|  |  |  |  |
| --- | --- | --- | --- |
| Test Laboratory: | TUV-NORD | Manufacturer: | FUYAO-GZ |
| Test Place: | FUYAO-GZ | Application: | ECE |
| Extension: | ~~yes~~ / no | Test date: | {{test\_date}} |
| Type designation: | {{windscreen\_thick}} | Inspector: | Yijun CHEN |

|  |  |  |
| --- | --- | --- |
| 1. Principal characteristics |  |  |
| number of layers of glass | : | {{glass\_layers}} |
| number of layers of interlayer | : | {{interlayer\_layers}} |
| nominal thickness of the windscreen | : | {{windscreen\_thick}} |
| nominal thickness of interlayer(s) | : | {{interlayer\_thick}} |
| special treatment of glass | : | {{glass\_treatment}} |
| nature and type of interlayer(s) | : | {{interlayer\_type}} |
| nature and type of plastics coating(s) | : | {{coating\_type}} |
| nominal thickness of plastics coating(s) | : | {{coating\_thick}} |
| 2. Secondary characteristics |  |  |
| nature of the material | : | {{material\_nature}} |
| colouring of glass | : | {% if glass\_color\_choice == "tinted\_struck" %}(colourless/~~tinted~~){% elif glass\_color\_choice == "colourless\_struck" %}(~~colourless~~/tinted){% elif glass\_color\_choice == "both\_visible" %}(colourless/tinted){% endif %} |
| colouring of plastics coating(s) | : | {{coating\_color}} |
| colouring of interlayer | : | ({% if interlayer\_total %}total{% else %}~~total~~{% endif %}/{% if interlayer\_partial %}partial{% else %}~~partial~~{% endif %}) {% if not interlayer\_colourless and (interlayer\_total or interlayer\_partial) %}tinted{% else %}~~tinted~~{% endif %}/{% if interlayer\_colourless %}colourless{% else %}~~colourless~~{% endif %} |
| conductors incorporated | : | {% if conductors\_choice == "yes\_struck" %}~~yes~~/no{% elif conductors\_choice == "no\_struck" %}yes/~~no~~{% elif conductors\_choice == "both\_visible" %}yes/no{% endif %} |
| opaque obscuration incorporated | : | {% if opaque\_obscure\_choice == "yes\_struck" %}~~yes~~/no{% elif opaque\_obscure\_choice == "no\_struck" %}yes/~~no~~{% elif opaque\_obscure\_choice == "both\_visible" %}yes/no{% endif %} |
| 3. Windowscreen paratemeters | : | Refer to info document |

|  |  |  |
| --- | --- | --- |
| Ambient Condition: | Actual |  |
| Temperature : | 22 | 20 °C ± 5 °C |
| Pressure: | 1020 | 860 to 1,060 mbar |
| Relative humidity: | 50 | 60 ± 20 per cent. |

Test Sample: C2507202-001#-048#

Headform test: (annex 6 / 3):

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test on a complete windscreen | | | | |
| Type of vehicle: AHT | | | | |
| Height of fall (m) | | 1.5 m +0/-5mm | | |
| Stored in above-mentioned condition for at least 4 hrs: Yes / ~~No~~ | | | | |
| sample | Cracks nearest to impact point not more than 80mm | | 1 or more partial interlayer separation less than 4mm in breath, on either crack side, 60mm diameter centered impact point | on impact point the interlayer must not be laid bare over an area of more than 20cm2 & a tear in interlayer up to a length of 35mm is allowed |
| 001# | Yes / ~~No~~ | | Yes / ~~No~~ | Yes / ~~No~~ |
| 002# | Yes / ~~No~~ | | Yes / ~~No~~ | Yes / ~~No~~ |
| 003# | Yes / ~~No~~ | | Yes / ~~No~~ | Yes / ~~No~~ |
| 004# | Yes / ~~No~~ | | Yes / ~~No~~ | Yes / ~~No~~ |
| Result: | Pass / ~~Fail~~ | | | |

Mechanical strength test (A6/4.2./4.3.)

