamination is possible. When laminating TRC Tentesol, all panes of the laminated glass should be either toughened or heat strengthened in order to avoid thermal breakage risks.
- Enamelling is possible (please visit http://www.trakyacam.com.tr/Mimari_Camlar/en/tentesol_isleme.htm).

- For spandrel and facade cladding applications, special polyester opacifier film can be bonded to the coated surface. The opacifier film manufacturer should approve conformity of polyester opacifier film and coated surface.
- TRC Tentesol solar control glasses are subject to thermal breakage risks (see page 86). In order to avoid thermal breakage risks, toughening or heat strengthening is recommended.
- TRC Tentesol is intended primarily for non-residential buildings with curtain walls, which require solar control with visible reflectance; for windows, spandrels, facade claddings and overhead glazing.
- During daytime due to the reflectance it offers a mirror-like appearance to the exterior of buildings, however during night time with internal lighting, inward vision occurs.



Thickness and sizes:

Product	Standard Thickness (mm)	Standard Sizes* (mm)	Thickness Tolerances (mm)
TRC Tentesol Silver	6	3210 x 2500 3210 x 6000	± 0,2
TRC Tentesol Green	4 & 6	3210 x 2500 3210 x 6000	± 0,2
TRC Tentesol Blue	4 & 6	3210 x 2500 3210 x 6000	± 0,2

* The tolerances on nominal sizes are ± 5 mm.

In addition to above data for other thickness and size requests, please contact Trakya Cam.

Performance Table:

Configuration	Coated Surface	Daylight (EN 410)		Solar Energy (EN 410)				Thermal Conductivity (U value) W/m ² K (EN 673)					
		Transmittance %	Reflectance Outdoor %	Reflectance Outdoor %	Absorption %	Direct Transmittance %	Solar Factor	Shading Coefficient	12 mm Air Space	Argon**	Dry Air	16 mm Air Space	Argon**
Single Glazing - 6 mm													
TRC Tentesol Silver	#1	38	33	27	30	43	0.51	0.59					5.7
	#2	38	26	19	38	43	0.53	0.61					5.7
TRC Tentesol Green	#1	32	33	25	53	22	0.36	0.41					5.7
	#2	32	19	10	68	22	0.40	0.46					5.7
TRC Tentesol Blue	#1	23	33	27	52	21	0.35	0.40					5.7
	#2	23	14	10	69	21	0.40	0.46					5.7
Insulating Glass Unit with TRC Tentesol + Clear Float Glass (6+6)													
TRC Tentesol Silver	#1	34	34	29	38	34	0.42	0.48	2.8	2.7	2.7		2.6
	#2	34	28	21	45	34	0.43	0.49	2.8	2.7	2.7		2.6

TRC Tentesol Green	#1	28	33	26	56	18	0.27	0.31	2.8	2.7	2.7		2.6
	#2	29	20	11	71	18	0.29	0.33	2.8	2.7	2.7		2.6
TRC Tentesol Blue	#1	21	34	27	55	17	0.26	0.30	2.8	2.7	2.7		2.6
	#2	21	14	10	73	17	0.28	0.32	2.8	2.7	2.7		2.6
Insulating Glass Unit with TRC Tentesol + TRC Ecotherm (Low-E Coated Glass) (6+6)													
TRC Tentesol Silver	#1	33	34	36	41	23	0.31	0.36	1.6	1.3	1.3		1.1
	#2	33	27	29	48	23	0.32	0.37	1.6	1.3	1.3		1.1
TRC Tentesol Green	#1	28	33	27	59	14	0.20	0.23	1.6	1.3	1.3		1.1
	#2	28	19	12	74	14	0.22	0.25	1.6	1.3	1.3		1.1
TRC Tentesol Blue	#1	20	33	29	59	13	0.19	0.22	1.6	1.3	1.3		1.1
	#2	21	14	11	76	13	0.21	0.24	1.6	1.3	1.3		1.1

* Low-E coating is on the 3rd surface.

** Gas filling rate 90%

Explanations about the table can be found on page 88.

Quality:

TRC Tentesol is manufactured in accordance with EN 1096
Glass in building - Coated glass.

Processing:

http://www.trakyacam.com.tr/Mimari_Camlar/en/tentesol_isleme.htm

CE:

http://www.trakyacam.com.tr/CE/index_eng.htm

TRC Tentesol T®

ON-LINE PYROLYTIC COATED SOLAR CONTROL GLASSES

Description:

- TRC Tentesol T is the trademark of the on-line pyrolytic (hard) coated solar control glasses of Trakya Cam.
- Manufactured by applying a thin, reflective and highly durable coating on body tinted glass during the production of float glass.
- The pyrolytic coating provides high mechanical and chemical durability.
- Green and blue colors are available.
- Provides high light transmittance.
- Assembling into insulating glass units is recommended. Can be used as single glazing. Mild detergents and gentle solvents should be used for cleaning. Sharp objects and abrasives should be avoided on the coated surface.
- Can be incorporated into insulating glass unit with clear float glass or TRC Ecotherm (Low-E coated glass). Therefore solar control and heat control properties can be provided.
- The coating can be placed facing outside (surface:1) or inside (surface:2) of the building.
- If the coating is exposed to the outside, (surface:1) dirt accumulation on the coated surfaces will be more visible, the cleaning of the glass will be required more often regarding the air pollution and amount of dust in the atmosphere. Therefore glazing with the coating on surface 2 is recommended.
- Can be toughened, heat strengthened and bent.
- Lamination is possible. When laminating TRC Tentesol T, all panes of the laminated glass should be either toughened or heat strengthened in order to avoid thermal breakage risks.
- Enamelling is possible (please visit http://www.trakyacam.com.tr/Mimari_Camlar/en/tentesol_t_isleme.htm).
- TRC Tentesol T solar control glasses are subject to thermal breakage risks (see page 86). In order to avoid thermal breakage risks, toughening or heat strengthening is recommended.
- TRC Tentesol T is intended primarily for non-residential buildings with curtain walls and overhead glazing.

