

#		Title	Publication number	1st app. date	Applicant/Assignee	
1.		A roll-type composite sheet with	KR100874689	2008-09-08	DOO SUNG INDUSTRY*	100 %

Figure 1 is a schematic diagram of the structure of the Ag/AgCl-coated glass electrode. It shows a cross-section of the electrode with various layers. The layers are labeled with their respective thicknesses in micrometers (μm) on the right side. From top to bottom, the layers are: Optional Overcoat (16 μm), DetectroX (13 μm), Barrier 2 (12 μm), Barrier 1 (10 μm), Ag and/or Ag alloy (9 μm), Barrier 2 (8 μm), Barrier 1 (6 μm), DetectroX (3.5 μm), and a hatched base layer (1 μm). A vertical bracket on the left side indicates a total thickness of 50 μm for the layers from the Optional Overcoat down to the hatched base layer.

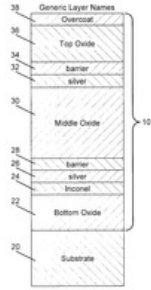
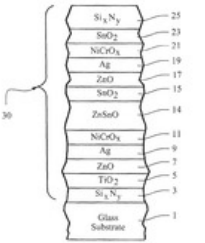
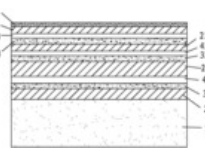
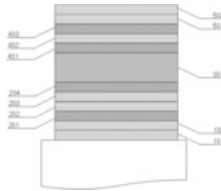
Layer	Thickness (units)
Optional Overcoat	16
Dielectric(s)	13
$\text{Nb}_2\text{O}_5/\text{MgO}$ alloy	9
Dielectric(s)	3.5
Substrate	1
Total (Dielectric + Alloy)	100

	Thymidine (pmol)
21	24.4
20	19.8
19	15.5
18	15.6
17	15.2
16	27
15	25.4
14	1.9
13	12.7
12	12.5
11	24
10	12.5
9	20.2
8	1.9
7	13.2
6	10.5
5	11.6
4	12.6
3	10.9
2	10.9
1	12.0
0	1.9

Label	RET
Final concentration	5.00

Layer Number	Material
16	Optional Overcoat
15	Di-electric
14	Optional Overcoat
13	Di-electric
12	Optional Overcoat
11	Di-electric
10	Ni ₄ Cr ₃ Mg alloy (C22 or BC1 or B2)
9	Di-electric
8	Ni ₄ Cr ₃ Mg alloy (C22 or BC1 or B2)
7	Di-electric
6	Ni ₄ Cr ₃ Mg alloy (C22 or BC1 or B2)
5	Di-electric
4	Ag and/or Ag alloy
3	Ni ₄ Cr ₃ Mg alloy (C22 or BC1 or B2)
2	Di-electric
1	Substrate

35	Ag and/or Ag alloy	9
	$\text{Ni}_2\text{Cr}_3\text{Mn}_2$ alloy (C22 or BC1 or B3)	7
	Dielectric(s)	3.5
		1

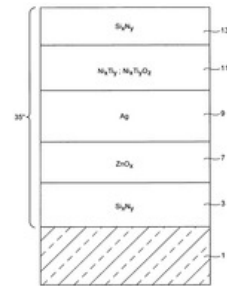
17.	Coated glass surfaces and method for coating a glass substrate	WO2010053921	2009-11-03	APOGEE ENTERPRISES APOGEE ENTPR* APOGEE WASSAU APOGEE WAUSAU PEAK ENTERPRISE TRU VUE TUBELITE	99 %	
18.	Ig window unit including double silver coating having increased shgc to u-value ratio, and corresponding coated article for use in ig window unit or other window	US8940400	2013-09-03	GE DIEN INDUSTRIAL GUARDIAN GLASS* GUARDIAN INDUSTRIES	99 %	
19.	Tri-silver low-emissivity coated glass capable of being tempered and preparation method thereof	CN105565679	2016-02-04	CSG HOLDING* DONGGUAN SOUNTH GLASS ENGINEERING GLASS*	99 %	
20.	Temperable neutral color double-silver low-emissivity coated glass based on multiple metal layers and preparation method thereof	CN106746729	2016-12-30	GUANGDONG AVIC SPECIAL GLASS TECHNOLOGY*	99 %	
21.	Multilayer stack for solar protection	WO2006122900	2006-05-10	AGC GLASS EUROPE* EASY SEA GRASS EUROPE	99 %	$\Delta E^* = \sqrt{(\Delta L^*)^2 + (\Delta a^*)^2 + (\Delta b^*)^2}$
22.	A temperable low-emissivity glass with enhanced durability and a method for preparing the same	KR20090099364	2008-03-17	KCC*	99 %	

23.	Heat treatable coated article with low-e coating having zinc stannate based layer between ir reflecting layers and corresponding method	US20150140354	2013-11-20	CENTER LUXEMBOURG BOURGEOIS DE LUCHELSH A· POOL A· LE A· VE A· A· A· LA A· CERAMICS CENTER LUXEMBOURG OISE DE RECHERCHER CHEVALIER VERSAILLES CERAMIC SLC CENTRE LUXEMBOURGOIS DE RECHERCHE POUR LE VERRE & LA CERAM CENTRE LUXEMBOURGOIS DE RECHERCHES POUR LE VERRE & LA CERAMIQUE* GUARDIAN EUROPE S À R L GUARDIAN EUROPE S À** R L* GUARDIAN GLASS* GUARDIAN INDUSTRIES	99 %
A coated article is provided which may be heat treated (e.g., thermally tempered) in certain example instances. In certain example embodiments, the coated article includes a low-emissivity (low-E) coating having a zinc stannate based layer provided over a silver-based infrared (IR) reflecting layer, where the zinc stannate based layer is preferably located between first and second silver based IR reflecting layers. The zinc stannate based layer may be provided between and contacting (i) an upper contact layer of or including Ni and/or Cr (or Ti, or TiOx), and (ii) a layer of or including silicon nitride.					
24.	Semiconductor substrate , method for forming electrode, and method for manufacturing solar cell	WO2008018265	2006-08-09	SHIN ETSU CHEMICAL* SHIN ETSU HANDOTAI SHINETSU HANDOTAI*	99 %
The present invention is directed to a semiconductor substrate having at least an electrode formed thereon, in which the electrode has a multilayer structure including two or more layers, of the multilayer structure, at least a first electrode layer directly bonded to the semiconductor substrate contains at least silver and a glass frit, and contains, as an additive, at least one of oxides of Ti, Bi, Zr, V, Nb, Ta, Cr, Mo, W, Mn, Fe, Co, Ni, Si, Al, Ge, Sn, Pb, and Zn, and, of an electrode layer formed on the first electrode layer, at least an uppermost electrode layer to be bonded to a wire contains at least silver and a glass frit and does not contain the additive. This makes it possible to form, on a semiconductor substrate, an electrode adhered to the semiconductor substrate with sufficient adhesive strength and adhered to a wire via solder with sufficient adhesive strength by lowering both contact resistance and interconnect resistance.					
25.	Ocean blue double- silver low-emissivity coated glass	CN105601126	2016-02-04	CSG HOLDING* DONGGUAN SOUNTH GLASS ENGINEERING GLASS*	99 %
The invention belongs to the technical field of glass and in particular relates to ocean blue double-silver low-emissivity coated glass which structurally comprises a glass substrate, a first compound dielectric layer, a first silver layer, a first protective layer, a second compound dielectric layer, a second silver layer, a second protective layer and a third compound dielectric layer. The ocean blue double-silver low-emissivity coated glass has reflection color of ocean blue, can perfectly replace an ocean blue original film, and is stable in color under different observation angles; a situation that different batches are different in color does not occur, and meanwhile the production efficiency can be improved.					
26.	Coated article with low-e coating having absorbing layers for low film side reflectance and low visible transmission	WO2014039345	2012-09-07	GE DIEN INDUSTRIAL GUARDIAN GLASS* GUARDIAN INDUSTRIES	99 %
Absorbing layers of a low-emissivity (low-E) coating are designed to cause the coating to have a reduced film side reflectance which is advantageous for aesthetic purposes. In certain embodiments, the absorbing layers are metallic or substantially metallic (e.g., NiCr or NiCrNx) and are each provided between first and second nitride layers (e.g., silicon nitride based layers) in order to reduce or prevent oxidation of the absorbing layers during optional heat treatment (e.g., thermal tempering, heat bending, and/or heat strengthening). Coated articles according to certain example embodiments of this invention may be used in the context of insulating glass (IG) window units, other types of windows, etc.					
27.	But tempering muted color double - silver low -emissivity coated glass based on many metal levels	CN206512103	2016-12-30	GUANGDONG AVIC SPECIAL GLASS TECHNOLOGY*	99 %
The utility model relates to a but muted color tempering double -silver low -emissivity coated glass. Muted color double -silver low -emissivity coated glass, it is equipped with double -deck low radiation silver or silver alloy layer on glass substrate, its characterized in that, outwards be equipped with first medium protective layer with this on glass substrate, a dielectric layer, first metal protection layer, first low radiation silver or silver alloy layer, copper or copper alloy layer, second metal protection layer, the 2nd dielectric layer, third metal protective layer, a serial communication port, fourth metal protection layer and third dielectric protective layer and second medium protective layer. This coated glass under the environment of low vacuum respectively according to the order of target membrane argon gas ar and nitrogen gas N2 with or the atmosphere of oxygen in, obtain each desirable layer by intermediate frequency DC power supply or alternating current power supply drive sputtering target. The utility model discloses a be low -emissivity coated glass realized, and to see through the look middle tone, promptly the chromatic value that sees through light of its product 5 A 5, 5 < b < 5.					
28.	Thin-film transistor	WO2015133372	2014-03-07	FUJIFILM*	99 %
Provided is a thin film transistor including a gate electrode, a semiconductor layer, a gate insulating layer provided between the gate electrode and the semiconductor layer and formed of an organic polymer compound, and a source electrode and a drain electrode provided in contact with the semiconductor layer and connected via the semiconductor layer, on a substrate, in which the content of metals selected from Mg, Ca, Ba, Al, Sn, Pb, Cr, Mn, Fe, Ni, Cu, Zn, and Ag in the gate insulating layer is 10 ppb to 1 ppm in terms of total amount, or the content of non-metal ionic materials selected from halogen ions, sulfate ions, nitrate ions, and phosphate ions is 1 ppm to 100 ppm in terms of total amount.					