|  |  |  |  |
| --- | --- | --- | --- |
| 2,260 g ball on Inner face ( Annex 6 / 4.2) | | | |
| Height of fall (m): 4m +25/-0mm | | | |
| Stored in 232C at least 4 hrs: Yes / ~~No~~ | | | |
| sample | Ball not pass through within 5 seconds | sample | Ball not pass through within 5 seconds |
| 037# | Yes ~~/ No~~ | 043# | Yes ~~/ No~~ |
| 038# | Yes ~~/ No~~ | 044# | Yes ~~/ No~~ |
| 039# | Yes ~~/ No~~ | 045# | Yes ~~/ No~~ |
| 040# | Yes ~~/ No~~ | 046# | Yes ~~/ No~~ |
| 041# | Yes ~~/ No~~ | 047# | Yes ~~/ No~~ |
| 042# | Yes ~~/ No~~ | 048# | Yes ~~/ No~~ |
| Result: | Pass ~~/ Fail~~ | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 227 g ball on outer face( Annex 6 /4.3) | | | | | | | |
| Stored in +402C for at least 4 hrs: Yes ~~/ No~~ | | | | Stored in -202C for at least 4 hrs: Yes ~~/ No~~ | | | |
| Height of fall (m): 9 m | | | | 8.5 m | | | |
| Sample | Ball not pass through | Not break into several pieces | Total weight of fragment  Limit value:  ~~12/~~15~~/20/25~~ g | Sample | Ball not pass through | Not break into several pieces | Total weight of fragment  Limit value:  ~~12/~~15~~/20/25~~ g |
| 017# | Yes ~~/ No~~ | Yes ~~/ No~~ | 0.7 | 027# | Yes ~~/ No~~ | Yes ~~/ No~~ | 1.4 |
| 018# | Yes ~~/ No~~ | Yes ~~/ No~~ | 0.6 | 028# | Yes ~~/ No~~ | Yes ~~/ No~~ | 1.3 |
| 019# | Yes ~~/ No~~ | Yes ~~/ No~~ | 0.8 | 029# | Yes ~~/ No~~ | Yes ~~/ No~~ | 1.1 |
| 020# | Yes ~~/ No~~ | Yes ~~/ No~~ | 0.8 | 030# | Yes ~~/ No~~ | Yes ~~/ No~~ | 1.7 |
| 021# | Yes ~~/ No~~ | Yes ~~/ No~~ | 0.4 | 031# | Yes ~~/ No~~ | Yes ~~/ No~~ | 1.9 |
| 022# | Yes ~~/ No~~ | Yes ~~/ No~~ | 0.5 | 032# | Yes ~~/ No~~ | Yes ~~/ No~~ | 2.2 |
| 023# | Yes ~~/ No~~ | Yes ~~/ No~~ | 0.9 | 033# | Yes ~~/ No~~ | Yes ~~/ No~~ | 1.6 |
| 024# | Yes ~~/ No~~ | Yes ~~/ No~~ | 0.3 | 034# | Yes ~~/ No~~ | Yes ~~/ No~~ | 2.0 |
| 025# | Yes ~~/ No~~ | Yes ~~/ No~~ | 0.5 | 035# | Yes ~~/ No~~ | Yes ~~/ No~~ | 2.3 |
| 026# | Yes ~~/ No~~ | Yes ~~/ No~~ | 0.7 | 036# | Yes ~~/ No~~ | Yes ~~/ No~~ | 1.8 |
| Result: | Pass / ~~Fail~~ | | | | | | |
| remark, e≤4.5(12), 4.5＜e≤5.5(15), 5.5＜e≤6.5(20), e＞6.5(25) | | | | | | | |

Resistance to abrasion: outer face (Annex 6 /5.1)

|  |  |  |  |
| --- | --- | --- | --- |
| Stored in above-mentioned condition for at least 48 hrs: Yes / ~~No~~ | | | |
| 005# | Initial haze | Haze after abrasion | Difference ( 2% max) |
| 0.17 | 0.31 | 0.14 |
| 006# | Initial haze | Haze after abrasion | Difference ( 2% max) |
| 0.14 | 0.27 | 0.13 |
| 007# | Initial haze | Haze after abrasion | Difference ( 2% max) |
| 0.14 | 0.34 | 0.20 |
| Result: | Pass / ~~Fail~~ | | |

## **Resistance to high temperature (A6/5.2)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Immersing sample vertically | | | Yes / ~~No~~ | | |
| Heat to 100 C for 2 hours | | | Yes / ~~No~~ | | |
| Cool to room temperature | | | Yes / ~~No~~ | | |
| Colorless  interlayer | sample | No bubble or other defects | ~~Tinted~~  ~~interlayer~~ | ~~sample~~ | ~~No bubble or other defects~~ |
| 008# | Yes ~~/ No~~ | ~~1~~ | ~~Yes / No~~ |
| 009# | Yes ~~/ No~~ | ~~2~~ | ~~Yes / No~~ |
| 010# | Yes ~~/ No~~ | ~~3~~ | ~~Yes / No~~ |
| Result | Pass ~~/ Fail~~ | | ~~Result~~ | ~~Pass / Fail~~ | |

