GUARDIAN

Glass • Automotive • Building Products

Sticla pentru ferestre si usi

GUARDIAN

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Definitii importante

Transmisie luminoasa T_L:

Raportul dintre fluxul luminos transmis prin sticla si fluxul luminos incident definit de CIE D65 (distributie spectrala) cuprinsa intre 380 si 780[nm]

FACTOR SOLAR sau energia totala transmisa (g):

Procentul fluxului total de energie solara care intra prin sticla si fluxul de energie solara incidenta

Selectivitatea S:

Raportul dintre transmisia luminoasa TL si factorul solar g

Coeficientul de transfer termic (U_g):

Suma termica in Wati transmisa pe ora prin 1[mp] de perete (geam) cu o diferenta de 1 [grad Kelvin] intre interior si exterior [W/mpK]

GUARDIAN CLIMAGUARD® SOLAR
KOMFORT ÉS ENERGIAMEGTAKARÍTÁS TÉLEN-NYÁRON

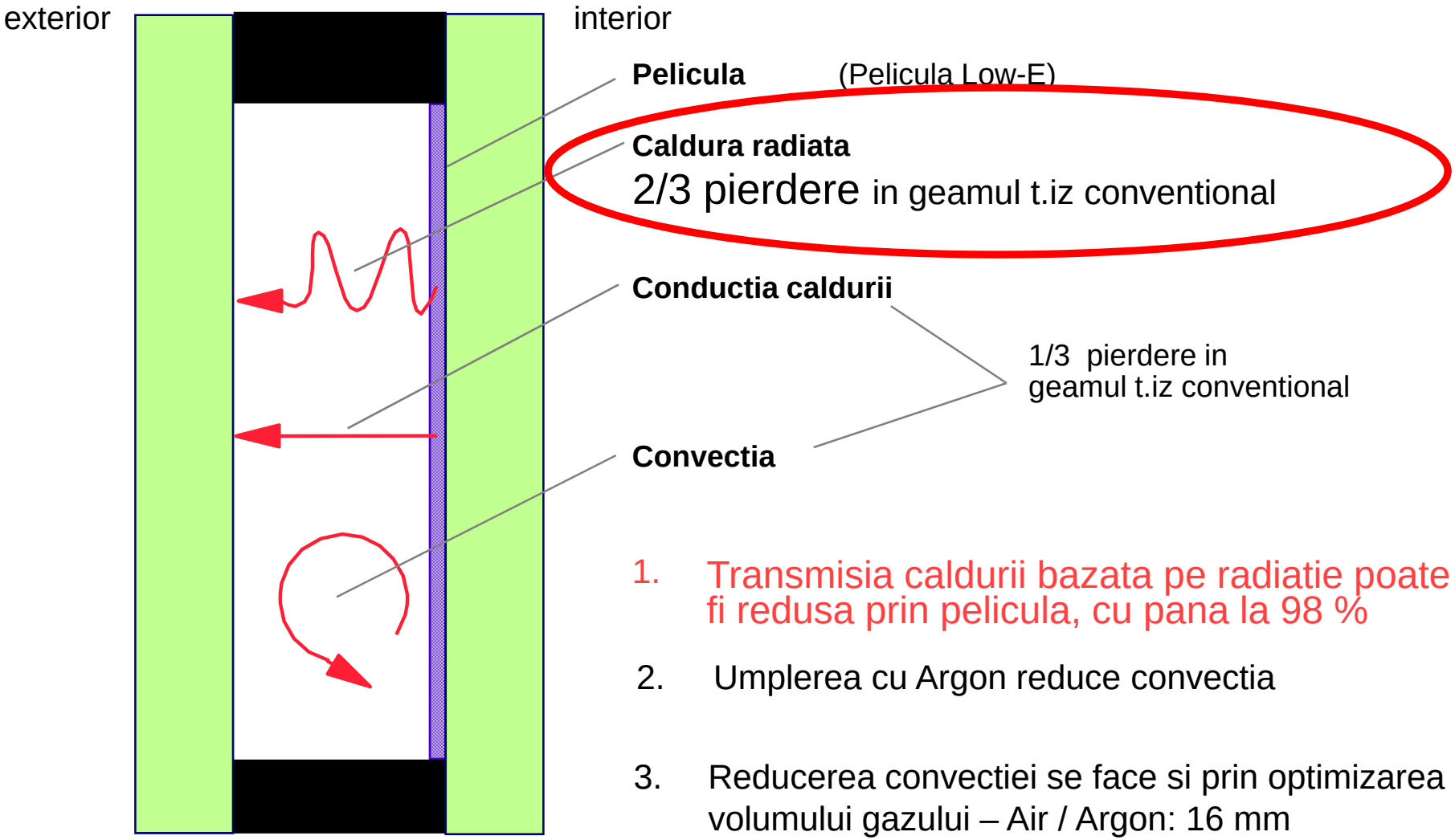
Obtinerea unui coeficient U_g- nu este totul!