29.	But low low tempering list silver low -emissivity coated glass that passes through that turns over	CN206751658	2017-05-05	LUTHERAN ENERGY SAVING GLASS*	99 %
The utility model belongs to the technical field of glass, specifically disclose a but low low tempering list silver low -emissivity coated glass that passes through that turns over. This but low low tempering list silver low -emissivity coated glass that passes through that turns over includes glass substrate, and includes certainly a glass substrate surface is a sedimentary dielectric layer, reflection stratum, the 2nd dielectric layer, first barrier layer, infrared reflection layer, second barrier layer and the 3rd dielectric layer in proper order outwards. The utility model discloses the but low low tempering list silver low -emissivity coated glass that passes through that turns over who obtains, the coating film layer combines the reinforce with glass substrate, the coating film layer is fine and close, even, the rete scratch resistance can be the reinforce, the outward appearance presents the low low form that passes through of turning over, has not only satisfied the requirement of each big city to the light pollution, still has fine outward appearance effect, satisfies people to the demand of glass colour, in addition can be fine satisfy the requirement of people to the glass performance.					
30.	A temperable low-emissivity glass with reduced hazing after thermal treatment and a method for preparing the same	KR20100098199	2009-02-27	KCC*	99 %
PURPOSE: A low-emissivity glass and a manufacturing method thereof are provided to secure the excellent visible light transmission rate, and to prevent the hazing of the glass. CONSTITUTION: A low-emissivity glass capable of performing a heat treatment comprises the following: a first dielectric layer coated on a glass substrate; a first haze preventing layer containing a Zn based oxide including more than one element selected from the group consisting of Sn, Nb, Al, Sb, Mo, Cr, Ti, and Ni; a functional reflecting metal layer reflecting far infrared rays or solar radiation rays; a second haze preventing layer containing the Zn based oxide including more than one element selected from the group consisting of Sn, Nb, Al, Sb, Mo, Cr, Ti, and Ni; and a second dielectric layer.					
31.	Double- silver low-radiation coated glass with outer reflective color being warm-toned and manufacturing method for coated glass	CN105366960	2015-12-01	AVIC SANXIN*	99 %
The invention relates to the technical field of double-silver low-radiation coated glass and discloses double-silver low-radiation coated glass with an outer reflective color being warm-toned. The glass comprises a glass substrate which has an air face, wherein a film system is arranged on the air face. The film system comprises a plurality of film layers. The film layers are a first dielectric shielding layer, a first oxide transition layer, a first alloy protecting layer, a first low-radiation functional layer, a second alloy protecting layer, a second oxide transitional layer, a second dielectric shielding layer, a third oxide transition layer, a third alloy protecting layer, a second low-radiation functional layer, a fourth alloy protecting layer, a fourth oxide transition layer and a third dielectric shielding layer along the direction of the air face from bottom to top; the film system is formed by sputtering a plane or a rotating target containing a targeted film layer material by adopting a direct current or an alternating current power supply in a low-vacuum environment containing reaction gas; and the film system is arranged on the air face, and the thickness of the film layer is adjusted, so that the double-silver low-radiation coated glass with outer reflective color being warm-toned is obtained, and the manufacturing process is small in difficulty.					
32.	Double silver low-emissivity and solar control coatings	US20070207327	2007-05-07	AGC GLASS*	99 %
A low-emissivity multilayer coating includes, in order outward from the substrate, a first layer including a layer containing titanium oxide, a layer containing silicon nitride, or a sublayer layer containing titanium oxide in combination with a sublayer containing silicon nitride; a second layer including Ag; a third layer including at least one layer selected from titanium oxide layers and silicon nitride layers; a fourth layer including Ag; and a fifth layer including silicon nitride. The color of the coatings can be varied over a wide range by controlling the thicknesses of the layers of titanium oxide, silicon nitride and Ag. A diffusion barrier of oxidized metal protects relatively thin, high electrical conductivity, pinhole free Ag films grown preferentially on zinc oxide substrates. Oxygen and/or nitrogen in the Ag films improves the thermal and mechanical stability of the Ag. Dividing the first layer of titanium oxide, the Ag layers, and/or the third layer with a sublayer of oxidized metal can provide greater thermal and mechanical stability to the respective layers.					
33.	Double silver low-emissivity and solar control coatings	US20120321867	2012-01-13	AGC GLASS*	99 %
A low-emissivity multilayer coating includes, in order outward from the substrate, a first layer including a layer containing titanium oxide, a layer containing silicon nitride, or a sublayer layer containing titanium oxide in combination with a sublayer containing silicon 5 nitride, a second layer including Ag, a third layer including at least one layer selected from titanium oxide layers and silicon nitride layers, a fourth layer including Ag, and a fifth layer including silicon nitride, where the color of the coatings can be varied over a wide range by controlling the thicknesses of the layers of titanium oxide, silicon nitride and Ag.					
34.	Coated article with low-e coating having absorbing layer over functional layer designed to increase outside reflectance	WO2013055495	2011-10-12	GE DIEN INDUSTRIAL GUARDIAN GLASS* GUARDIAN INDUSTRIES	99 %
A coated article includes a low-E coating having an absorbing layer located over a functional layer (IR reflecting layer) and designed to cause the coating to have an increased outside reflectance (e.g., in an IG window unit) and good selectivity. In certain embodiments, the absorbing layer is metallic, or substantially metallic, and is provided directly over and contacting a lower of two IR reflecting layers. In certain example embodiments, during heat treatment (e.g., thermal tempering, heat bending, and/or heat strengthening) thereby permitting predictable coloration, high outside reflectance values, and/or good selectivity to be achieved. Coated articles according to certain example embodiments of this invention may be used in the context of insulating glass (IG) window units, vehicle windows, other types of windows, or in any other suitable application.					

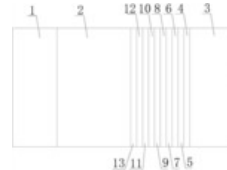
35.	Barrier layers comprising ni and/or ti , coated articles including barrier layers, and methods of making the same	US20120225224	2011-03-03	GE DIEN INDUSTRIAL GUARDIAN GLASS* GUARDIAN INDUSTRIES	99 %
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Certain example embodiments relate to a **coated** article including at least one infrared (IR) reflecting layer of a material such as **silver** or the like in a low-E **coating**, and methods of making the same. In certain cases, at least one layer of the **coating** is of or includes nickel and/or titanium (e.g., **Ni x Ti y O z**). The provision of a layer including nickel titanium and/or an oxide thereof may permit a layer to be used that has good adhesion to the IR reflecting layer, and reduced absorption of visible light (resulting in a **coated** article with a higher visible transmission). When a layer including nickel titanium oxide is provided directly over and/or under the IR reflecting layer (e.g., as a barrier layer), this may result in improved chemical and mechanical durability. Thus, visible transmission may be improved if desired, without compromising durability; or, durability may simply be increased.