Performance Table:

Configuration	Coated Surface	Daylight (EN 410)		Solar Energy (EN 410)				Thermal Conductivity (U value) W/m ² K (EN 673)						
		Transmittance %	Reflectance Outdoor %	Reflectance Outdoor %	Absorption %	Direct Transmittance %	Solar Factor	Shading Coefficient	12 mm Air Space	16 mm Air Space	Argon**	Dry Air	Argon**	Dry Air
Single Glazing - 6 mm														
TRC Tentesol T Green	#1	51	33	24	43	33	0.44	0.51						
	#2	51	23	12	55	33	0.47	0.54						
TRC Tentesol T Blue	#1	39	33	24	43	32	0.43	0.49						
	#2	39	16	11	57	32	0.47	0.54						
Insulating Glass Unit with TRC Tentesol T + Clear Float Glass (6+6)														
TRC Tentesol T Green	#1	46	35	25	48	27	0.35	0.40	2.8	2.7	2.7	2.7	2.6	2.6
	#2	46	25	13	59	28	0.37	0.43	2.8	2.7	2.7	2.7	2.6	2.6
TRC Tentesol T Blue	#1	35	35	26	48	26	0.34	0.39	2.8	2.7	2.7	2.7	2.6	2.6
	#2	35	17	12	61	27	0.36	0.41	2.8	2.7	2.7	2.7	2.6	2.6

Insulating Glass Unit with TRC Tentesol T + TRC Ecotherm (Low-E Coated Glass) (6+6)*														
Configuration	Coated Surface	Daylight (EN 410)		Solar Energy (EN 410)				Thermal Conductivity (U value) W/m ² K (EN 673)						
		Transmittance %	Reflectance Outdoor %	Reflectance Outdoor %	Absorption %	Direct Transmittance %	Solar Factor	Shading Coefficient	12 mm Air Space	16 mm Air Space	Argon**	Dry Air	Argon**	Dry Air
TRC Tentesol T Green	#1	45	34	26	51	23	0.29	0.33	1.6	1.3	1.3	1.3	1.1	1.1
	#2	45	24	14	63	23	0.30	0.34	1.6	1.3	1.3	1.3	1.1	1.1
TRC Tentesol T Blue	#1	34	34	27	52	21	0.28	0.32	1.6	1.3	1.3	1.3	1.1	1.1
	#2	34	17	13	66	21	0.29	0.33	1.6	1.3	1.3	1.3	1.1	1.1

* Low-E coating is on the 3rd surface.

** Gas filling rate 90%

Explanations about the table can be found on page 88.

Thickness and sizes:

Product	Standard Thickness (mm)	Standard Sizes* (mm)	Thickness Tolerances (mm)
TRC Tentesol T Green	6	3210 x 2500 3210 x 6000	± 0,2
TRC Tentesol T Blue	6	3210 x 2500 3210 x 6000	± 0,2

* The tolerances on nominal sizes are ± 5 mm.

In addition to above data for other thickness and size requests, please contact Trakya Cam.

Quality:

