TECHNICAL NOTE & PERFORMANCE SUMMARY

CNCGLASS Ionoplast Interlayer — Density and Polymer Composition Characterisation

1. Purpose and Scope

This technical note presents the material characterisation of the **CNCGLASS ionoplast interlayer**, covering two fundamental properties: the specific gravity (density) of the film and the qualitative identification of its principal polymer composition by infrared spectroscopy. Together these results confirm the material identity of the interlayer as a sodium-ionomer of an ethylene–methacrylic acid copolymer — the chemistry shared by the family of structural ionoplast interlayers used in high-performance laminated glass — and establish its density for lamination calculations, quality control and shipping estimation.

2. Test Specimens and Methods

Material	CNCGLASS ionoplast interlayer film
Specimens	Two film samples, specimens cut from the samples as supplied
Density method	ASTM D792-13 Method B (displacement, immersion medium: absolute alcohol)
Composition method	Qualitative analysis by FTIR infrared spectroscopy (GB/T 6040-2002), hot-pressed film technique
Laboratory conditions	23 ± 2 °C, 50 ± 5% RH

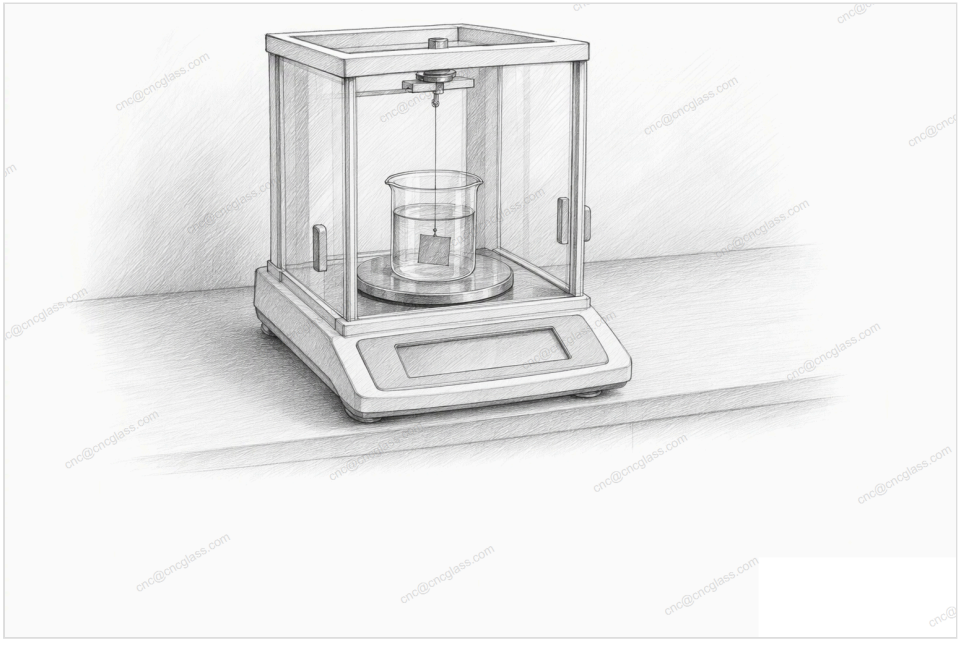


Fig. 1 — Specific gravity determination: the film specimen is weighed in air and immersed in alcohol by the displacement method.

3. Results

Property	Method	Result
Specific gravity	ASTM D792-13 Method B, 23 ± 0.5 °C	**0.965**
Major composition, Sample A	FTIR (GB/T 6040-2002)	Poly(ethylene-co-methacrylic acid), sodium salt
Major composition, Sample B	FTIR (GB/T 6040-2002)	Poly(ethylene-co-methacrylic acid), sodium salt

The infrared spectra of both samples show the characteristic absorption pattern of ethylene–methacrylic acid ionomers: strong CH&sbond; stretching bands near 2920 and 2851 cm^{-1}, the carboxylate salt bands near 1535 and 1402 cm^{-1}, and the methylene rocking band near 720 cm^{-1}, together with the acid carbonyl band near 1698 cm^{-1}. The two samples yield essentially identical spectra, confirming a consistent composition.

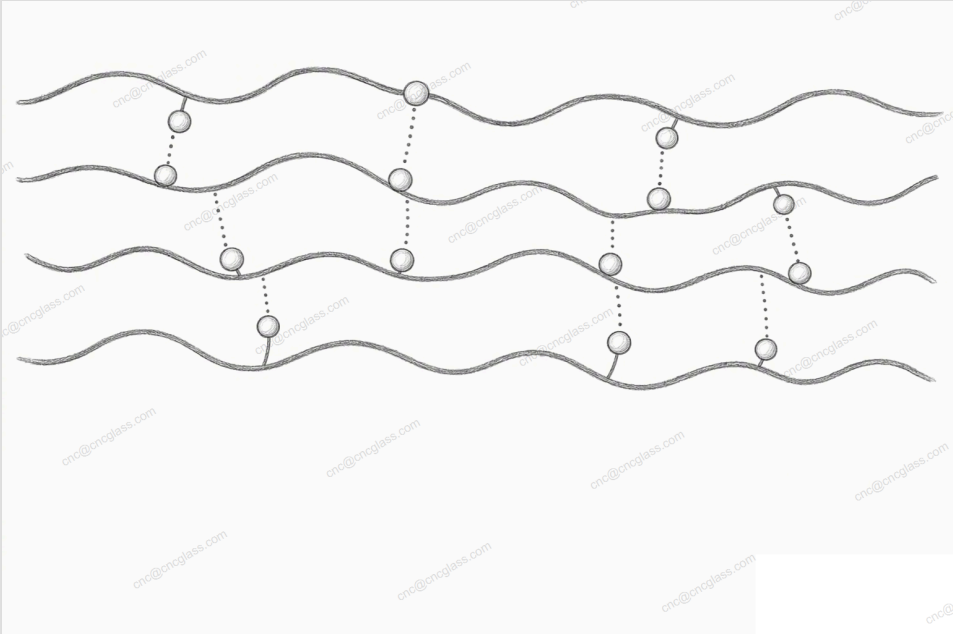


Fig. 2 — Ionomer structure concept: polymer chains carrying ionic groups that cluster into physical cross-links, giving the interlayer its stiffness and toughness.

4. Discussion

The measured specific gravity of **0.965** is consistent with a polyethylene-based ionomer: slightly below the density of water and substantially lower than PVB interlayers (approximately 1.07), which makes the ionoplast film lighter per unit area at equal thickness — a practical advantage in laminated panel weight calculations and freight estimation.

The composition result identifies the material as the sodium salt of an ethylene–methacrylic acid copolymer. In this ionomer chemistry, a fraction of the carboxylic acid groups along the polyethylene backbone are neutralised with sodium ions. The ionic groups cluster into nanoscale domains that act as physical cross-links: they melt and allow processing at lamination temperature, then re-form on cooling to deliver the high stiffness, strength and post-breakage performance that distinguish structural ionoplast interlayers from conventional PVB.

5. Conclusion

Characterisation of the CNCGLASS ionoplast interlayer established:

Specific gravity 0.965 · Composition: sodium ionomer of ethylene–methacrylic acid copolymer

The results confirm the material identity, density and compositional consistency of the CNCGLASS ionoplast interlayer for structural laminated glass applications.

This document is a CNCGLASS technical note and performance summary. It is not a third-party test certificate or a certificate of conformity, and it does not authorise the use of any third-party laboratory mark.

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