36.	Champagne look double - silver low -emissivity coated cavity glass	CN206408122	2017-01-19	WUJIANG CSG EAST CHINA ARCHITECTURAL GLASS*	99 %
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The utility model discloses a champagne look double -**silver** low -emissivity **coated** cavity **glass**, be in including interior **glass substrate**, outer **glass substrate**, connection hollow layer between interior **glass substrate** and the outer **glass substrate**. Outer **glass substrate**'s medial surface has plated composite membrane layer, and composite membrane layer by a zinc stannate layer, the first oxidative zinc layer, first **silver** layer, copper layer, a nickel **chromium** layer, the 2nd zinc stannate layer, second zinc oxide film, second **silver** layer, the 2nd nickel **chromium** layer, **silicon nitride** certainly outer **glass substrate**'s medial surface inwards stacks gradually and forms. Structure and thickness combination through above -mentioned composite membrane layer, the cavity **glass** saving who obtains when being used for the curtain, people from outdoor during to indoor seeing **glass** present the champagne look, beautifully spend higherly, and from indoor during to outdoor seeing **glass** colourless basically, outside the observation ward color deviation can not appear during the view, the view is truer, can know to see outdoor scenery really clearly, people's eyes are also more comfortable.



37.	Three- silver low emissivity coated glass capable of being tempered	CN202344935	2011-11-25	LIN JIAHONG	99 %
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The utility model discloses three-**silver** low emissivity **coated** **glass** capable of being tempered. The three-**silver** low emissivity **coated** **glass** comprises a **glass** body and a **coating**. The three-**silver** low emissivity **coated** **glass** is characterized in that a base plate is used as a **glass substrate**, and the **coating** has a film layer structure comprising a first dielectric medium combined layer, a first barrier protection layer, a first dielectric medium layer, a first **silver** layer, a second barrier protection layer, a first interval dielectric medium combined layer, a third barrier protection layer, a second dielectric medium layer, a second **silver** layer, a fourth barrier protection layer, a second interval dielectric medium combined layer, a fifth barrier protection layer, a third dielectric medium layer, a third **silver** layer, a sixth barrier protection layer and a second dielectric medium combined layer from inside to outside. The three-**silver** low emissivity **coated** **glass** capable of being tempered has a special film layer structure, solves the problem that the low emissivity **coated** **glass** in the prior art can not be well tempered, has high visible light transmission rate, extremely low emissivity rate, good photo-thermal ratio and optical stability, and good heat insulation effect, and can meet various requirements of subsequent processing.



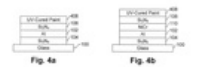
38.	Low-reflection and low-permeability temperable single silver low-emissivity coated glass as well as manufacturing method and application thereof	CN107117832	2017-05-05	LUTHERAN ENERGY SAVING GLASS*	99 %
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The invention belongs to the technical field of **glass** and particularly discloses low-reflection and low-permeability temperable single **silver** low-emissivity **coated** **glass**. The low-reflection and low-permeability temperable single **silver** low-emissivity **coated** **glass** comprises a **glass substrate**, a first dielectric layer, a reflecting layer, a second dielectric layer, a first barrier layer, an infrared reflecting layer, a second barrier layer and a third dielectric layer, wherein the first dielectric layer, the reflecting layer, the second dielectric layer, the first barrier layer, the infrared reflecting layer, the second barrier layer and the third dielectric layer sequentially deposits from one surface of the **glass substrate** to the outside. The low-reflection and low-permeability temperable single **silver** low-emissivity **coated** **glass** obtained by the invention has the benefits that a **coating** layer has a strong bonding force with the **glass substrate** and is compact and uniform, and strong in scratch resistance; the appearance is low reflective and low permeable, so that not only are the requirements of all big cities for light pollution met, is a appearance effect good, and are the demands of people on **glass** color met, but also the requirements of the people for **glass** properties can be better met.



39.	Mirror with optional protective paint layer, and/or methods of making the same	WO2013166232	2013-05-02	CENTRE LUXEMBOURG EAST RIO DE RED CHERRY CHASE DRIVERS BUNCHED LE RAE LAS CERAMICS ARRAY CENTRE LUXEMBOURGEOIS DE RECHERCHES POUR LE VERRE & LA CERAMIQUE* GUARDIAN INDUSTRIES	99 %
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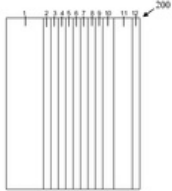
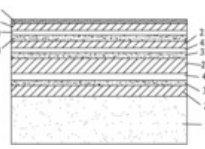
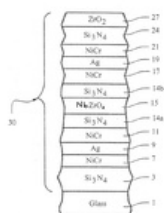
Certain example embodiments of this invention relate to sputtered aluminum second surface mirrors with permanent protective **coatings** optionally provided thereto, and/or methods of making the same. A mirror **coating** supported by a **substrate** may include, for example, first and second **silicon**-inclusive layers sandwiching a metallic or substantially metallic layer including aluminum, and an optional layer including **Ni** and/or **Cr** in direct contact with the metallic or substantially metallic layer comprising aluminum. A protective paint is disposed directly over and contacting an outermost layer of the mirror **coating**. The protective paint, once applied and cured, is adapted to survive seven day exposure to an 85 degree C temperature at 85% relative humidity, as well as seven day exposure to a 49 degree C temperature at 100% relative humidity.

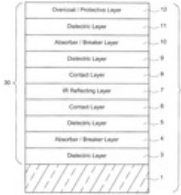
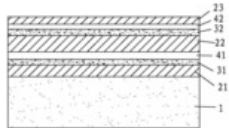
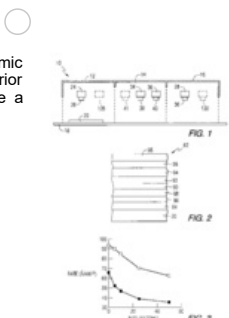


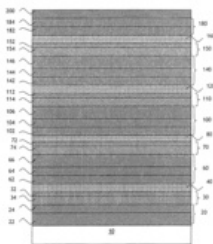
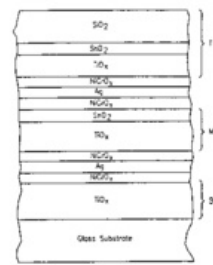
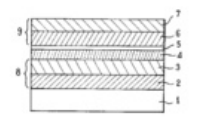
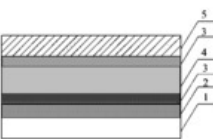
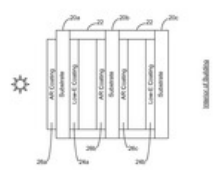
40.	Plasma display panel including frameless emi filter, and/or method of making the same	WO2009145862	2008-08-21	GUARDIAN GLASS* GUARDIAN INDUSTRIES	99 %
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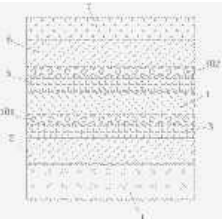
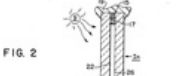
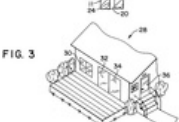
A plasma display panel (PDP) includes a frameless EMI filter supported by a **glass substrate** for blocking/shielding substantial amounts of electromagnetic waves, with the filter being supported by a side of the **substrate** opposite a viewer. In certain example embodiments, the PDP filter includes a transparent conductive **coating** (TCC) for electromagnetic interference (EMI) and near infrared (NIR) blocking without the need for a conductive, peripheral buss bar. Additionally, in certain example embodiments, the need for a conductive frame is reduced or eliminated. The filter has high visible transmission, and is capable of blocking/ shielding electromagnetic waves.



41.	Four- silver low emissivity coated glass capable of being processed in foreign places and manufacturing method thereof	CN102501449	2011-11-25	LIN JIAHONG	99 %
The invention discloses a four-silver low emissivity coated glass capable of being processed in foreign places and a manufacturing method thereof. The four-silver low emissivity coated glass comprises a glass substrate and a film layer coated on the glass substrate. The four-silver low emissivity coated glass is characterized in that: the film layer comprises a basis layer dielectric medium layer, a first dielectric medium combination layer, a first barrier protection layer, a first silver layer, a second barrier protection layer, a first spaced dielectric medium combination layer, a third barrier protection layer, a second silver layer, a fourth barrier protection layer, a second spaced dielectric medium combination layer, a fifth barrier protection layer, a third silver layer, a sixth barrier protection layer, a third spaced dielectric medium combination layer, a seventh barrier protection layer, a fourth silver layer, an eighth barrier protection layer and a second dielectric medium combination layer which are arranged in sequence outwards from the glass substrate. According to the invention, the unique film layer structure and the manufacturing method are adopted, so that the product, namely the four-silver low emissivity coated glass, has the advantages of higher visible light transmissivity, extremely low emissivity, good photo-thermal ratio and optical stability, better weather resistance and oxidation resistance, and capabilities of realizing foreign-place processing and meeting the requirements of deep processing on product performance.					
					
