

## HANGZHOU DONGKE NEW ENERGY TECH CO., LTD

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## LOW IRON PATTERN GLASS SPECIFICATION (TEMPERED)

Dimensions and Tolerances       Length and Width Variation $-1 \sim +1 \text{nm}$ Diagonal Variation       <0.2% of the length of long edge         Thickness       3.2 mm thickness       3.0 $\sim$ 3.4 mm         Jolerances       Thickness       3.2 mm thickness       3.0 $\sim$ 3.4 mm         Flatness       0verall Bow       < 0.3%       BS EN 12150-1:2000         Flatness       Overall Bow       < 0.5mm/300mm       BS EN 12150-1:2000         Machanical Strength Test       2 2400Pa       EN 61215:2005         Machanical Strength Test       2 2400Pa       EN 61215:2005         Impact Test       The first qualified       Qualified       use a steel ball of 38mm diameter (weight: 225g) drop from 100mm height Freely to hit the center area (25mm to the center) of the glass.         Physical Characteristics       Fragmentation       no less than 40pc in 50°50mm area of testing sample. Testing on final product size.       BS EN 12150-1:2000         Fragmentation       Incless than 40pc in 50°50mm area of testing sample. Testing on final product size.       BS EN 12150-1:2000       BS EN 12150-1:2000         Ibuble (per plate)       Diameter       \$1mm       1mm -2mm       >2mm         Jourdet free       1       10       1       5       0         Jourdet free       1       10       1       1		ltem				Speci	ficat	ion		Te	estin / Sta	g Meth andard	nod I
Dimensions and Tolerances         Diagonal Variation         <0.2% of the length of long edge           Dimensions and Tolerances         3.2 mm thickness         3.0 ~ 3.4 mm           Hitchness         3.7 ~ 4.3 mm           A.0 mm thickness         3.7 ~ 4.3 mm           Flatness         Overall Bow         ≤ 0.3%           Machanical Strength Test         ≥ 2400Pa         EN 61215:2005           Machanical Strength Test         ≥ 2400Pa         EN 61215:2005           Machanical Strength Test         ≥ 2400Pa         EN 61215:2005           Impact Test         The first qualified         Qualified         use a steel ball of 38mm diameter (weight: 225g) drop from 1000mm height freely to hit the center area (25mm to the center of the glass.           Physical Characteristics         Fragmentation         no less than 40pc in 50*50mm area of testing sample. Testing on final product size.         BS EN 12150-1:2000           Fragmentation         no less than 40pc in 50*50mm area of testing sample. Testing on final product size.         BS EN 12150-1:2000           Ibabble (per plate)         Diameter         ≤1mm         1mm - 2mm         >2mm           1) But below 0.5m consider as seeds and no limit for the numbers.         1) 1) But below 0.5m consider as seeds and no limit for the numbers.            Longitudinal Bubble (per plate)         Cleart means the number of bubble >20 in any 100	Dimensions and Tolerances	Sizo	Length and Width Variation		-1~+1mm								
Dimensions and Tolerances         Thickness         3.2 mm thickness         3.0 ~ 3.4 mm           Thickness         4.0 mm thickness         3.7 ~ 4.3 mm           Flatness         Overall Bow         ≤ 0.3%         BS EN 12150-1:2000           Machanical Strength Test         ≥ 2400Pa         EN 61215:2005           Machanical Strength Test         Qualified         use a steel ball of 38mm diameter (weight: 225g) drop forp forp infonal product size.           Physical Characteristics         The first not qualified         Qualified         use a steel ball of 38mm diameter area (25mm to the center) of the glass.           Fragmentation         no less than 40pc in 50*50mm area of testing sample. Testing on final product size.         BS EN 12150-1:2000           Ibubble (per plate)         Diameter ≤1mm         1mm - 2mm         >2mm           Allowable Quantity         10 <sup>3</sup> 1         0		Size	Diagonal Variation		<0.2% of the length of long edge				ge				