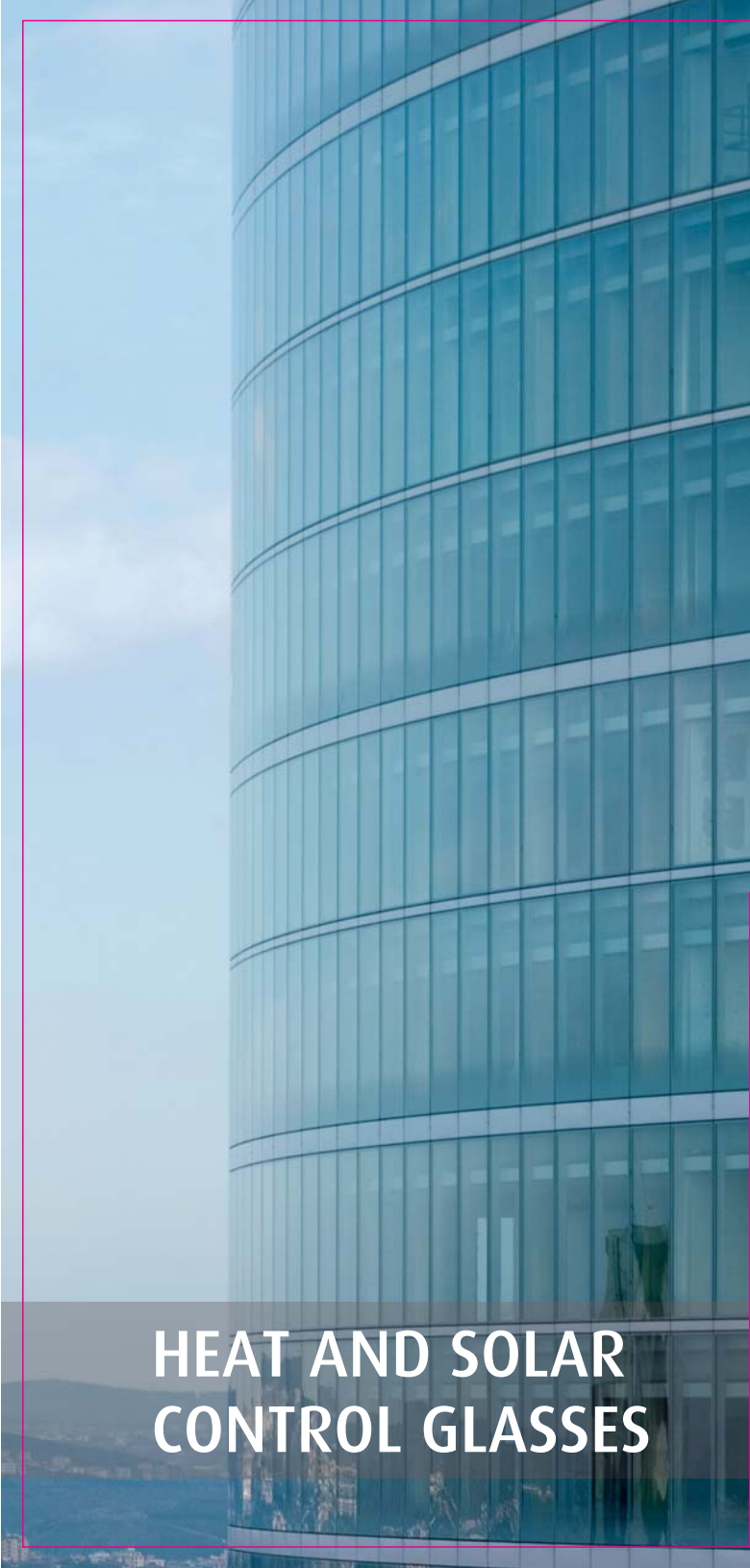
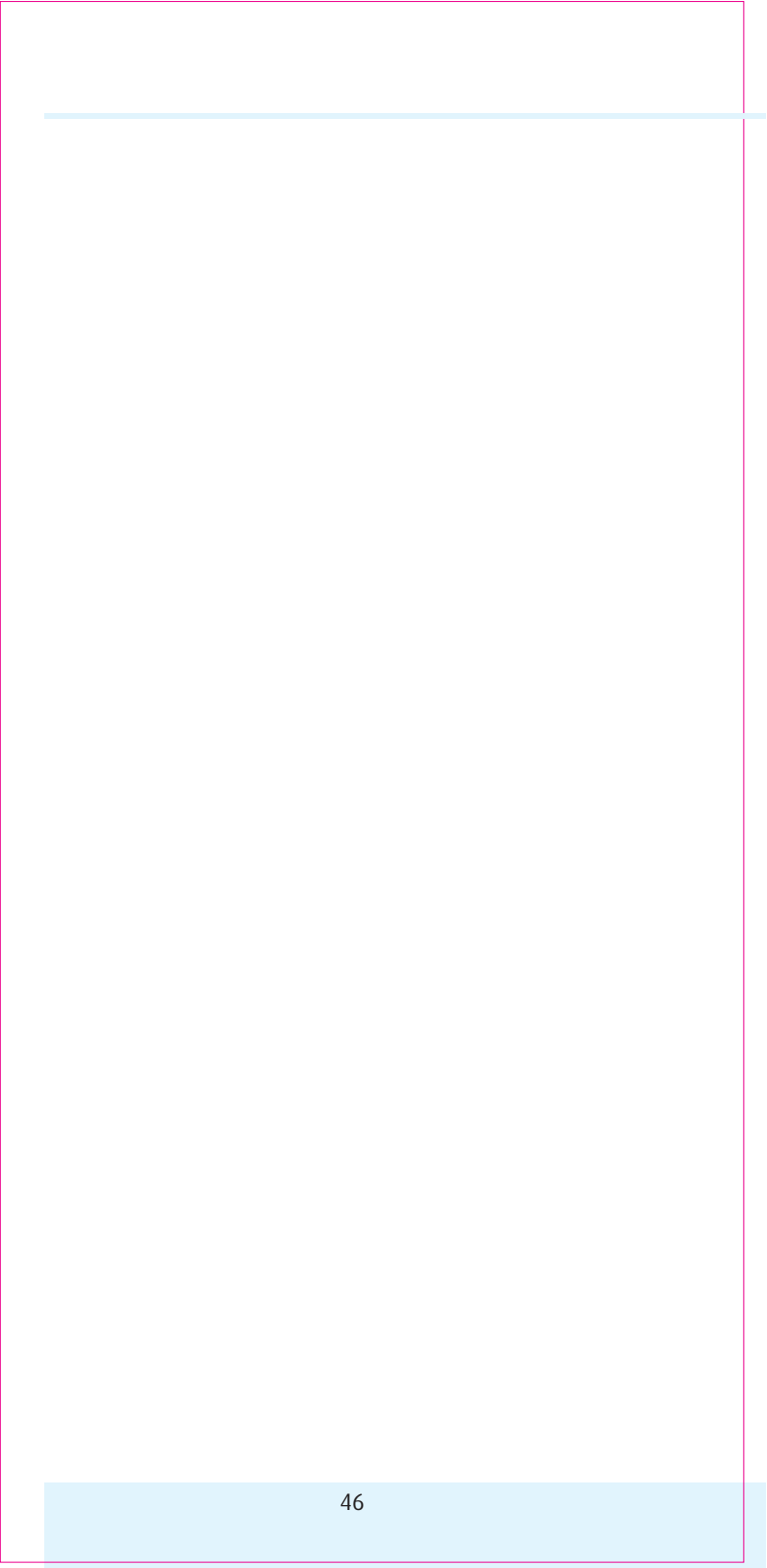
TRC Tentesol T is manufactured in accordance with EN 1096 Glass in building - Coated glass.

Processing:

http://www.trakyacam.com.tr/Mimari_Camlar/en/tentesol_t_isleme.htm

CE:

http://www.trakyacam.com.tr/CE/index_eng.htm



HEAT AND SOLAR
CONTROL GLASSES

HEAT AND SOLAR CONTROL GLASSES

HEAT AND SOLAR CONTROL GLASSES

- In geographical regions, where summer and winter are both experienced, it is important for glass to provide heat insulation and solar control as well. Heat and solar control glasses have to be used for decreasing heat loss during the cold days and for limiting solar heat gains during the hot days of the year.
- Heat and solar control properties can be provided by applying a coating on the surface of the glass or by incorporating a solar control glass and a heat control glass within an insulating glass unit separately.
- Insulating glass units incorporating Trakya Cam's heat and solar control glass TRC Ecosol, provide effective heat and solar control.