42.	Novel energy-saving toughened three- silver -layer low-radiation coated glass	CN102350833	2011-07-19	JIANGMEN YAO PAPER ENGINEERING GLASS* SHANGHAI YAOHUA PILKINGTON GLASS*	99 %
The invention provides novel energy-saving toughened three-silver-layer low-radiation coated glass, which is characterized in that: a film structure of the glass sequentially consists of the following layers from a glass substrate to the outside: the glass substrate, a first composite dielectric medium layer (11), a first reflection deduction layer (12), a first silver layer (13), a first protective layer (14), a second dielectric medium layer (21), a second reflection deduction layer (22) plus a second silver layer (23), a second protective layer (24), a third dielectric medium layer (31), a third reflection deduction layer (32), a third silver layer (33), a third protective layer (34), a fourth composite dielectric medium layer (35) and a fourth protective layer (36). The novel energy-saving toughened three-silver-layer low-radiation coated glass has the advantages that: an infrared reflection capacity is higher than that of a double-silver-layer low-radiation film with the same visible light transmission value, the radiation rate on the surface of the film layer is low, the shading coefficient is much lower, and the reflection rate is low; and the film has high hardness and high oxidation resistance, and different cold processing and hot treatment can be carried out after the film coating.					
43.	Transparent front electrode for a photovoltaic device	GB201011729	2010-07-13	PILKINGTON*	99 %
A transparent front electrode for a photovoltaic device comprising at least the following layers in sequence: -a glass substrate; -a lower anti-reflection layer, comprising in sequence from the glass substrate *a base layer of an (oxi)nitride of silicon and/or an (oxi)nitride of aluminium, *a middle layer of an oxide of Zn and Sn, *a top layer of an oxide of Zn; -a silver-based functional layer; and -an upper anti-reflection layer comprising in sequence from the silver-based functional layer *a first barrier layer of an oxide of Ni and Cr, *a second barrier layer of an Al-doped oxide of Zn, and *a buffer layer; wherein the first barrier layer of an oxide of Ni and Cr is located directly in contact with the silver-based functional layer or the first barrier layer of an oxide of Ni and Cr is separated from the silver-based functional layer by one or more additional barrier layers.					
					
44.	But three silver medal low -emissivity coated glass of tempering	CN205501127	2016-02-04	CSG HOLDING* DONGGUAN SOUTHW GLASS ENGINEERING GLASS*	99 %
The utility model belongs to the technical field of glass, concretely relates to but three silver medal low -emissivity coated glass of tempering, its structure is: the 3rd compound medium layer third silver layer / third protective layer / fourth compound medium layer zirconia membrane of the 2nd compound medium layer second silver layer / second protective layer / of the first silver layer of a glass?substrate compound medium layer / first protective layer /, the utility model discloses a rete can stand 700 DEG C high temperature tempering, and the colour is stable behind the tempering, does not have appearance imperfections behind the rete tempering.					
					
45.	Silver colored coated article with low-e coating having absorber layer and low visible transmission	WO2018075006	2016-10-18	GUARDIAN GLASS* GUARDIAN GLASS HOLDING S*	99 %
A low-emissivity (low-E) coating on a substrate (e.g., glass substrate) includes at least first and second infrared (IR) reflecting layers (e.g., silver based layers) that are spaced apart by contact layers (e.g., NiCr based layers), a layer comprising silicon nitride, and an absorber layer of or including a material such as niobium zirconium which may be oxidized and/or nitrided. The absorber layer is designed to allow the coated article to realize glass side reflective (equivalent to exterior reflective in an IG window unit when the coating is provided on surface #2 of an IG window unit) silver color. In certain example embodiments, the coated article (monolithic form and/or in IG window unit form) has a low visible transmission (e.g., from 15-45%, more preferably from 22-39%, and most preferably from 24-35%). In certain example embodiments, the coated article may be heat treated (e.g., thermally tempered and/or heat bent).					
					
FIG. 1					
46.	Thermally highly loadable low-e-layer system for coating transparent flat substrates such as glass panes, comprises two silver functional layers, zinc oxide layers, metallic nickel- chromium blocker layers, and dielectric layers	DE102008007981	2008-02-07	SAINT GOBAIN SEKURIT*	99 %
The thermally highly loadable low-E-layer system comprises two silver functional layers, zinc oxide layers directly arranged below the silver layers, metallic nickel-chromium blocker layers directly arranged on the silver layers, and dielectric layers arranged above the blocker layers. The dielectric layer arranged above the upper blocker layer consists of a zinc oxide partial layer, a nickel chromium oxide partial layer and a silicon nitride partial layer in sequence. A titanium oxide layer is directly arranged on a substrate surface and has a thickness of less than 5 nm. The thermally highly loadable low-E-layer system comprises two silver functional layers, zinc oxide layers directly arranged below the silver layers, metallic nickel-chromium blocker layers directly arranged on the silver layers, and dielectric layers arranged above the blocker layers. The dielectric layer arranged above the upper blocker layer consists of a zinc oxide partial layer, a nickel chromium oxide partial layer and a silicon nitride partial layer in sequence. A titanium oxide layer is directly arranged on a substrate surface and has a thickness of less than 5 nm. A further layer is arranged as a covering layer above the silicon nitride layer. The covering layer has a thickness of less than 2 nm. The zinc oxide layer is arranged on the metallic nickel-chromium blocker layers. The dielectric layer arranged on the lower blocker layer consists of a zinc oxide partial layer and a silicon nitride partial layer.					

47.	Coated article having low-e coating with absorber layer(s)	WO2011060897	2009-11-20	CENTRE LUXEMBOURGEOIS DE RECHERCHE POUR LE VERRE & LA CERAM CENTRE LUXEMBOURGEOIS DE RECHERCHES POUR LE VERRE & LA CERAMIQUE GUARDIAN EUROPE S À R L GUARDIAN EUROPE S À** R L GUARDIAN GLASS* GUARDIAN INDUSTRIES LUXEMBOURG CENTRE DE BURTON S EASTERN POOR RED CHERRY CHESTER LE RIVER PLATE FC ATLAS POLICY RESEARCH & DEVELOPMENT PRAD SCHLUMBERGER SCHLUMBERGER SERVICES PETROLIERS SCHLUMBERGER TECHNOLOGIES	99 %	
48.	High-temperature resistant tempered double-silver low-radiation coated glass	CN202945162	2012-11-27	JINDUICHENG LUOYANG ENERGY SAVING GLASS*	99 %	
49.	Neutral color double silver composite structure low radiation coated glass and manufacturing process thereof	CN102951854	2012-10-31	SHANGHAI YAOHUA PILKINGTON GLASS*	99 %	
50.	Blue two silver -colored low -emissivity coated glass in ocean	CN205501128	2016-02-04	CSG HOLDING* DONGGUAN SOUNTH GLASS ENGINEERING GLASS*	99 %	
51.	Methods and apparatus for producing silver based low emissivity coatings without the use of metal primer layers	WO200037384	1998-12-18	PPG INDUSTRIES VITRO FLAT GLASS*	99 %	