Tolerances       Inickness       4.0 mm thickness       3.7 ~ 4.3 mm         Platness       Overall Bow $\leq 0.3\%$ BS EN 12150-1:2000         Impact Test       Local Bow $\leq 0.5mn/300mm$ BS EN 12150-1:2000         Physical Characteristics       Impact Test $\geq 1400Pa$ EN 61215:2005         Impact Test       The first qualified       Qualified       use a steel bail of 38mm diameter (weight: 225g) drop from 1000mm height freely to hit the center area (25mm to the center) of the glass.         Physical Characteristics       Fragmentation       no less than 40pc in 50*50mm area of testing sample. Testing on final product size.       BS EN 12150-1:2000         Repearance       Spherical Bubble (per plate)       Diameter $\leq 1mm$ 1mm - 2mm $\geq 2mm$ Appearance       Scratch (per plate) $\overline{Wdth}$ $\leq 1mm$ 1mm - 2mm $\geq 10m$ Appearance       Scratch (per plate) $\overline{Vdth}$ $\leq 5mm$ $1 pc$ not allowed         Appearance       Edge       All edges are grinded to "C" shape $\overline{Vdth}$ $\leq 5mm$ $1 pcc$ not allowed         Appearance       Edge       All edges are grinded to "C" shape $\overline{Vdth}$ $\overline{Vdth}$ $\overline{Vdth}$ $\overline{Vdth}$ $\overline{Vdth}$ $\overline{Vdth}$ $$		Thislanses	3.2 mm thickness		$ m 3.0 \sim 3.4~mm$								
Flatness $Overall Bow$ $\leq 0.3\%$ BS EN 12150-1:2000Physical CharacteristicsMachanical Strength Test $\geq 2400$ PaEN 61215:2005Impact TestThe first qualifiedQualifieduse a steel ball of 38mm diameter (weight: 225g) drop from 1000mm height freely to hit the center area (25mm to the center) of the glass.Physical CharacteristicsThe first not qualified2 samples more, should be both qualified.Not the center area (25mm to the center) of the glass.Physical CharacteristicsFragmentationno less than 40pc in 50°50mm area of testing sample. Testing on final product size.BS EN 12150-1:2000Papearance $Output Impact Impa$		Thickness	4.0 mm thickness		$3.7 \sim 4.3~\text{mm}$								
Induces         Local Bow         ≤ 0.5mm/300mm         BS EN 12150-1:2000           Machanical Strength Test         ≥ 2400Pa         EN 61215:2005           Impact Test         The first qualified         Qualified         use a steel ball of 38mm diameter (weight: 225g) drop from 100mm height freely to hit the center area (25mm to the center) of the glass.           Physical Characteristics         The first not qualified         2 samples more, should be both qualified.         BS EN 12150-1:2000           Fragmentation         no less than 40pc in 50°50mm area of testing sample. Testing on final product size.         BS EN 12150-1:2000           Fragmentation         no less than 40pc in 50°50mm area of testing sample. Testing on final product size.         BS EN 12150-1:2000           Allowable Quantity         10 <sup>1)</sup> 5         0           1) But below 0.5mm consider as seeds and no limit for the numbers.         1) But below 0.5mm consider as seeds and no limit for the numbers.           Appearance         Congitudinal Bubble (per plate)         Viet means the number of bubble >20 in any 100mm diameter area           * Cluster means the number of bubble >20 in any 100mm diameter area         >25mm           Scratch (per plate)         Viet means the number of bubble >20 in any 100mm diameter area           * Cluster means the number of simm-10mm 10mm-25mm >25mm         >25mm           inclusion         For inclusions smaller than 1.5 mm×0.5 mm, 4		Flataooo	Overall Bow		≤ 0.3%					BS EN 12150-1:2000			