Noua solutie pentru controlul solar al ferestrelor rezidentiale.

ClimaGuard® Solar

GUARDIAN CLIMAGUARD®
RESIDENTIAL GLASS INNOVATION

Transferul termic in geamul termoizolant



1. Transmisia caldurii bazata pe radiatie poate fi redusa prin pelicula, cu pana la 98 %
2. Umplerea cu Argon reduce convectia
3. Reducerea convectiei se face si prin optimizarea volumului gazului – Air / Argon: 16 mm

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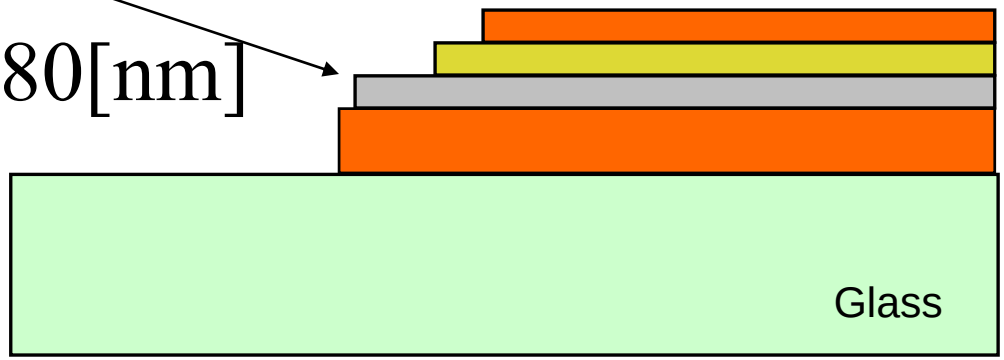
Pelicula Low-e

- Low-emissivity
  - E.g.: Guardian ClimaGuard® Neutral sau -Premium
- Tehnologie de pulverizare in vid („Magnetron”)
- Straturi succesive de metale, oxizi metalici si nitriti

  -Stratul functional este **Argintul**
- Grosimea totala = cca.80[nm]

  (de 2500 ori mai subtire decat un fir de par)



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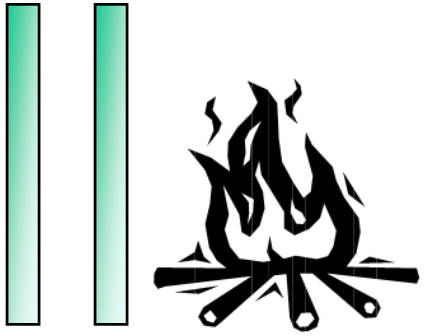
Geam simplu

$U_g = 5.8\ W/m^2K$

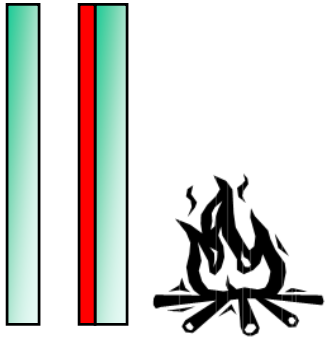
Geam termoizolant simplu



$U_g = 2.7\ W/m^2K$

Pierderea caldurii scade cu cca. 50 %

ClimaGuard N



$U_g = 1.2\ W/m^2K$

Pierderea caldurii scade cu mai mult de

80 % !