59.	Offsite-processing four- silver low-radiation coated glass	CN202344934	2011-11-25	LIN JIAHONG	99 %	The utility model discloses an offsite-processing four-silver low-radiation coated glass which comprises a glass substrate and a film layer plated on the glass substrate, and is characterized in that the film layer sequentially comprises a substrate dielectric layer, a first dielectric combination layer, a first stop protection layer, a first silver layer, a second stop protection layer, a first spacing dielectric combination layer, a third stop protection layer, a second silver layer, a fourth stop protection layer, a second spacing dielectric combination layer, a fifth stop protection layer, a third silver layer, a sixth stop protection layer, a third spacing dielectric combination layer, a seventh stop protection layer, a fourth silver layer, an eighth stop protection layer and a second dielectric combination layer from the glass substrate to the outside. According to the utility model, by adopting the unique film layer structure and manufacturing method, products have higher visible light transmittance, very low radiance, good photo-thermal ratio and optical stability and good weather fastness and oxidation resistance, thus realizing offsite processing and meeting the requirement of deep processing on the performances of the products. 
60.	Substrate which is equipped with a stack having thermal properties	FR2893023	2005-11-08	SAINT GOBAIN GLASS*	99 %	The invention relates to a substrate (10), such as a transparent glass substrate, which is equipped with a stack of thin layers comprising an alternating stack of n functional layers (40) having reflection properties in the infrared and/or solar radiation range, particularly silver-based metal functional layers, and (n+1) dielectric coatings (20, 60), wherein n = 1, said coatings being formed by one or more layers (22, 24, 62, 64), such that each functional layer (40) is disposed between at least two dielectric coatings (20, 60). The invention is characterised in that at least one functional layer (40) comprises a blocking coating (30, 50) consisting of: (i) an interface layer (32, 52) which is in direct contact with the functional layer and which is made from a material other than metal, and (ii) a metal layer (34, 54) which is made from a metal material and which is in direct contact with the interface layer (32, 52). 
61.	Anti-reflection layer system on a glass substrate with high visible transmission and a low e	WO03055816	2001-12-21	GUARDIAN GLASS* GUARDIAN INDUSTRIES	99 %	The present invention relates to a coated article including a coating supported by a glass substrate. The coating comprises from the glass substrate outwardly a first dielectric layer comprising silicon zirconium nitride or niobium oxide; a contact layer comprising at least one of NiCr, NiCrO x and NiCrN x ; a first IR reflecting layer comprising Ag; a second dielectric layer comprising the same material as the first dielectric layer; a third dielectric layer having an index of refraction n less than an index of refraction of at least one of the first and second dielectric layers; a contact layer comprising at least one of NiCr, NiCrO x and NiCrN x ; a second IR reflecting layer comprising Ag; a fourth dielectric layer comprising silicon oxide in case of niobium oxide as first dielectric layer or at least one of tin oxide and silicon nitride in case of silicon Zirconium nitride as first dielectric layer. Thereby, the article receives a visible transmission of at least 70% and a sheet resistance (R s) of no greater than 10 ohms/square. 
62.	Obtention of bent, annealed or tempered glass substrates coated with a stack of thin layers having reflective properties for infrared and/or solar radiation	EP0718250	1994-12-23	SAINT GOBAIN GLASS* SAINT GOBAIN VITRAGE SAINT-GOBAIN VITRAGE	99 %	Transparent substrate is coated with a pile of thin layers, with reflective properties in the infrared and/or in the solar radiation domain. A transparent substrate (1), notably of glass, provided with a pile of thin layers incorporates at least one metal layer (4) with properties in the infrared, arranged between an underlying oxide anchoring layer (3) deposited on a first coating of dielectric based material (2) and an upper protective layer (5) surmounted by a second coating of dielectric based material (9). With a view to preventing the modification of the properties of the pile, in the case where the carrier substrate (1) is subjected to a heat treatment of the tempering or bending type, the second dielectric based coating includes at least one oxygen diffusion barrier layer (7) and the functional metal layer is deposited directly on the anchoring layer. Independent claims are also included for: (a) a low emission or antiglare multiple glazing incorporating such substrate; (b) a laminated glazing incorporating such substrate; (c) a method for the fabrication of the substrate; (d) utilization of the substrate in which the substrate is curved, annealed or tempered; (e) an assembly of glazing incorporating the tempered, curved or annealed substrate.  FIG.1
63.	Golden low-emissivity coated glass and manufacturing method thereof	CN103407225	2013-07-04	COATED GLASS*	99 %	The invention relates to the technical field of glass processing and in particular provides golden low-emissivity coated glass and a manufacturing method thereof. The coated glass has a simple film structure, is easy to produce in large scale, is good in coloration and has an obvious energy-saving effect. The coated glass is characterized in that the following films are deposited on the surface of a glass substrate in sequence: a silicon nitride buffer layer film, a nichrome induction layer film, a golden function layer film, the nichrome induction layer film and a ZnO:Al protective layer film. The golden low-emissivity coated glass provided by the invention has higher reflectivity in middle and far infrared waves, has better shading performance in visible light bands and has the obvious advantages of low emissivity, sunshading, beauty, pure color and the like compared with the prior art, and meanwhile the color of reflection of the coated glass is golden in wider ranges of view angles. 
64.	Insulating glass units with low-e and anti-reflective coatings , and/or methods of making the same	US20130149473	2011-12-13	CENTRE LUXEMBOURGEOIS DE RECHERCHES POUR LE VERRE & LA CERAMIQUE GUARDIAN EUROPE S À R L* GUARDIAN EUROPE S À** R L GUARDIAN GLASS* GUARDIAN INDUSTRIES	99 %	Certain example embodiments of this invention relate to insulating glass (IG) units including three substantially parallel spaced apart glass substrates, wherein at least two of the surfaces include low-emissivity (low-E) coatings and at least some of the non-low E coated surfaces have antireflective (AR) coatings disposed thereon. In certain example embodiments, low-E coatings are provided on the second and fifth surfaces of the IG unit, and each internal surface of the IG unit that does not support a low-E coating does support an AR coating. Additional AR coatings may be provided on one or both of the outermost surfaces in certain example embodiments. In some cases, the center substrate need not be heat treated because of the reduced absorption enabled by providing the low-E coatings on the two outermost substrates, as well as the reduced heat accumulation in the center lite itself and in the two adjacent spacers. 

65.	Low-emissivity coating and functional building material including low-emissivity coat for windows	KR20160010332	2015-07-14	LG HAUSYS*	99 %
Provided are a low-emissivity coating and a functional construction material for windows and doors comprising the same. The low-emissivity coating successively comprises: a first dielectric layer including silicon aluminum nitride; a low-emissivity layer; and a second dielectric layer including silicon aluminum nitride, wherein a refractive index of the first dielectric layer is higher than that of the second dielectric layer. 					
66.	Low-radiation heat-treatable coated glass and interlayer glass product thereof	CN102757185	2012-07-26	FUYAO GLASS INDUSTRY*	99 %
The invention relates to the field of glass coating, in particular to heat-treatable silver-based low-radiation coated glass and an interlayer glass product thereof. The low-radiation coated glass comprises a glass substrate, wherein multiple medium layers and at least two infrared reflecting layers are outwards arranged on the surface of the glass substrate; at least one layer of the multiple medium layers comprises a ZnSnMgOx coating layer or ZnSnNiOx coating layer. According to the low-radiation coated glass and the interlayer glass product thereof, as the ZnSnMgOx coating layer or ZnSnNiOx coating layer is introduced to the medium layer, the chemical stability and the heat stability of the low-radiation coated glass and the interlayer glass product are remarkably improved, and the constructed double-silver-layer or three-silver-layer low-radiation coating has higher heat stability; and the growth of Zn and Sn large grains is restrained as Mg or Ni is introduced to an alloy target, the microscopic structure of the target is improved, and the stability of the sputtering process is favorably improved. 					
67.	Nickel- chromium film layer and a preparation method comprising transition silicas which have the transition silicas which have a nickel- chromium film layer may be a tempered low emissivity coated glass	CN109136870	2018-07-19	CSG HOLDING* WUJIANG CSG EAST CHINA ARCHITECTURAL GLASS*	99 %
The present invention relates to the field of glass manufacturing technology, and particularly relates to methods of making and nickel-chromium layer transition silicas which have transition can be tempered nickel-chromium film layer containing the low-emissivity coating silicas which have glass, preparation of the present invention method includes the steps of: using a NiCr alloy target, under the control of the DC power source or a DC pulse power supply, a magnetron sputtering apparatus according to the present background of maintaining a vacuum degree is better than 5x10 bottom-4Pa,reactive sputtering in a manner that in the processing atmosphere can be accomplished using a film layer is deposited on the surface of sequentially, corresponding to the argon oxygen atmosphere of the processing atmosphere point, and a purge of argon and oxygen flow rate ratio of 8/1-12/1, nickel-chromium film layer to give a transition silicas which have, the present invention was prepared by the method for producing a transition state of a nickel-chromium oxide film, as the barrier layer may be a tempered low emissivity coated glass may be applied to greatly reduce the chromatic aberration of the front and rear tempered glass, facilitates the production of color control in the course, and also can improve the transmittance, color more neutral transmission. 					
68.	Toughened bi- silver low-radiation coated glass	CN202378342	2011-12-08	LIN JIAHONG	99 %
The utility model relates to toughened bi-silver low-radiation coated glass, which comprises a piece of glass, wherein a first barrier layer, a basic dielectric layer, a second barrier layer, a first functional layer, a third barrier layer, a first intermediate dielectric layer, a second intermediate dielectric layer, a third intermediate dielectric layer, a fourth barrier layer, a second functional layer, a fifth barrier layer and a top dielectric layer are sequentially coated on the glass from bottom to top. The first barrier layer, the second barrier layer and the fourth barrier layer adopt nickel chromium; the basic dielectric layer, the first intermediate dielectric layer and a third intermediate dielectric layer are silicon nitride; the third barrier layer and the fifth barrier layer adopt zinc aluminum oxide; the first functional layer and the second functional layer are respectively a silver-contained film layer; and the second intermediate dielectric layer is zinc tin oxide. The film of the glass has advantages of stable performance, strong high temperature resistance, improvement in color drifting before the toughening and after the toughening, low radiation rate, high mechanical performance, good oxidization resistance, high adhesive force and the like. 					
69.	Dual silver layer low-e glass coating system and insulating glass units made therefrom	NO960193	1995-01-17	GUARDIAN GLASS* GUARDIAN INDUSTRIES	99 %
A sputter-coated glass layer system particularly useful in insulating glass units ("IGs"), which includes dual layers of silver separated by a layer of Si3N4 having a thickness of about 700 ANGSTROM - 1,100 ANGSTROM and further including an undercoat and an overcoat of Si3N4 having thicknesses of about 300 ANGSTROM - 550 ANGSTROM and about 350 ANGSTROM - 700 ANGSTROM respectively, such that a glass so coated achieves normal emissivity values (En's) of less than about 0.02 - 0.09 with good durability and very low reflectance. <IMAGE>   					