Machanical Strength Test         ≥ 2400Pa         EN 61215:2005           Physical Characteristics         Impact Test         The first qualified         Qualified         use a steel ball of 38mm diameter (weight: 225g) drop from 1000mm height freely to hit the center area (25mm to the center) of the glass.           Fragmentation         no less than 40pc in 50°50mm area of testing sample. Testing on final product size.         BS EN 12150-1:2000           Spherical Bubble (per plate)         Diameter         ≤1mm         1mm - 2mm         > 2mm           Allowable Quantity         10 <sup>-1)</sup> 5         0         0           1) But below 0.5mm consider as seeds and no limit for the numbers.         10         10         10         10           Appearance         Caratch (per plate)         Width         <1mm		Fiduless	Local Bow		≤ 0.5mm/300mm					BS EN 12150-1:2000			
Physical Characteristics       Impact Test       The first qualified       Qualified       use a steel ball of 38mm diameter (weight: 225g) drop from 1000mm height freely to hit the center area (25mm to qualified.         Physical Characteristics       The first not qualified       2 samples more, should be both qualified.       bit the center area (25mm to the center) of the glass.         Fragmentation       no less than 40pc in 50*50mm area of testing sample. Testing on final product size.       BS EN 12150-1:2000         Allowable Quantity       10 <sup>11</sup> 5       0         1) But below 0.5mm consider as seeds and no limit for the numbers.       1) But below 0.5mm consider as seeds and no limit for the numbers.         Longitudinal Bubble (per plate)       Vidth       1 num       1 num       2 num         * Cluster means the number of bubble >20 in any 100mm diameter area       1 louwed       not allowed       not allowed         * Cluster means the number of bubble >20 in any 100mm diameter area       1 num	Physical Characteristics	Machanical Strength Test			≥ 2400Pa					EN 61215:2005			
Physical Characteristics       Impact Test       The first not qualified       2 samples more, should be both qualified.       from 1000mm height freely to hit the center area (25mm to the center) of the glass.         Fragmentation       no less than 40pc in 50°50mm area of testing sample. Testing on final product size.       BS EN 12150-1:2000         Spherical Bubble (per plate)       Diameter       ≤1mm       1mm - 2mm       > 2mm         Allowable Quantity       10 <sup>1)</sup> 5       0         1) But below 0.5mm consider as seeds and no limit for the numbers.         Longitudinal Bubble (per plate)       Vidth       1mm       1mm-2mm       2mm-5mm       5-10mm       >10mm         * Cluster means the number of bubble >20 in any 100mm diameter area       * Cluster means the number of bubble >20 in any 100mm diameter area       >25mm         Scratch (per plate)       Vidth       <5mm		Impact Test	The first qualified		Qualified				use diar	use a steel ball of 38mm diameter (weight: 225g) drop			
Fragmentation       no less than 40pc in 50*50mm area of testing sample. Testing on final product size.       BS EN 12150-1:2000         Bubble (per plate)       Diameter       \$\$\frac{1mm}{1mm} - 2mm \$> 2mm\$}       \$\$D = 2mm\$}         Allowable Quantity       10 <sup>1)</sup> 5       0       \$\$0         1) But below 0.5mm consider as seeds and no limit for the numbers.       \$\$10mm \$\$10mm\$}       \$\$10mm\$}       \$\$10mm\$}         Appearance       \$\$\frac{1.5mm}{0}m\$ all allowed \$\$not clustered \$\$4\$ pcs \$\$1\$ pc \$\$not allowed \$\$\$not allowed \$\$\$not allowed \$\$\$not allowed \$\$\$\$not allowed \$			The first not qualified		2 samples more, should be both qualified.			fron hit t the	from 1000mm height freely to hit the center area (25mm to the center) of the glass.				
