

ICS 43.040.60

CCS T 26



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 46023.2-2025

**Smart glazing used on road vehicles - Part 2: Polymer
dispersed liquid crystal glazing**

汽车用智能变色玻璃 第2部分：聚合物分散液晶调光玻璃

Issued on: August 1, 2025

Implemented on: February 1, 2026

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

Table of Contents

Foreword	4
Introduction	5
1 Scope	7
2 Normative References	7
3 Terms and Definitions	7
4 Classification	9
5 Requirements	9
5.1 Appearance Quality of Dimming Area	9
5.2 Haze in Dimming Area	10
5.3 Regular Luminous Transmittance and its Deviation of Dimming Area	10
5.4 Deviation of Visible Light Transmittance of Dimming Area	10
5.5 Contrast Ratio of Dimming Area	11
5.6 Ultraviolet Transmittance of Dimming Area	11
5.7 Color Uniformity of Dimming Area	11
5.8 Apparent Power	11
5.9 Insulation Resistance	11
5.10 Temperature and Humidity Durability	11
5.11 Irradiation Durability	12
5.12 Electromagnetic Shielding Effectiveness	12
5.13 Overpressure Performance	13
6 Test Methods	13
6.1 General Rules	13
6.2 Appearance Quality of Dimming Area	14
6.3 Haze of Dimming Area	14
6.4 Regular Luminous Transmittance and its Deviation of Dimming Area	14
6.5 Deviation of Visible Light Transmittance of Dimming Area	15
6.6 Contrast Ratio of Dimming Area	15
6.7 Ultraviolet Transmittance of Dimming Area	16
6.8 Color Uniformity of Dimming Area	16
6.9 Apparent Power	18
6.10 Insulation Resistance	18
6.11 Temperature and Humidity Durability	18

6.12 Irradiation Durability	20
-----------------------------------	----

1 Scope

This document specifies the requirements, test methods, inspection rules, packaging, transportation and storage of polymer dispersed liquid crystal glazing.

This document applies to the design, production and delivery of smart glazing products used on road vehicles that use polymer dispersed liquid crystal as the dimming medium.

2 Normative References

GB/T 2410

GB/T 5137.2-2020

GB/T 5137.4

GB/T 11942

GB/T 30142

GB/T 35847

GB/T 42788

JJF 1615

3 Terms and Definitions

The terms and definitions defined in GB/T 42788, JC/T 2631-2021 and GB/T 35847, and the following are applicable to this document.

3.1 Smart glazing used on road vehicles

A glazing product used on road vehicles that, under the influence or excitation of an external energy field, can alter its optical properties, such as transmission, reflection or absorption in specific wavelength bands.

3.2 Polymer dispersed liquid crystal glazing

A glazing product that combines a dimming film consisting of two flexible transparent conductive films and a layer of polymer dispersed liquid crystal material through interlayer or film bonding processes and can rapidly switch between regular transmission and diffuse transmission under the control of an external electric field.

[source. GB/T 42788-2023, 3.4.2, modified]

3.3 Transparent state

Under given control conditions, the state of polymer dispersed liquid crystal glazing (3.2) with the lowest haze.

3.4 Haze state

Under given control conditions, the state of polymer dispersed liquid crystal glazing (3.2) with the highest haze.

3.5 Forward polymer dispersed liquid crystal glazing

A polymer dispersed liquid crystal glazing (3.2) that exhibits diffuse transmission when power is off and transitions to regular transmission when power is on.

3.6 Reverse polymer dispersed liquid crystal glazing

A polymer dispersed liquid crystal glazing (3.2) that exhibits regular transmission when power is off and transitions to diffuse transmission when power is on.

3.7 Dyed polymer dispersed liquid crystal glazing

A polymer dispersed liquid crystal glazing (3.2) in which colorants are added to the polymer dispersed liquid crystal layer to achieve color intensity variations.

3.8 Regular luminous transmittance

Within the visible light spectrum (380 nm ~ 780 nm), the ratio of the regular luminous flux passing through the specimen to the incident luminous flux.

[source. GB/T 35847-2018, 3.4, modified]

3.9 Contrast ratio

Under given control conditions, the ratio of the visible light transmittance of the dyed polymer dispersed liquid crystal glazing (3.7) in its transparent state (3.3) to that in the haze state (3.4).

3.10 Puncture

The phenomenon of localized burning of the polymer dispersed liquid crystal layer caused by discharge between electrodes under the influence of an electric field.

[source. GB/T 35847-2018, 3.2, modified]

4 Classification

In accordance with power-on/off state, it is classified into forward polymer dispersed liquid crystal glazing and reverse polymer dispersed liquid crystal glazing.

In accordance with whether dyes are added to the liquid crystal layer, it is classified into non-dyed polymer dispersed liquid crystal glazing and dyed polymer dispersed liquid crystal glazing.

In accordance with the production process, it is classified into interlayer polymer dispersed liquid crystal glazing and film bonding polymer dispersed liquid crystal glazing.

5.1 Appearance Quality of Dimming Area

The appearance quality of the dimming area of the polymer dispersed liquid crystal glazing in both haze and transparent states shall meet the requirements of Table 1. The corresponding state or appearance characteristics required for different locations after assembly shall be agreed upon by the supply-side and the demand-side.

5.13 Overpressure Performance

After the test, the specimen shall have no punctures.

6.1.1 Requirements for test pieces

If the inspection item does not affect the performance of the specimen, then the specimen can be used to continue testing for other items. When using specially made test pieces, the test pieces shall be of the same structure, material, and manufactured under the same process conditions as the product.

The requirements for the size of the dimming area for test pieces of different dimensions are shown in Table 3.

6.1.2 Adjustment and control requirements for dimming area

The dimming control system and its control program shall be provided by the manufacturer and consistent with the actual operating conditions of the product, enabling the specimen to transition to the desired state and remain stable. The adjustment and control requirements for the dimming area and the test results shall be simultaneously recorded.

6.1.3 Test conditions

Unless otherwise specified, the test shall be conducted under the following environmental conditions.

- a) Temperature. $(20 \pm 5) ^\circ\text{C}$;
- b) Relative humidity. 40% ~ 80%.