Detective (e.g., Si_3N_4)

NiCr or NiCrN

Detective (e.g., Si_3N_4)

NiCr or NiCrN

Detective (e.g., Si_3N_4)

Glass Substrate

71.	Functional building material for windows	WO2018038329	2016-08-23	LG HAUSYS*	98 %
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100

12	} 90
11	
12	

13	} 10

98 %

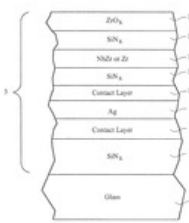
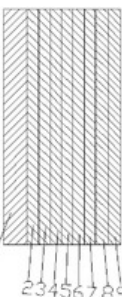
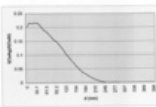
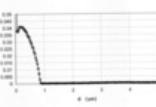
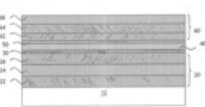
Figure 1 is a schematic diagram of the structure of the SiO₂/Si₃N₄ multilayer film. It shows a vertical stack of alternating layers. The layers, from top to bottom, are: Si₃N₄ (25 nm), SiO₂ (22 nm), SiO₂ (21 nm), SiO₂ (19 nm), SiO₂ (17 nm), Si₃N₄ (15 nm), SiO₂/Si₃N₄ (14 nm), SiO₂ (13 nm), SiO₂ (11 nm), SiO₂ (8 nm), SiO₂ (7 nm), Si₃N₄ (3 nm), and SiO₂/Si₃N₄ (1 nm). A vertical scale bar on the left indicates 30 nm.

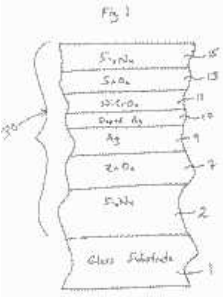
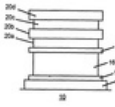
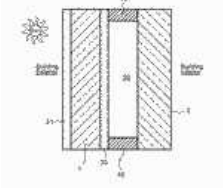
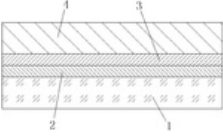
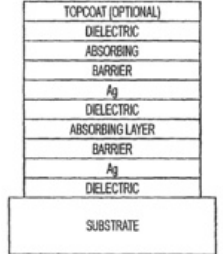
98 %

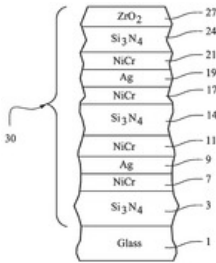
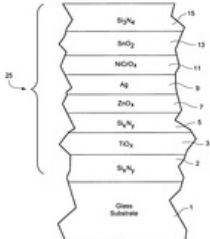
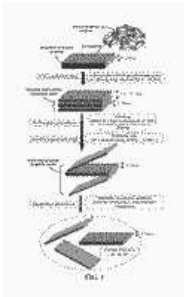
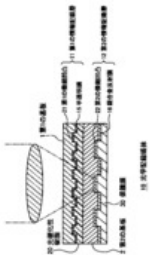
Diagram illustrating a cross-sectional view of a substrate (1) with a stack of layers (2) through (19). The layers are labeled as follows:

- 19: ZrO_2 (e.g., ZrO_2)
- 17: Si_3N_4 (e.g., Si_3N_4)
- 15: ZnO
- 13: SnO
- 11: $NiCrOx$
- 9: Ag
- 7b: ZnO
- 5b: TiO_x (e.g., TiO_2)
- 7a: ZnO
- 5a: TiO_x (e.g., TiO_2)
- 3: Si_3N_4 (e.g., Si_3N_4)

A magnification of 20x is indicated on the left side of the diagram.

74.	Solar control glazing	WO2014125081	2014-02-14	AGC GLASS EUROPE* AGSE GLASSES EUROPEOP AGC GLASS EUROPE	98 %
The invention relates to solar control glazing comprising, on at least one of the surfaces of a glass substrate, a system of layers including at least one solar-radiation-absorbing layer and dielectric layers surrounding said solar-radiation-absorbing layer. According to the invention, the solar-radiation-absorbing layer is a metal layer based on tungsten alloyed with at least nickel. The layer system comprises: between the substrate and the metal layer, at least one layer of a dielectric material based on oxide, nitride or oxynitride of silicon or aluminium, or mixed aluminium/silicon nitrides; and, on top of the solar-radiation-absorbing layer, at least one layer of a dielectric material based on one of said compounds.					
					
75.	Coated article with low-e coating having multilayer overcoat and method of making same	US20130216861	2012-02-22	GE DIEN INDUSTRIAL GUARDIAN GLASS* GUARDIAN INDUSTRIES	98 %
A coated article is provided so as to include a low-E (low emissivity) coating having an infrared (IR) reflecting layer sandwiched between at least a pair of dielectric layers. The IR reflecting layer may be of or include a material such as silver (Ag), and is provided between a pair of contact layers. The low-E coating includes an overcoat having a substantially metallic layer (e.g., NbZr or Zr) which has been found to improve the durability of the coating without significantly sacrificing desired optical characteristics. Such coated articles may be used in the context of windows.					
					
76.	Neutral color type double-silver composite structural low-emissivity coated glass capable of offsite processing	CN203295365	2012-11-01	SHANGHAI YAOHUA PILKINGTON GLASS*	98 %
The utility model provides neutral color type double-silver composite structural low-emissivity coated glass capable of offsite processing. The structure of the glass in layers from a glass substrate to outside is as follows: a glass/ first composite dielectric medium layer, a copper aluminum alloy layer, a first silver layer, a first protective layer, a second composite dielectric medium layer, a second silver layer, a second protective layer and a dielectric medium layer. The color type double-silver composite structural low-emissivity coated glass capable of offsite processing has the advantages that the structures of the composite dielectric medium layers at the bottom and middle are improved based on the existing neutral color type double-silver composite structural low-emissivity coated glass, simultaneously, a copper nitride compact structure can effectively protect the silver layers, thus a new product can be subjected to toughening treatment, and as a result, offsite processing is realized.					
					
77.	Substrate with antimicrobial properties	WO2006064060	2005-12-16	AGC GLASS EUROPE* EASY SEA GRASS EUROPE GLASS YUOPPU EJISHI	98 %
A process for the production of a substrate having antimicrobial properties is described. It comprises a step consisting of the deposition of a metal non-gelling layer comprising an inorganic antimicrobial agent, starting from a precursor, in metal, colloid, chelate or ion form on at least one of the surfaces of the metallic substrate; and a step consisting of the diffusion of the agent into said at least one surface of the substrate by thermal treatment. Alternatively, the substrate may be coated with an underlayer or a topcoat and the diffusion occurs either in the underlayer or in the topcoat. Metallic substrates having antimicrobial properties are also described. In particular, a substrate exhibiting a bactericidal activity measured in accordance with standard JIS Z 2801 of higher than log 2.					
 Fig. 1a.  Fig. 1b.					
78.	Substrate comprising a stack with thermal properties	FR2928913	2008-03-18	SAINT GOBAIN GLASS*	98 %
The invention relates to a glass substrate (10) having, on a main side, a stack of thin layers comprising a functional metallic layer (40) with reflective properties in infrared and/or solar radiation, particularly silver-based or based on a metallic alloy containing silver, and two anti-reflective coatings (20, 60), said coatings each comprising at least one dielectric layer (22, 64) silicon-nitride based, possibly doped with at least one other element, such as aluminum, said functional layer (40) being placed between the two antireflective coatings (20, 60), characterized in that the optical thickness e60 in nm of the underlying antireflective coating (60) is: e60 = 5 x e40 + a, where e40 is the geometric thickness in nm of the functional layer (40) such as 13 4040 < 18, and where a is a number = 25 ± 15.					
					

79.	Coated article with low-e coating having protective doped silver layer for protecting silver based ir reflecting layer(s), and method of making same	US20180251886	2017-03-01	GUARDIAN GLASS*	98 %
A coated article includes a low emissivity (low-E) coating supported by a glass substrate. The low-E coating includes at least one silver (Ag) based infrared (IR) reflecting layer(s) that is provided adjacent to and contacting at least one protective metallic or substantially metallic doped silver layer in order to improve chemical durability characteristics of the low-E coating. The silver based IR reflecting layer and adjacent protective doped silver layer are part of a low emissivity (low-E) coating, and may be sandwiched between at least transparent dielectric layers. A barrier layer including Ni and/or Cr may be provided over and directly contacting the protective doped silver layer in order to further improve durability of the low-E coating.					
					