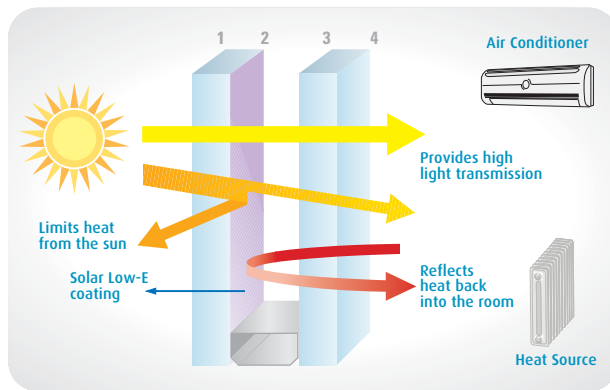


TRC Ecosol

HEAT AND SOLAR CONTROL GLASSES (SOLAR CONTROL & LOW-E COATED GLASS)

Description:

- TRC Ecosol is the trademark of solar control and Low-E coated glass of Trakya Cam.
- Heat and Solar Control Glasses (solar control and Low-E coated glass) are manufactured by depositing multi-layered metal/metal oxides on clear or body tinted float glass through "magnetically enhanced vacuum sputtering" technology.
- Reduce heating and cooling expenses by;
 - decreasing heat loss through the glass (from interior to exterior),
 - decreasing solar heat gains.
- Eliminates cold spots in winter and hot spots in summer close to windows.
- Reduce UV transmission which causes fabrics to fade.



- Should be incorporated into insulating glass unit.
- Must be assembled in an insulating glass unit with the coating facing inside (surface: 2) of the building.
- Toughening, heat strengthening, laminating and enamelling must be done prior to coating process.

HEAT AND SOLAR CONTROL COATING ON CLEAR FLOAT GLASS

Description:

- Has a neutral appearance close to clear float glass.
- Insulating glass unit incorporating TRC Ecosol reduces heat loss from windows by;
 - 80% compared to single glazing,
 - 60% compared to traditional insulating glass unit.
 Therefore effective heat insulation is provided and heating expenses are reduced.
- Provides 40% reduction in solar heat gain compared with traditional insulating glass unit. Therefore it keeps cooler in summer and cooling expenses are reduced.

Thickness and sizes:

Standard Thickness (mm)	Standard Sizes* (mm)
4 & 6	3210 x 2250
	3210 x 2500
	3210 x 6000

* The tolerances on nominal sizes are ± 5 mm.

In addition to above data for other thickness and size requests, please contact Trakya Cam.

Heat and solar control coating can be applied on different thicknesses of cut size toughened or heat strengthened clear float glass on project basis. Minimum available size is 500x1000 mm.

Performance Table:

Configuration	Daylight (EN 410)		Solar Energy (EN 410)					Thermal Conductivity (U value) W/m ² K (EN 673)			
	Transmittance %	Reflectance Outdoor %	Absorption %	Direct Transmittance %	Solar Factor	Shading Coefficient	12 mm		16 mm		
							Dry Air	Argon**	Dry Air	Argon**	
Clear Float + Clear Float	80	14	19	69	0.75	0.86	2.9	2.7	2.7	2.6	
Clear Float	78	14	26	62	0.71	0.82	2.8	2.7	2.7	2.6	
TRC Ecosol (#2) + Clear Float	71	10	32	40	0.44	0.51	1.6	1.3	1.3	1.1	
Clear Float	69	10	38	37	0.43	0.49	1.6	1.3	1.3	1.1	

** Gas filling rate 90%

Explanations about the table can be found on page 88.

HEAT AND SOLAR CONTROL COATING ON TRC HELIO® (BODY TINTED FLOAT GLASS)

- Heat and solar control coating (solar control & Low-E coating) can be applied on different thicknesses of cut size toughened or heat strengthened green, gray, bronze and blue body tinted float glasses on project basis.
- Heat and solar control coating (solar control & Low-E coating) is intended for all buildings especially non-residential buildings with curtain walls, which require solar control with low reflectance; for windows, spandrels, facade claddings and overhead glazing. However in buildings such as airports, houses, shop fronts where nighttime viewing is important, it offers best solutions.

Thickness and sizes:

On project basis, minimum available size for toughened or heat strengthened cut size heat and solar control coated Helio range is 500x1000 mm. Thickness and size tolerances are the same of the substrate glass.



Performance Table:

Configuration	Daylight (EN 410)		Solar Energy (EN 410)					Thermal Conductivity (U value) W/m ² K (EN 673)			
	Transmittance %	Reflectance Outdoor %	Reflectance Outdoor %	Absorption %	Direct Transmittance %	Solar Factor	Shading Coefficient	12 mm Air Space		16 mm Air Space	
								Dry Air	Argon**	Dry Air	Argon**
Insulating Glass Unit with TRC Ecosol + Clear Float (6+6)											
TRC Ecosol on Clear Float + Clear Float	69	10	25	38	37	0.43	0.49	1.6	1.3	1.3	1.1
TRC Ecosol on Green Float + Clear Float	56	8	8	67	25	0.32	0.37	1.6	1.3	1.3	1.1
TRC Ecosol on Gray Float + Clear Float	35	5	13	66	21	0.28	0.32	1.6	1.3	1.3	1.1
TRC Ecosol on Bronze Float + Clear Float	40	6	14	64	22	0.29	0.33	1.6	1.3	1.3	1.1
TRC Ecosol on Blue Float + Clear Float	44	6	8	69	23	0.30	0.34	1.6	1.3	1.3	1.1

* Heat and Solar Coating is on the 3rd surface.

** Gas filling rate 90%

Explanations about the table can be found on page 88.

Quality:

TRC Ecosol is manufactured in accordance with EN 1096 Glass in building - Coated glass.