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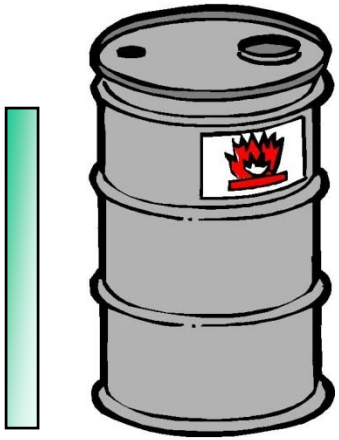
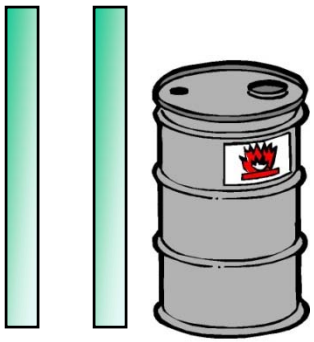
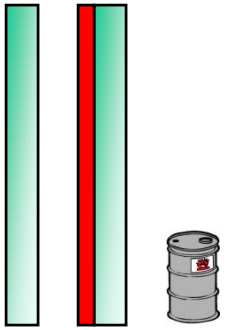
Geam simplu



Geam termoizolant simplu



ClimaGuard N



Economie de energie:
750 l combustibil/an.

Economie:
1.200 l
combustibil/an.

1 combustib=1,2 m³ gaz=10 kWh

Referinta: Casa standard europeana (Nord: 5 m², Est+Vest: 10 m², Sud: 10 m²)

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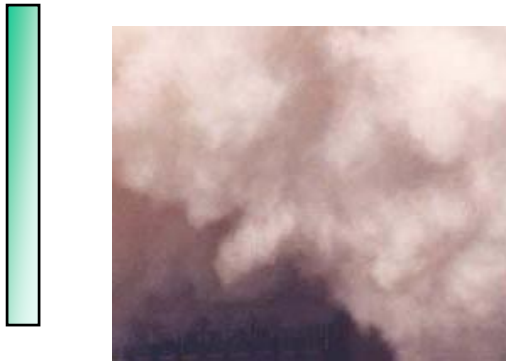
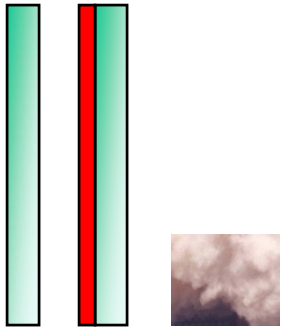
RESIDENTIAL GLASS INNOVATION

Geam simplu



Geam termoizolant simplu

ClimaGuard N



Reducerea poluarii:

2 t CO_2

2,5 kg SO_2

2 kg NO_X

3,5 t CO_2

4 kg SO_2

3,5 kg NO_X

Referinta: Casa standard europeana (Nord: 5 m², Est+Vest: 10 m², Sud: 10 m²)

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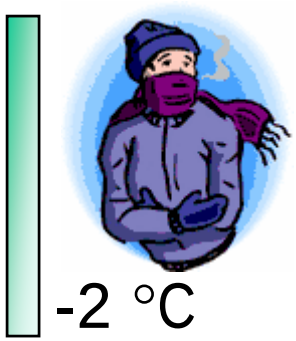
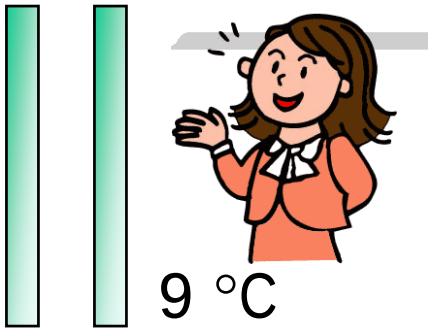
Geam simplu



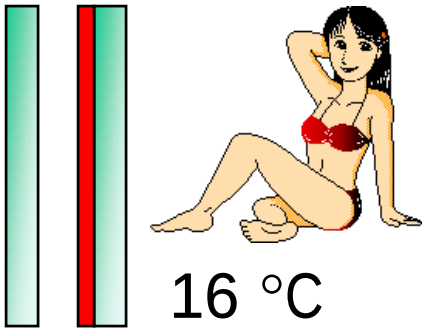
-2 °C

Geam termoizolant simplu



9 °C

ClimaGuard N



16 °C

- Temperatura mai ridicata la interior!
- Curent de aer rece redus
- Risc scazut de condens

Confort sporit !