80.	Durable silver coating for mirrors	WO9964900	1999-06-09	UNIVERSITY OF CALIFORNIA*	98 %
A durable multilayer mirror includes reflective layers of aluminum and silver and has high reflectance over a broad spectral range from ultraviolet to visible to infrared. An adhesion layer of a nickel and/or chromium alloy or nitride is deposited on an aluminum surface, and a thin layer of silver is then deposited on the adhesion layer. The silver layer is protected by a passivation layer of a nickel and/or chromium alloy or nitride and by one or more durability layers made of metal oxides and typically a first layer of metal nitride. The durability layers may include a composite silicon aluminum nitride and an oxinitride transition layer to improve bonding between nitride and oxide layers.					
					
81.	Bendable and heat treatable low-emissivity glass and method for preparing the same	KR20110062566	2009-12-03	HYUNDAI MOTOR* KCC* KOREA AUTOGLASS*	98 %
PURPOSE: Low-emissivity glass and a producing method thereof are provided to secure the high visible light transmission rate greater than 70% after a heat-treating process using dielectric layers and functional reflective-metal protecting layers. CONSTITUTION: Low-emissivity glass capable of bending and tempering includes the following: a first dielectric layer formed with Zn system oxides, and coated on a glass substrate; a first functional reflective-metal protecting layer protecting a functional reflective-metal layer during a heating process; the functional reflective-metal layer reflecting far infrared rays and the solar radiation; a second functional reflective-metal protecting layer; a second dielectric layer formed with either Si system nitrides or oxy-nitrides; and a top protecting layer.					
					
82.	Ig window unit having triple silver coating and dielectric coating on opposite sides of glass substrate	WO2018165645	2018-03-12	GUARDIAN GLASS*	98 %
An insulating glass (IG) window unit including first and second glass substrates that are spaced apart from each other. At least one of the glass substrate has a triple silver low-emissivity (low-E) coating on one major side thereof, and a dielectric coating for improving angular stability on the other major side thereof.					
					
83.	Solar-control or low-emissivity glazing comprising an upper protective layer	WO2016097557	2014-12-19	SAINT GOBAIN GLASS*	98 %
The invention relates to a material comprising a transparent substrate coated with a stack of thin layers comprising at least one silver-based functional metal layer characterized in that the stack comprises: - a dielectric layer based on silicon nitride and/or aluminium nitride located on top of a silver-based functional metal layer, - an upper protective layer based on titanium zirconium oxide located on top of the dielectric layer based on silicon nitride and/or aluminium nitride and having a ratio, by weight, of titanium to zirconium Ti/Zr of between 60/40 and 90/10.					
					
84.	Low-emissivity coated glass and laminated glass product thereof	CN103073196	2013-02-08	FUYAO GLASS INDUSTRY*	98 %
The invention relates to the field of glass coating, and particularly relates to low-emissivity coated glass and a laminated glass product thereof, in particular to single-silver or double-silver low-emissivity coated glass installed on a communication media. The low-emissivity coated glass comprises a glass substrate and a low-emissivity film, wherein the low-emissivity film comprises at least two dielectric layers and at least one infrared reflection layer, and each infrared reflection layer is positioned between two dielectric layers; and a high-refractive-index layer and a low-refractive-index layer are additionally arranged between the surface of the glass substrate and the low-emissivity film. As the low-emissivity coated glass and the laminated glass product thereof add the high-refractive index layer and the low-refractive index layer, on the one hand, the diffusion of alkali metal ions of the glass in the process of high-temperature heat treatment can be better blocked, and on the other hand, the reflectivity of a near infrared region can be greatly increased under the condition that the visible light transmittance is basically unchanged, therefore the solar direct transmittance is reduced, and the glass has a better solar energy blocking ability.					
					
85.	Heat-absorbing glazing	WO2014125083	2014-02-14	AGC GLASS EUROPE* AGSE GLASSES EUROPEOP AGC GLASS EUROPE	98 %
The invention relates to solar-control transparent glazing comprising, on a glass substrate, a transparent multilayer stack including an alternation of n silver-based functional layers and n+1 dielectric coatings, where n≥1, such that each functional layer is surrounded by dielectric coatings, and at least one solar-radiation-absorbing layer enclosed between two dielectric layers formed by a material selected from among aluminium or silicon nitrides or mixtures thereof, inside one of the dielectric coatings. At least one functional layer is disposed on top of the so-called absorbent layer, and an intermediate transparent oxide layer selected from among oxides of zinc, tin, zirconium, titanium or alloys of same and a zinc oxide-based wetting layer are disposed between the absorbent layer and the functional layer, the intermediate transparent oxide layer having a different composition from that of the wetting layer.					
$\Delta E^* = (\Delta L^{*2} + \Delta a^{*2} + \Delta b^{*2})^{1/2}$					
86.	Low emissivity coating with low solar heat gain coefficient, enhanced chemical and mechanical properties and method of making the same	WO2009067263	2007-11-23	AGC FLAT GLASS AGC GLASS* EHJ DZHI SI FLET GLASS NORT EHMERIKE INK	98 %
The invention provides low-emissivity stacks being characterized by a low solar heat gain coefficient (SHGC), enhanced aesthetics, mechanical and chemical durability, and a tolerance for tempering or heat strengthening. The invention moreover provides low-emissivity coatings comprising, in order outward from the substrate a first dielectric layer; a first nucleation layer; a first Ag layer; a first barrier layer; a second dielectric layer; a second nucleation layer; a second Ag layer; a second barrier layer; a third dielectric layer; and optionally, a topcoat layer, and methods for depositing such coatings on substrates.					
					

87.	Coated article with low-e coating having low visible transmission which may be used in ig window unit for grey appearance	WO2015023292	2013-08-16	CENTER LUXEMBOURG BOURGEOIS DE LUCHEL'S POOL LE VEIL LA CERAMIC CENTER LUXEMBOURG BOURGEOIS DE LUCHEL'SH Â· POOL Â· LE Â· VE Â· Â· Â· LA Â· CERAMICS CENTRE LUXEMBOURGEOIS DE RECHERCHES POUR LE VERRE & LA CERAMIQUE* GE DIEN INDUSTRIAL GORDIAN INDUSTRIAL CENTER LUXEMBOURG OISE DESERCHER CHASE POOLE WARRETTE CERAMIC S R GUARDIAN EUROPE S Â R L GUARDIAN EUROPE S Â** R L* GUARDIAN GLASS* GUARDIAN INDUSTRIES	98 %	
88.	Coated article with ir reflecting layer and method of making same	CA2659140	2008-04-21	CENTRE LUXEMBOURGEOIS DE RECHERCHES POUR LE VERRE & LA CERAMIQUE* GUARDIAN EUROPE S Â** R L* GUARDIAN GLASS* GUARDIAN INDUSTRIES	98 %	
89.	Alkali metal battery having an integral 3d graphene-carbon-metal hybrid foam-based electrode	US20170352868	2016-06-07	NANOTEK INSTRUMENTS*	98 %	
90.	Silver alloy, sputtering target, reflector for reflection lcd, reflection wiring electrode, thin film, manufacturing method therefor, optical recording medium, electro magnetic wave shield, metal material for electronic part, wiring material, electronic...	JP2004002929	2002-05-31	FURUYA KINZOKU*	98 %	

This invention relates to a **coated** article including a low-emissivity (low-E) **coating**. In certain example embodiments, the low-E **coating** is provided on a **substrate** (e.g., **glass substrate**) and includes at least first and second infrared (IR) reflecting layers (e.g., **silver** based layers) that are spaced apart by contact layers (e.g., NiCr based layers) and a dielectric layer of or including a material such as **silicon nitride**. In certain example embodiments, the **coated** article has a low visible transmission (e.g., no greater than 60%, more preferably no greater than about 55%, and most preferably no greater than about 50%).

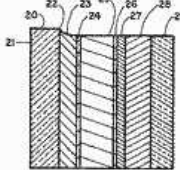
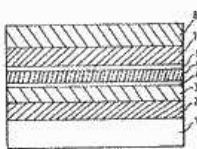
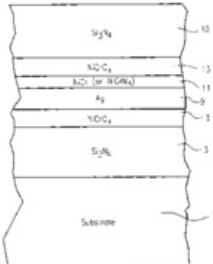
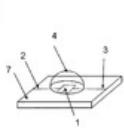
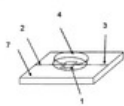
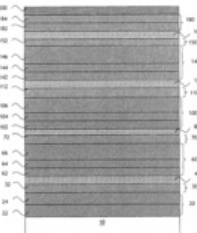
A low-E **coating** supported by a **glass substrate**, the **coating** from the **glass substrate** outwardly including at least the following layers: a dielectric layer of or including **silicon nitride**; a high index layer having a refractive index of at least 2.1; another dielectric layer of or including **silicon nitride**; a layer comprising zinc oxide; an infrared (IR) reflecting layer, wherein the **coating** includes only one IR reflecting layer; and an overcoat including (i) a layer comprising tin oxide and (ii) a layer comprising **silicon nitride** located over and contacting the layer comprising tin oxide. An IG unit including the **coating** may have a visible transmission of at least 70%.