Spherical Bubble (per plate)       Diameter       ≤1mm       1mm - 2mm       > 2mm         Allowable Quantity       10 <sup>1)</sup> 5       0         1) But below 0.5mm consider as seeds and no limit for the numbers.         Longitudinal Bubble (per plate)       Imm       1mm       1mm-2mm       2mm-5mm       >10mm          -1.5mm       all allowed       *not clustered       4 pcs       1 pc       not allowed           -1.5mm       not allowed       *not clustered       4 pcs       1 pc       not allowed         * Cluster means the number of bubble >20 in any 100mm diameter area       * Cluster means the number of bubble >20 in any 100mm diameter area         Scratch (per plate)       Imm       <5mm		Fragmentation			no less than 40pc in 50*50mm area of testing sample. Testing on final product size.				BS	BS EN 12150-1:2000			
Allowable Quantity       10 <sup>1)</sup> 5       0         Allowable Quantity       10 <sup>1)</sup> 5       0         1) But below 0.5mm consider as seeds and no limit for the numbers.         Longitudinal Bubble (per plate)       Vidth       <1mm		Spherical Bubble	Diameter		≤1mm 1		1m	m - 2mm	>	> 2mm			
Appearance       (per plate)       1) But below 0.5mm consider as seeds and no limit for the numbers.         Appearance       Longitudinal Bubble (per plate)       Image: Length < 1mm			Allowable Quantity		10 <sup>1)</sup>		5	0					
Appearance       Longitudinal Bubble (per plate)       Length       <1mm		(per plate)	1) But below 0.5mm consider as seeds and no limit for the numbers.										
Appearance       Longitudinal Bubble (per plate)       <1.5mm	Appearance	Longitudinal Bubble (per plate)	Length <1m		ım 1mm-2mm		n 2	2mm-5mm	5-10m	-10mm >		Dmm	
Appearance       (per plate)       ≥1.5mm       not allowed			<1.5mm	all allo		*not clustered		4 pcs	1 pc		not a	ot allowed	
* Cluster means the number of bubble >20 in any 100mm diameter area         * Cluster means the number of bubble >20 in any 100mm diameter area         Scratch (per plate)       Viete of the space         Vidth       <5mm			≥1.5mm	≥1.5mm not alle		owed not allowed		ot allowed	not allowed		not a	llowed	
Scratch (per plate)       Length       <5mm       5mm-10mm       10mm-25mm       >25mm         <1mm			* Cluster means the number of bubble >20 in any 100mm diameter area										
(per plate)       <1mm       4 pieces       2 pieces       1 piece       not allowed         ≥1mm       not allowed       not allowed       not allowed       not allowed       not allowed         Inclusion       For inclusions smaller than 1.5 mm×0.5 mm, 4 pieces can be accepted at most. The space between two inclusions should less than 300mm         Edge       All edges are grinded to "C" shape		Scratch (per plate)	Length <5mm		5mm-10mm		ım	10mm-25mm		ı >25mm			
Inclusion       For inclusions smaller than 1.5 mm×0.5 mm, 4 pieces can be accepted at most. The space between two inclusions should less than 300mm         Edge       All edges are grinded to "C" shape			<1mm 4	<1mm 4 pieces		2 pieces		1 piece		not allowed			
Edge All edges are grinded to "C" shape		Inclusion	For inclusions smaller than 1.5 mm×0.5 mm, 4 pieces can be ad							cepte	d at r	most. T	he space
-		Edge	All edges are grinded to "C" shape										

## LOW IRON PATTERN GLASS SPECIFICATION (TEMPERED)

Appearance	Corner	4 corners are chamfered	, 0∼4.0 mm					
	Edge Chip	Extend along the length	i ≤10mm					
		Extend to the surface	b ≤2mm					
		Extend to the thickness	<u>c≤1mm</u>					
		Allowable Quantity 4 pieces/plate						
	Surface	Roughness (Ra)	Ra: 0.4 to 1.0 micron	ISO 4278:1997				
Others	Ir	on Content	≪0.015%	Tested by XRF (X Ray Fluorescence)				
	Transmitta	ance (380~1100nm)	not less than 91 %	TUV				
	Appea	rance Inspection	The glass pane to be examined is illuminated in conditions approximating to diffuse daylight and is observed in front of a matt grey screen. Place the pane of glass to be examined vertically 3 m in front of the parallel to the screen. Arrange the point of observation 1.5 m from the glass, keeping the direction of observation normal to the glass surface.	BS-EN 572-5:2004				