Temperatura exterioara: -10 °C
Temperatura incaperii: +20 °C

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RESIDENTIAL GLASS INNOVATION

Dar ce facem vara?

- Verile toride sunt specifice si Romaniei
- Caldura este deseori de nesuportat in apartamente, case
- Aparatele de aer conditionat sunt tot mai raspindite
- Racirea cu 1° necesita mult mai multa energie decat incalzirea cu 1°(randament scazut)
- Scopul este sa pastram afara energia solara. Cum?
  - Umbrare, perdele => mai putina lumina naturala 
  - **Folosind sticla cu pelicula de control solar** 

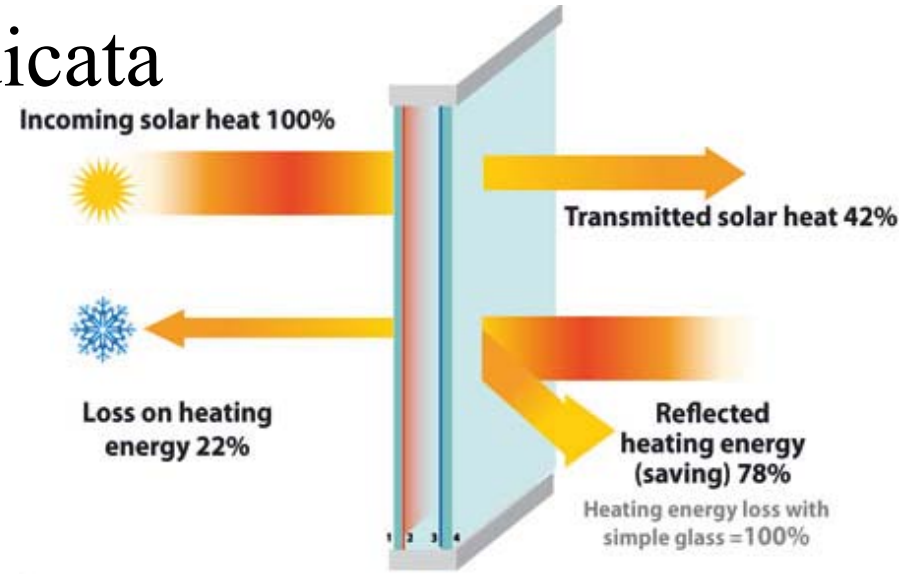
GUARDIAN CLIMAGUARD® SOLAR

COMFORT AND ENERGY SAVING ALL YEAR ROUND

GUARDIAN CLIMAGUARD® SOLAR
COMFORT AND ENERGY SAVING ALL YEAR ROUND

ClimaGuard® Solar

- Conceput special pentru ferestrele rezidentiale
- Protectie solara excelenta: g=42%
- Izolare termica pronuntata: U_g=1,1 W/m^{2}K
- Sticla „rezidentiala multifunctionala”
- Transmisie luminoasa ridicata
- Aspect color -neutru
- Made in Orosháza
- Pret competitiv



GUARDIAN CLIMAGUARD® SOLAR
COMFORT AND ENERGY SAVING ALL YEAR ROUND

Comparatie:

ClimaGuard® Neutral si ClimaGuard® Solar

- [4 mm]_[16 mm cu 90% Argon]_[4 mm]

	ClimaGuard Neutral	ClimaGuard Solar
Factor Solar (g)	66%	42%
Factor - U_g	1,2 W/m^2K	1,1 W/m^2K
Transmisia lumin.	80%	66%
Pozitia peliculei	3	2

Ce este sticla de control solar ?