Processing:

http://www.trakyacam.com.tr/Mimari_Camlar/en/isi_gunes_kontrol_isleme.htm

CE:

http://www.trakyacam.com.tr/CE/index_eng.htm



SAFETY AND SECURITY GLASSES

SAFETY AND SECURITY GLASSES

- Glass is a fragile material and has low resistance to impact. By increasing the thickness of glass its resistance improves but risks associated with the fragility can not be prevented.
- By applying secondary processes to glass, safety and security can be provided where risks associated with broken glass can be reduced and people and goods can be protected against accidental impacts or attacks.
- Referring to glazing terms, safety means reducing the risk of injury associated with broken glass by accidental impact. Glass used in interior applications should be toughened or laminated in order to reduce the risk of injuries caused by broken glass.
- The term "security" is related to the protection of people and goods against attacks from outside. Glasses to be used for this purpose have to be laminated.
- Safety and security performances of glass are determined in accordance to the test methods specified in standards EN 12600 and EN 356:
 - EN 12600 determines the classification for flat glass products by resistance to impact and breakage characteristics.
 - EN 356 defines the classification of flat glass products by resistance against manual attack.
- TRC Duracam is the brand name for safety glass and TRC Lameks is the brand name for safety and security glasses of Trakya Cam.
- TRC Duracam and TRC Lameks should be used in critical locations mentioned below to avoid injuries that might be caused by glass breakage:
 - Low level glazing within 80 cm of floor level,
 - Glazing from floor level to ceiling (without any frame in between),
 - Glazing in doors and glazing adjacent to doors as well,
 - Overhead glazing.

TRC Duracam®

TOUGHENED (TEMPERED) SAFETY GLASS

Description:

- TRC Duracam is the brand name of the thermally toughened safety glass of Trakya Cam.
- Toughening process,
 - involves heating and cooling treatment whereby high compressive stresses are set up at the surfaces with balancing tensile stresses in the center,
 - improves the glass strength against impact and thermal stress loads,
 - keeps the original volume, chemical composition, color and clarity of the glass.
- Approximately five times stronger than annealed glass against impact.
- Appropriate for using as safety glass because it shatters into small, blunt edged fragments, which reduce the risk of injury.
- Recommended to be used in balustrades, doors, shower cabins, partitions, furniture, city furniture, home appliances and also as sidelites and backlites of vehicles.
- Impact resistance of TRC Duracam differs regarding to thickness of glass, for determination of impact resistance categories according to EN 12600 please refer to CE marking-declaration of performances at http://www.trakyacam.com.tr/CE/index_eng.htm.



Thickness and sizes:

Standard Thickness (mm)	Minimum Sizes (mm)	Maximum Sizes (mm)
3	350 x 110	2000 x 900
4 & 5 (seaming)	350 x 180	2500 x 2400
6 - 19 (seaming)	350 x 180	4900 x 2400
4 & 5 (grinding)	350 x 110	2500 x 2400
6 - 19 (grinding)	450 x 300	4500 x 2400

Quality:

TRC Duracam is produced in accordance with EN 12150 Glass in building - Thermally toughened soda lime silicate safety glass.

Processing:

http://www.trakyacam.com.tr/Mimari_Camlar/en/duracam_isleme.htm

CE:

http://www.trakyacam.com.tr/CE/index_eng.htm

TRC Lameks®

LAMINATED SAFETY AND SECURITY GLASS

Description:

- TRC Lameks is the trademark of laminated glass of Trakya Cam.
- Produced by combining two or more panes of glass with polyvinyl butyral (PVB) interlayer(s).
- When broken, keeps splinters in place therefore minimizes the risks of injury caused by broken glass.
- Besides preventing injuries related to accidental impact, TRC Lameks can be used to protect people and goods against external manual attacks with tools such as stone and stick. Laminated safety glasses prevent or delay break-ins depending on the thickness of PVB and glass and the extent of the attack.
- Provides noise control.
- UV radiation, which causes fabrics to fade, can be reduced up to 97% by using TRC Lameks.
- Can be incorporated into insulating glass unit.
- Recommended to be used in external and internal applications including shop windows, over head glazing, canopies, balustrades, internal partitions, passageways with busy pedestrian traffic, museums, banks, hospitals, schools, kindergartens, police stations, military institutions, facilities and sport centers.
- Impact and manual attack resistance of TRC Lameks differs regarding not only to the thickness of glass panes and PVB interlayers, but also the number of panes and PVB interlayers. For determination of impact resistance according to EN 12600 and manual attack resistance according to EN 356 please refer to CE marking declaration of performances at http://www.trakyacam.com.tr/CE/index_eng.htm.



Thickness and sizes:

	PVB Thickness (mm)	Glass Thickness (mm)	Standard* Sizes (mm)	Tolerance on Thickness (mm)
Clear	0,38 0,76	3+3	3210 x 2250 3210 x 2500 3210 x 6000	± 0,4
	0,38 0,76	4+4	3210 x 2250 3210 x 2500 3210 x 6000	± 0,4
	0,38 0,76	5+5	3210 x 2250 3210 x 2500 3210 x 6000	± 0,4
	0,38 0,76	6+6	3210 x 2250 3210 x 2500 3210 x 6000	± 0,4
Opaque (milky translucent)	0,38	4+4	3210 x 2500 3210 x 6000	± 0,4
	0,38	5+5	3210 x 2500 3210 x 6000	± 0,4

* Tolerance on size, = < 8 mm +5, -3;
8 - 10 mm +6, -4;
10 mm > +8, -6

- Standard TRC Lameks is available with clear or opaque PVB interlayer.
- TRC Lameks can be produced by combining different colors and thicknesses of glass and PVB interlayer to meet special requirements.

Quality:

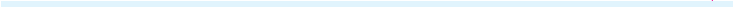
TRC Lameks is produced in accordance with EN ISO 12543/1-6 Glass in building - Laminated glass and laminated safety glass standards.

Processing:

http://www.trakyacam.com.tr/Mimari_Camlar/en/lameks_isleme.htm

CE:

http://www.trakyacam.com.tr/CE/index_eng.htm



**NOISE
CONTROL GLASSES**

**NOISE
CONTROL GLASSES**

NOISE CONTROL GLASSES

- Noise control glass reduces the noise entering into the living spaces.
- In addition, using different thicknesses of glass or using one of the panes as TRC Lameks in an insulating glass unit contribute to noise control, too.
- Acoustic laminated glasses of Trakya Cam offer better sound insulation for places where there is excessively high levels of noise.
- Transforming high level of outside noise into the tranquility of a library is possible with the acoustic laminated glasses along with similarly rated wall, roof and framework materials.