Provided is a lithium or sodium metal battery having an anode, a cathode, and a porous separator and/or an electrolyte, wherein the anode contains an integral 3D graphene-carbon hybrid foam composed of multiple pores, pore walls, and a lithium-attracting metal residing in the pores; wherein the metal is selected from Au, **Ag**, Mg, Zn, Ti, Na, K, Al, Fe, Mn, Co, **Ni**, Sn, V, **Cr**, or an alloy thereof and is in an amount of 0.1% to 50% of the total hybrid foam weight or volume, and the pore walls contain single-layer or few-layer graphene **sheets** chemically bonded by a carbon material having a carbon material-to-graphene weight ratio from 1/200 to 1/2, wherein graphene **sheets** contain a pristine graphene or non-pristine graphene selected from graphene oxide, reduced graphene oxide, graphene fluoride, graphene chloride, graphene bromide, graphene iodide, hydrogenated graphene, **nitrogenated** graphene, doped graphene, chemically functionalized graphene, or a combination thereof.

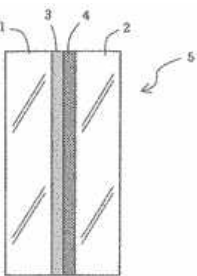
PROBLEM TO BE SOLVED: To provide a **silver** alloy having characteristics of superior corrosion resistance, high reflectance, low electric resistance and superior heat resistance, and to provide a sputtering target.

SOLUTION: The **silver** alloy superior in corrosion resistance includes **Ag** as a main component, and at least one element selected from the group composed of Ti, Zr, Hf, V, Nb, Ta, **Cr**, Mo, W, Fe, Ru, Co, Rh, Ir, **Ni**, Pd, Pt, Cu, Au, Zn, Al, Ga, In, Si, Ge and Sn. The content of at least one each element described above is preferably 0.1 atom% or more but 8.0 atom% or less. The sputtering target is comprised of the **silver** alloy. The sputtering target can be used for manufacturing a reflector for a reflection LCD or a reflection wiring electrode, which controls the yellowing of reflected light.

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91.	Mirrors.	CA2120877	1994-04-08	BCS BOC* BOCOC	98 %	
A first or second surface mirror comprising in order: a substrate (20); a first metal precoat layer (24); a reflective metal layer (25); a second metal precoat layer (26); and a protective layer (27), characterised in that the first metal precoat layer (24) comprises nickel and chromium or chromium nitride and the second metal precoat layer (26) comprises nickel and chromium or chromium nitride . <IMAGE>						
						FIG. 2.
92.	Glass substrates coated with a stack of thin layers, application to glass sheets with infra-red radiation reflective properties and/or with solar radiation properties	NO940395	1993-02-11	SAINT GOBAIN VITRAGE*	98 %	
A transparent substrate (1), especially of glass , provided with a stack of thin layers comprising at least one metallic layer (5) with properties in the infrared, especially of low emission, arranged between two coatings based on dielectric material. The coating underlying the layer (5) with properties in the infrared comprises at least one wetting coating which is adjacent to the said layer (5) and which includes a layer (3) either based on tantalum oxide or based on niobium oxide. <IMAGE>						
						FIG. 1
93.	Coated article with improved barrier layer structure and method of making the same	WO03042122	2001-11-13	GUARDIAN GLASS* GUARDIAN INDUSTRIES	98 %	
A coated article, and a corresponding method of making the same are provided. The coated article includes a coating supported by a substrate , the coating including a thin metal or metal nitride contact layer (e.g., NiCr, Ni , Cr , CrNx or NiCrNx) located directly between and contacting an infrared (IR) reflecting layer (e.g., Ag) and an oxide barrier layer (e.g., NiCrOx).						
94.	Co-doped silicooxynitrides	WO2011006565	2009-07-11	MERCK*	98 %	
The invention relates to compounds of the formula (I) (Ca,Sr,Ba)6-X (Si1-yMey)3(O1-zMa2z)6N4: Eux (I) where Me = Th, Ru and/or Os, Ma = F and/or Cl, x < 0.5, y < 1 and z < 0.1, and also to a process for producing these compounds and use as light-emitting substances, and also to conversion light-emitting substances for the conversion of the blue emission or the emission in the near UV from an LED.						Fig 1  Fig 2 
95.	Window comprising a solar control coating	WO2014139755	2014-02-14	AGC GLASS EUROPE*	98 %	
The invention relates to a solar control glass panel comprising, on at least one of the surfaces of a glass substrate , a multilayer stack including at least one solar radiation absorption layer, and dielectric coatings surrounding said solar radiation absorption layer. According to the invention, the solar radiation absorption layer is a metal alloy layer made from zirconium and chromium . The multilayer stack includes, between the substrate and the solar radiation absorption layer, as well as on top of the solar radiation absorption layer, at least one coating made of a dielectric material made from a compound selected from among silicon oxide, aluminum oxide, silicon nitride , aluminum nitride , mixed aluminum/ silicon nitrides , silicon oxynitride, and aluminum oxynitride. The invention is particularly useful as a motor vehicle glass panel, particularly for the roof, as a building glass panel, or as a household stove door.						$\Delta E^* = (\Delta L^{*2} + \Delta a^{*2} + \Delta b^{*2})^{1/2}$
96.	Substrate which is equipped with a stack having thermal properties	FR2893024	2005-11-08	SAINT GOBAIN GLASS*	98 %	
The invention relates to a substrate (10), such as a transparent glass substrate , which is equipped with a stack of thin layers comprising an alternating stack of n functional layers (40) having reflection properties in the infrared and/or solar radiation range, particularly metal functional layers based on silver or metal alloy containing silver , and (n+1) dielectric coatings (20, 60), wherein n = 1, said coatings being formed by one or more layers (22, 24, 62, 64) of which at least one is made from a dielectric material, such that each functional layer (40) is disposed between at least two dielectric coatings (20, 60). The invention is characterised in that at least one functional layer (40) comprises a blocking coating (30, 50) consisting of at least one interface layer (32, 52) which is in direct contact with the functional layer and which is based on titanium oxide TiO_x.						

The present invention relates to a laminated **glass** having an interlayer film between at least two transparent **glass** platy bodies. Functional ultra-fine particles of a particle diameter of not greater than 0.2µm are dispersed in the interlayer film. The functional ultra-fine particles comprise a single substance of metal, oxide, **nitride**, sulfide or Sb- or F-doped substance of Sn, Ti, Si, Zn, Zr, Fe, Al, **Cr**, Co, Ce, In, **Ni**, **Ag**, Cu, Pt, Mn, Ta, W, V and Mo, or a composite selected from at least two of these, or a mixture containing an organic resin substance in the single substance or composite, or a **coated** substance **coated** with the single substance or composite, or an antimony-doped tin oxide and/or tin-doped indium oxide. An infrared-reflective film that selectively reflects a near-infrared ray and has a **sheet** resistivity ranging from 1kΩ/□ to 10GΩ/□ is formed on at least one surface of the interlayer film or at least one transparent **glass** platy body.



Transparent **substrate** (1), notably **glass**, is provided with a stack of thin films incorporating at least one metal film (4) with infrared reflective properties, notably low emissive, arranged between two **coatings** of a dielectric based material. The underlying **coating** comprises an anchoring film (2) of zinc oxide (ZnO), possibly doped with aluminum (Zn: Al) directly in contact with the metal layer. Each of the two dielectric **coatings** includes at least one film with an elevated refractive index, greater than or equal to 2.2. An independent claim is also included for low emissive or anti-solar multiple glazing incorporating the transparent **substrate**.

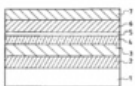


FIG 1

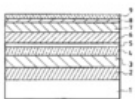
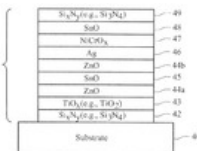


FIG 2

A projected capacitive touch panel, including a **substrate**, a **silver**-inclusive transparent conductive **coating** which forms a plurality of row electrodes, a plurality of column electrodes, and a plurality of conductive traces, and a signal processor which sequentially measures a capacitance between each of row electrodes and an adjacent column electrode. The row electrodes, the plurality of column electrodes, and the plurality of traces are on a plane substantially parallel to the **substrate**. Each of the row electrodes is electrically connected to the signal processor by one of the plurality of conductive traces. The plurality of traces are at least partially substantially parallel to the column electrodes.



A glazing panel has a **coating** stack comprising in sequence at least a base antireflective layer, an infra-red reflecting layer, a top antireflective layer and a top **coat** layer comprising in sequence at least two sublayers: a first one consisting essentially of at least one material selected from the group consisting of titanium, titanium oxide and titanium **nitride**, and a second one, consisting essentially of **silicon** oxide, **silicon nitride**, **silicon** oxynitride, **silicon** carbide, **silicon** carbonitride, **silicon** oxycarbide, or **silicon** oxycarbonitride. The second topcoat sublayer may have a geometrical thickness in the ranges 15 to 30 Å or 200 to 400 Å.

30 Å