- Sticla de control solar protejeaza interiorul de energia solara nedorita provenita din exterior

- Doi factori sunt responsabili de reducerea transmisiei energetice:

Absorbtia	Reflexia
O parte din energia solara este absorbita de sticla care se incalzeste =>Temperatura sticlei creste si o mare parte din energie este eliberata prin convectie	Cea mai mare parte din energia solara este reflectata in exterior datorita peliculei ḍepuse pe suprafata sticlei

Tipuri de pelicule

Depunere chimica

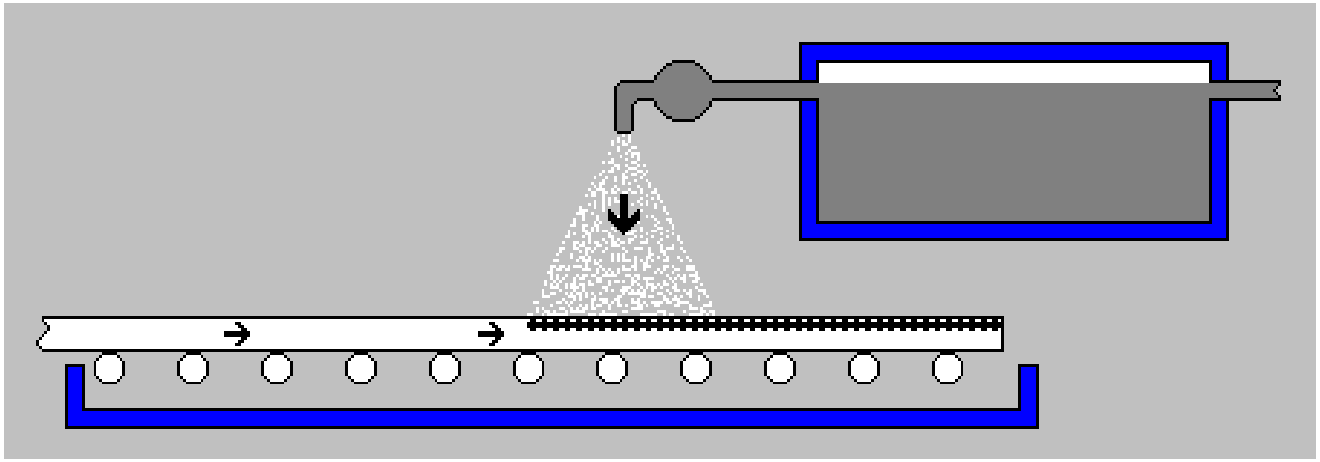
- Proces pirolitic
- Proces prin imersie

Depunere fizica

- Proces Vacuum
  (Pelicula magnetronica)

Procesul pirolitic

sprayere – in timpul procesului de productie al sticlei



- pelicula durabila
- strat unic de oxizi metalici
- performante tehnice limitate

Glaverbel	St. Gobain	Pilkington
Stopsol Sunergy	ANTELIO EKO-Plus	K Glass Eclipse

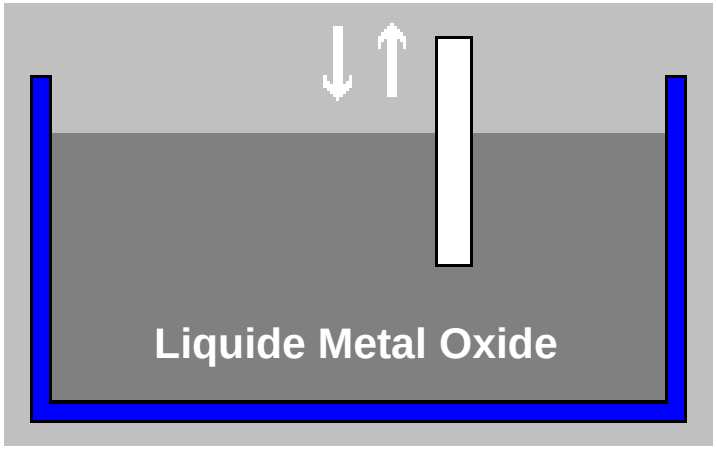
Imersie

Tehnologie:

Se foloseste un proces special de „scufundare“ pentru a depune pe sticla straturi de oxizi metalici

Acestea sunt ulterior arse in compozitia sticlei.