NOISE CONTROL GLASSES

Description:

- Acoustic laminated glasses are produced by combining two panes of glass with a sound absorbing polyvinyl butyral (PVB) interlayer under heat and pressure.
- Can be used as single glazing or in an insulating glass unit to improve sound insulation performance of a window.
- When combined with different types of glasses in an insulating glass unit, sound insulation performance is improved and solar control, heat control properties can be provided as well.
- Besides providing sound insulation, acoustic laminated glasses offer safety and security properties of TRC Lameks.

Quality:

Noise Control Glasses are produced in accordance with EN ISO 12543 Glass in building - Laminated glass and laminated safety glass and EN 1279 Glass in building - Insulating glass units.

Processing:

http://www.trakyacam.com.tr/Mimari_Camlar/en/gurultu_k_isleme.htm

CE:

http://www.trakyacam.com.tr/CE/index_eng.htm

Performance Table:

Product Code		Thickness and Air Space Information (mm)	Noise Insulation Values R_w (dB)	Nominal Weight Kg/m^2
TRC Lameks	A 3507	3+0,76 A+3	35	15
	A 3609	4+0,76 A+4	36	20
	A 3711	5+0,76 A+5	37	25
	A 3913	6+0,76 A+6	39	30

Insulating Glass Unit	A 3623	(3+0,76 A+3)+12+4	36	25
	A 3625	(3+0,76 A+3)+12+6	36	30
	A 3725	(4+0,76 A+4)+12+4	37	30
	A 3729	(4+0,76 A+4)+16+4	37	30
	A 3827	(4+0,76 A+4)+12+6	38	35
	A 3831	(4+0,76 A+4)+16+6	38	35
	A 4028	(4+0,76 A+4)+12+(3+0,76 A+3)	40	35
	A 4130	(4+0,76 A+4)+12+(4+0,76 A+4)	41	40
	A 4135	(5+0,76 A+5)+16+8	41	45
	A 4235	(4+0,76 A+4)+16+10	42	45
	A 4332	(5+0,76 A+5)+12+(4+0,76 A+4)	43	45
	A 4339	(6+0,76 A+6)+16+10	43	55

* A: Defines Trakya Cam laminated glass TRC Lameks with acoustic interlayer.

* TRC Lameks with 1230 x 1480 mm dimensions are tested and approved in accordance with EN ISO 717-1.

* Tests have been performed by TNO Quality Services BV, organization approved by European Union (EU).

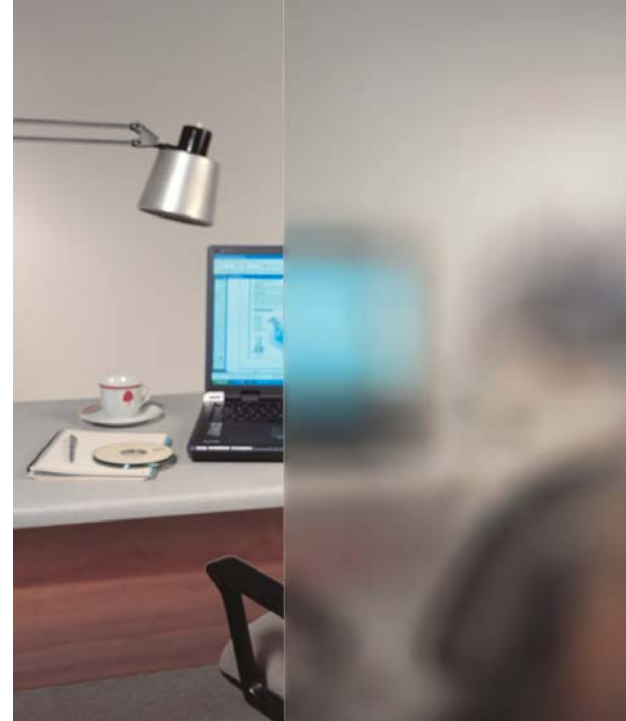


**DECORATIVE
GLASSES**

**DECORATIVE
GLASSES**

DECORATIVE GLASSES

Trakya Cam offers a wide range both for designers and users in creating aesthetical and elegant places by its decorative products comprising patterned glass, wired patterned glass, mirror and varnished glass.



TRC Flotal®

MIRROR

Description:

- TRC Flotal is the trademark of mirror of Trakya Cam.
- An ideal product for interior design. Due to its reflectivity, it enhances the interior spaces by illuminating and enlarging.
- Integrating with contemporary architecture, TRC Flotal offers aesthetics, light and spaciousness to interior applications. When used creatively it provides a new perspective to tight and awkwardly shaped rooms.
- Float glass of Trakya Cam is converted to TRC Flotal by using the world's most advanced technology. Float glass is washed, polished, silver coated, copper coated, two layers painted and dried at the full automatic mirror production line to produce TRC Flotal.
- Offers new perspectives for the interior through applications in bathrooms, bedrooms, kitchens, stores, sport centers, exhibition centers and kindergartens.
- Safety mirror TRC Flotal S (see page 76) should be used at places with busy pedestrian traffic, overhead applications and applications up to 80 cm above floor level where safety is a requirement.
- TRC Flotal is available in clear, bronze, gray, blue and green colors.



Thickness and sizes:

Product	Standard Thickness (mm)	Standard Sizes* (mm)	Tolerance on Thickness (mm)
TRC Flotal Clear	3	2500 x 1605 3210 x 2100 3210 x 2250 3210 x 2500	± 0,2
TRC Flotal Clear	4	2500 x 1605 3210 x 2100 3210 x 2250 3210 x 2500	± 0,2
TRC Flotal Clear	5	3210 x 2500	± 0,2
TRC Flotal Clear	6	3210 x 2500	± 0,2

*The tolerances on nominal sizes are ± 5 mm.