## **Resistance to radiation (A6/5.3)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| maintain the temperature of test piece at 455 C throughout test : Yes / ~~No~~ | | | | | |
| outer face direct to lamp. The exposure time shall be 100hours : Yes / ~~No~~ | | | | | |
| secondary characteristics: | | | | | |
| Glass | Interlayer | Sample | Initial transmittance | Transmittance after radiation  ( min transmittance: 70% | Difference  ( min: 95%) |
| ~~Colorless~~ | ~~Colorless/ Tinted~~ | ~~1~~ | ~~---~~ | ~~---~~ | ~~---~~ |
| ~~2~~ | ~~---~~ | ~~---~~ | ~~---~~ |
| ~~3~~ | ~~---~~ | ~~---~~ | ~~---~~ |
| Tinted | Colorless/ ~~Tinted~~ | 011# | 79.7 | 79.6 | 99.9 |
| 012# | 79.8 | 79.6 | 99.7 |
| 013# | 79.7 | 79.5 | 99.7 |
| Result | | Pass / ~~Fail~~ | | | |

## **Resistance to humidity (A6/5.4)**

|  |  |  |
| --- | --- | --- |
| Immersing sample vertically | | Yes ~~/ No~~ |
| keep temperature 502 C , relative humidity: 954%  maintained for 2 weeks | | Yes ~~/ No~~ |
| maintain in ambient atmosphere for 2 hrs | | Yes ~~/ No~~ |
|  | Sample | No Significant change existing |
| Colorless  interlayer | 014# | Yes ~~/ No~~ |
| 015# | Yes ~~/ No~~ |
| 016# | Yes ~~/ No~~ |
| ~~Tinted~~  ~~interlayer~~ | ~~1~~ | ~~Yes / No~~ |
| ~~2~~ | ~~Yes / No~~ |
| ~~3~~ | ~~Yes / No~~ |
| Result: | Pass / ~~Fail~~ | |

## **Light transmission test (A3/9.1)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Second characteristics involved | | | Actual transmittance | Comparison  ( limit ≥70%) |
| Coloring of glass | Coloring of interlayer | Opaque obscuration |
| ~~Clear~~ | ~~Clear/Tinted~~ | ~~yes/no~~ | ~~---~~ |
| Tinted | Clear/~~Tinted~~ | ~~yes/no~~ | 79.7 / 79.8 / 79.7 |
| Result: | Pass / ~~Fail~~ | | | |

## **Optical distortion test (A3/9.2)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type of vehicle: AHT | | | | |
|  | M1/ N1 Category | | ~~M, N Category others than M1,N1~~ | ~~Agricultural vehicles etc.~~ |
| Sample | Area A | Area B | ~~Area I~~ | ~~Area I'~~ |
| 001# | 0.4 | 1.1 | ~~---~~ | ~~---~~ |
| 002# | 0.5 | 1.2 | ~~---~~ | ~~---~~ |
| 003# | 0.4 | 1.1 | ~~---~~ | ~~---~~ |
| 004# | 0.5 | 1.1 | ~~---~~ | ~~---~~ |
| Limit value | 2’ of arc | 6’ of arc | ~~2’ of arc~~ | ~~2’ of arc~~ |
| Result | Pass / ~~Fail~~ | | | |

## **Secondary-image-separation test (A3/9.3)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type of vehicle: AHT | | | | |
|  | M1 / N1 Category | | ~~M, N Category others than M1,N1~~ | ~~Agricultural vehicles etc.~~ |
| Sample | Area A | Area B | ~~Area I~~ | ~~Area I'~~ |
| 001# | 8 | 10 | ~~---~~ | ~~---~~ |
| 002# | 6 | 10 | ~~---~~ | ~~---~~ |
| 003# | 8 | 10 | ~~---~~ | ~~---~~ |
| 004# | 8 | 10 | ~~---~~ | ~~---~~ |
| Limit value | 15’ of arc | 25’ of arc | ~~15’ of arc~~ | ~~15’ of arc~~ |
| Result | Pass / ~~Fail~~ | | | |