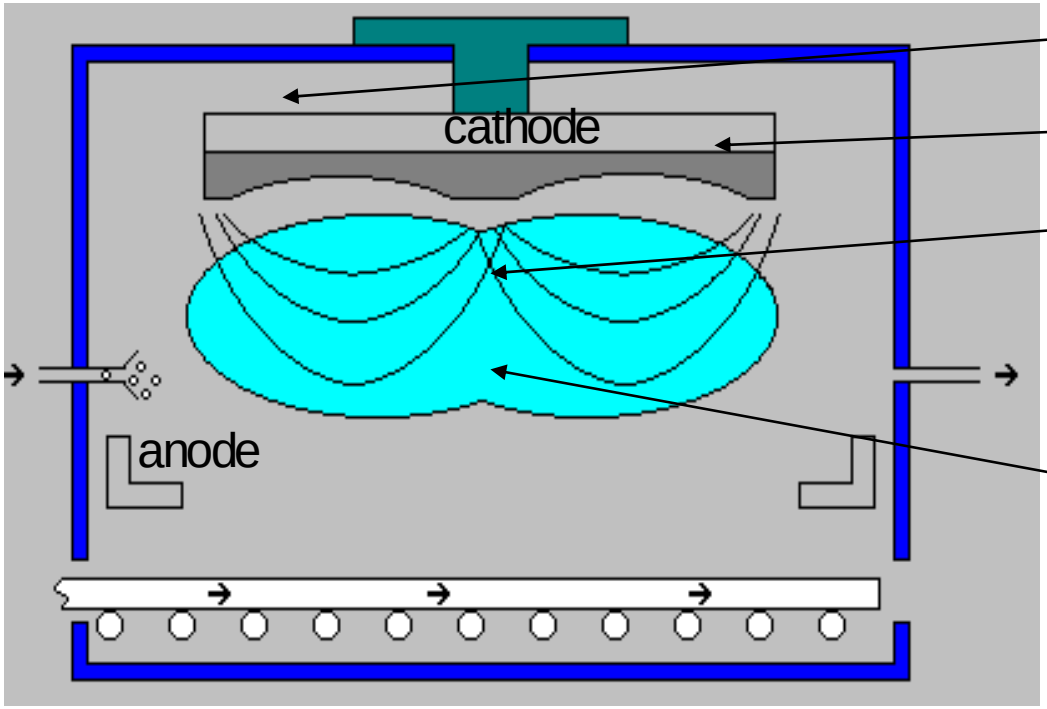
Pelicula este depusa pe ambele fete



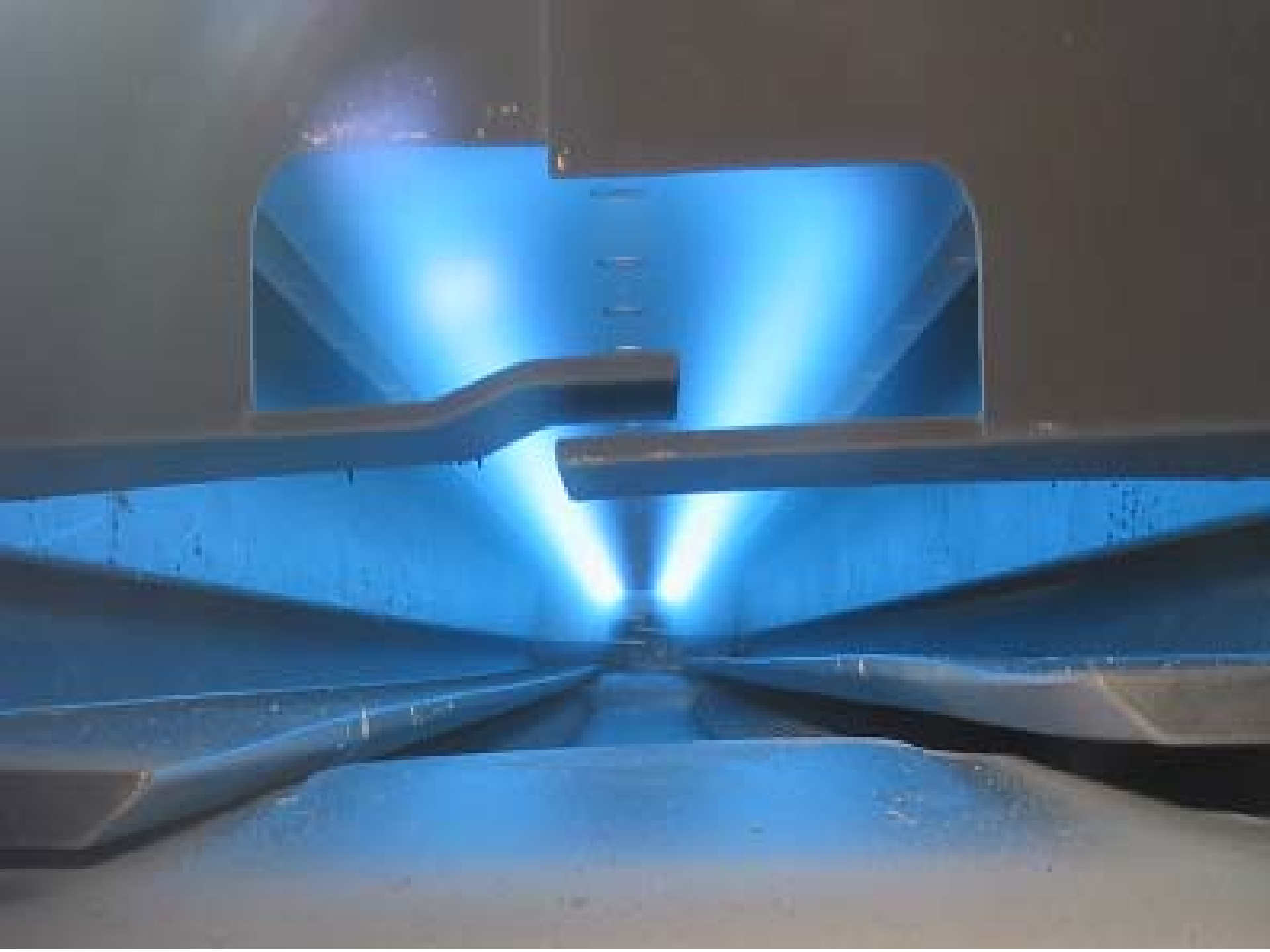
Fabricant: SCHOTT

Produse: Calorex (sticla de control solar)
Amiran (sticla anti reflexiva)

Proces cu Vacuum (Sputerizare magnetronica)



- diverse straturi de metale sau oxizi metalici
- pot fi neutre sau colorate
- performante tehnice ridicate
- pelicule extrem de subtiri si sensibile



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COMFORT AND ENERGY SAVING ALL YEAR ROUND

Exemple de economii anuale

- In cazul unei locuinte medii
  - Orientare mixta
  - 7 m^2 suprafata vitrata
  - ΔT: Iarna: –15°C, Vara: 10°C
  - Radiatia medie: Iarna: 270 W/m^2, Vara 400 W/m^2
  - 75% eficienta incalzirii, 25% eficienta racirii
- Rezultat:
  - **Economii anuale de 1233 kWh** comparativ cu un geam t.iz simplu (float+float)
  - PLUS o economie anuala de **584 kWh**, comparativ cu geamul t.iz cu Low-E normal.
- Si daca nu am aer conditionat?
  - Temperatura suprafetei interioare a geamului este mai mica cu 4-5 grade => **confort sporit**


Tame the weather

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COMFORT AND ENERGY SAVING ALL YEAR ROUND

g: 42% Ug: 1,1 W/(m²K)