The data above is also valid for bronze, gray, blue and green colors of TRC Flotal mirror.

In addition to above data for other thickness and size requests, please contact Trakya Cam.

Quality:

TRC Flotal is produced in accordance with EN 1036-1 Glass in building - Mirrors from silver-coated float glass for internal use - Part 1.

Processing:

http://www.trakyacam.com.tr/Mimari_Camlar/en/flotal_ayna_isleme.htm

CE:

<http://www.trakyacam.com.tr/CE/>

TRC Flotal S®

SAFETY MIRROR

Description:

- TRC Flotal S is the trademark of safety mirror of Trakya Cam.
- The backside of TRC Flotal S is coated with a special material to prevent shattering when subjected to impact.
- Offers an advantage for applications in places where safety is a requirement.
- Should be used at places such as sport centers, dance and beauty centers, discotheques, kindergartens, schools, hotel lobbies, theater & cinema lobbies and shopping centers with busy pedestrian traffic and also overhead applications, applications up to 80 cm above floor level where safety is a requirement.

Thickness and sizes:

Available in 3, 4, 5 and 6 mm thickness, and is produced between minimum 300 x 150 mm and maximum 1200 x 3000 mm on project basis.

Processing:

http://www.trakyacam.com.tr/Mimari_Camlar/en/flotal_s_isleme.htm



PATTERNED GLASSES

Description:

- Patterned Glass is manufactured through a continuous rolling process where molten glass is allowed to flow between two rollers, one with relief patterns.
- Used for decorative purposes.
- Available in clear in various patterns.
- The depth and texture of the pattern specifies transparency and privacy.
- Should be toughened where safety is a requirement.
- For better heat insulation, patterned glasses can be incorporated into insulating glass units.

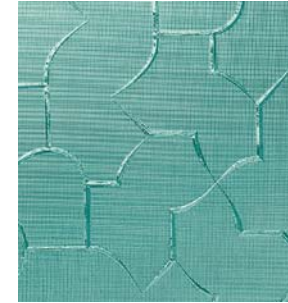
CLASSIC PATTERNED GLASSES

Description:

- Can be used in areas such as kitchen-bathroom cabinet doors, partitions, internal doors, shower cabins and shelves.
- Classic Patterned Glasses are also used at the social and industrial buildings, in balconies and balustrades.



Mandarin



Nature



Knot

Thickness and sizes:

Classic Patterned Glasses are manufactured in 4 mm standard thickness and at a maximum size of 3210 by 2200 mm.

In addition to above data for other thickness and size requests, please contact Trakya Cam.

The tolerances on nominal sizes are ± 3 mm. The tolerance for 4 mm thickness is $\pm 0,5$ mm.

Quality:

Classic Patterned Glasses are manufactured in accordance with EN 572-5 Glass in building - Basic soda lime silicate glass products - Part 5: Patterned glass.

Processing:

http://www.trakyacam.com.tr/Mimari_Camlar/en/klasik_buzlu_isleme.htm

CE:

http://www.trakyacam.com.tr/CE/index_eng.htm

TRC Elit Glass

Description:

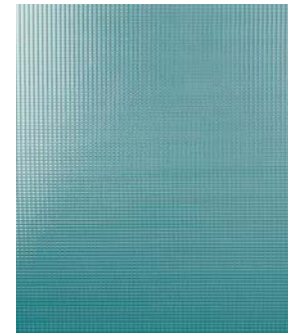
- TRC Elit Glass series inspires the designer and the user with its aesthetic appearance.
- Can be used in areas such as internal doors, shower cabins, table tops, shelves and partitions.
- TRC Elit Glass is also used at social and industrial buildings, in balconies and balustrades.



Elit Square



Elit Line



Elit Tulle



Elit Pine

Thickness and sizes:

TRC Elit Glass series is manufactured at a maximum size of 3210 by 2200 mm and 4 & 6 mm standard thickness. TRC Elit Glass series are also available in 8 mm thickness upon request. The tolerances on nominal sizes are ± 3 mm. The tolerance for 4 mm thickness is $\pm 0,5$ mm.

Quality:

TRC Elit Glass series is manufactured in accordance with EN 572-5 Glass in building - Basic soda lime silicate glass products - Part 5: Patterned glass.

Processing:

http://www.trakyacam.com.tr/Mimari_Camlar/en/elit_isleme.htm

CE:

http://www.trakyacam.com.tr/CE/index_eng.htm

WIRED PATTERNED GLASS

Description:

- Wired Patterned Glass is produced by a continuous rolling process, where a steel wire mesh is embedded into molten glass.
- The metal mesh keeps the glass in place when the glass is broken.
- Can be used in areas such as interior and exterior doors of plants, hospitals and record offices, elevators, balconies and shelves.



Thickness and sizes:

Wired glass is manufactured at a maximum size of 3210 by 2000 mm and 6 mm standard thickness. Tolerance on thickness is $\pm 0,6$ mm. The tolerances on nominal sizes are ± 4 mm.

Quality:

Wired Patterned Glass is manufactured in accordance with EN 572-6 Glass in building - Basic soda lime silicate glass products - Part 6: Wired patterned glass.

Processing:

http://www.trakyacam.com.tr/Mimari_Camlar/en/telli_buzlu_isleme.htm

CE:

http://www.trakyacam.com.tr/CE/index_eng.htm

TRC Rainbow

VARNISHED GLASS

Description:

- TRC Rainbow is the trademark of decorative varnished glass of Trakya Cam.
- Produced by applying high quality paint on float glass surface.
- An environmentally friendly product, since the paints used during the production process contains no heavy metals or chemicals that might be harmful to the environment.
- Application areas are;
 - furniture,
 - partitions,
 - wall claddings,
 - cupboardsin residences, offices, stores, hotels and restaurants.
- The painted side of the glass should be applied on a surface.
- A polypropylene film can be applied to the varnished side where safety is a requirement.
- Can be edgeworked and drilled.
- TRC Rainbow cannot be toughened or laminated.
- The painted side of the glass should not contact with water.
- With various colors available on request, (min:1000 m²) offers aesthetic solutions for interior applications.

Colors:



Black/ Ral 9005



White/ Ral 9010



Chocolate Brown/ Ral 8017



Beige/ Ral 0478



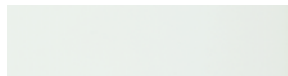
Black Brown/ Ral 8022



Orange/ Ral 2001



Dark Red/ Ral 3004



Satinated

Some of the colors shown in this catalog may differ from the actual color because of the printing technique. Therefore please compare your choice with a Rainbow sample.

Thickness and sizes:

Product	RAL	Standard Thickness (mm)	Standard Sizes (mm)
TRC Rainbow Black	9005	4 & 6	3210 x 2250 3210 x 2500
TRC Rainbow White	9010		
TRC Rainbow Chocolate Brown	8017		
TRC Rainbow Black Brown	8022		
TRC Rainbow Beige	0478		
TRC Rainbow Orange	2001		
TRC Rainbow Dark Red	3004		
TRC Rainbow Satinated	-		

Thickness and size tolerances are the same of the float glass.

Processing:

Processing and Installation Guide for Rainbow

http://www.trakyacam.com.tr/Mimari_Camlar/en/images/urunler/gokkusagi/pdf/gokkusagi_isleme.pdf

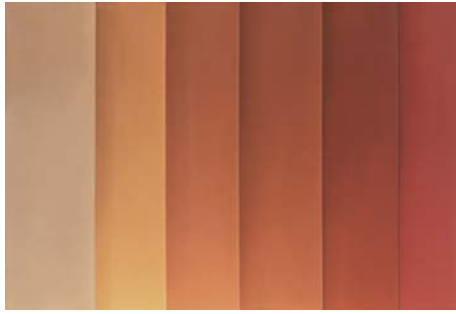


TRC Emaye Duracam®

ENAMELLED TOUGHENED (TEMPERED) GLASS

Description:

- TRC Emaye Duracam is produced by applying various colors of enamelled coating onto one side of clear or tinted glass by screen/roller printing through toughening process.
- TRC Emaye Duracam is intended for wall cladding, shower cabins, doors and partitions.



Thickness and sizes:

	Standard Thickness (mm)	Minimum Sizes (mm)	Maximum Sizes (mm)
TRC Emaye Duracam Single print	3	350 x 150	2000 x 900
	4 & 5	350 x 150	2500 x 2400
	6 - 19	500 x 400	4500 x 2000
TRC Emaye Duracam Multiple print	3	350 x 150	2000 x 900
	4 & 5	350 x 150	2500 x 2400
	6 - 19	350 x 150	4500 x 2000

Quality:

TRC Emaye Duracam is produced in accordance with EN 12150 Glass in building- Thermally toughened soda lime silicate safety glass.

Processing:

http://www.trakyacam.com.tr/Mimari_Camlar/en/duracam_emaye_isleme.htm

CE:

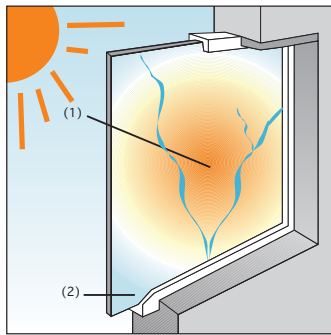
http://www.trakyacam.com.tr/CE/index_eng.htm

THERMAL BREAKAGE RISKS

All glass reacts to the solar radiant heat in three ways.

Some energy is directly transmitted; some is reflected and the remaining is absorbed which later is dissipated into the interior and to the exterior.

The absorbed portion of the energy heats the glass which results in a tendency for expansion, while the shaded parts tend to lag behind in expansion. It is this difference of tendencies to expand, which over certain limits, cause spontaneous glass breakages due to thermal stress.



1- Glass center exposed to direct sunlight with tendencies to expand

2- Glass edges masked by the frame, opposing rapid expansion of the glass center by assuming a compensating tension.

Single panes and insulating glass units comprising solar control glass (tinted or reflective solar control glass) and laminated glass which incorporate tinted or coated glass and thick configurations such as multi-layered laminated glass are more vulnerable to thermal risks.

Solar control films, opacifying films and posters applied on glass surface have an increasing effect on the absorbed portion of solar energy and therefore rising thermal breakage risks. Also dark colored curtains and Venetian blinds positioned close to glass surface may increase the thermal breakage probability.

In cases where thermal breakage risks are high, one way to prevent thermal breakage risks is to change the environmental conditions influencing the development of thermal stress; and the other is to apply toughening or heat strengthening to the glasses.

Heat strengthening

Heat strengthening is another form of heat treatment, which offers sufficient strength to overcome thermal stress loads. Heat strengthened glass with less surface compression is produced in the same furnace as toughened glass. It is approximately two times stronger than annealed glass and because it breaks into larger pieces it is not classified as safety glass. Heat strengthening is a useful treatment for vision and spandrel panels of curtain walls, because probability of spontaneous breakage is much less with heat strengthened glass when compared with toughened glass.

EXPLANATIONS

- **Daylight Transmittance (%)**: The ratio of the visible spectrum (light) that is transmitted through glass.
- **Daylight Reflectance (outdoor) (%)**: The ratio of the visible spectrum (light) that is reflected outside by glass.
- **Solar Factor**: The percentage of total solar radiant heat energy entering the room through the glass. The lower solar factor means better solar control.
- **Shading Coefficient**: The ratio of solar factor of a particular glass type to the solar factor of 3 mm clear float glass, set in identical conditions. The lower shading coefficient means better solar control.
- **U value (W/m²K)**: A measure of the rate of heat loss of a building component. The lower U value means better heat control and more comfort in winter.

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