

How argon content affect double glass unit performance

As we mentioned in previous posts, [both filling argon gas and using warm edge spacer](#) can decrease glass U value by 0.2-0.3w/m2.k.beside that,the benefits of filling argon are:

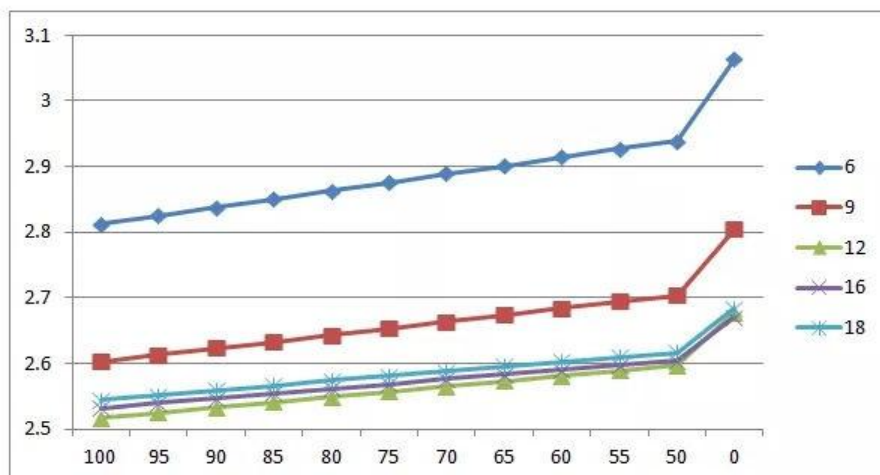
- Keep air pressure balance internal & external glass.
- Increase acoustic performance.
- Increase glass wind resistance and glass strength.
- prolong the service life of the molecular sieve in the aluminum spacer frame

Customers can get positive feedback with just USD1.5/sqm costs.I BS EN1279-Insulating glass standard require the argon content should be at least 90% and no leakage,while some glass manufacturers don't have the right operation rules in filling process,and lack of necessary tools to measure and test the argon content,which cause the double glass units made in China had poor quality,argon content is far from required ,causing overall building energy costs increase.

Why the argon content so important? How the argon content affect the glass performance?Here we calculate the glass performance with Window,Therm to check how it works.

Spacer Thickness	100% Argon	90% Argon	80% Argon	70% Argon	60% Argon	50% Argon	0% Argon
6	2.812	2.838	2.863	2.889	2.914	2.939	3.064
9	2.603	2.623	2.643	2.664	2.684	2.704	2.805
12	2.517	2.533	2.549	2.565	2.581	2.597	2.677
16	2.532	2.547	2.562	2.576	2.59	2.604	2.671
18	2.544	2.559	2.574	2.588	2.603	2.617	2.684

Table 1: 5+N+5 clear insulated glass, U value calculated based on winter night condition.





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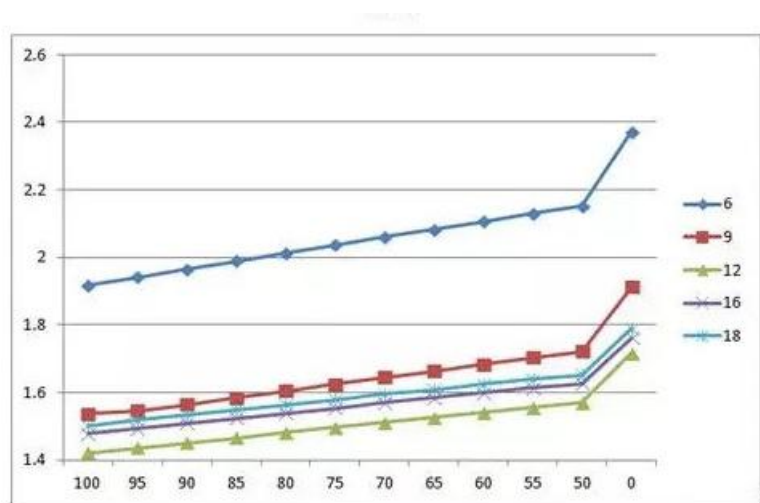
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90% content U value is 0.226W/m².k than 0% content for 5+9A+5.

90% argon content is 0.081W/m².k than 50% content for 5+9A+5.

Spacer Thickness	100% Argon	90% Argon	80% Argon	70% Argon	60% Argon	50% Argon	0% Argon
6	1.918	1.965	2.013	2.06	2.106	2.152	2.372
9	1.536	1.566	1.605	1.664	1.683	1.722	1.912
12	1.421	1.451	1.481	1.526	1.541	1.57	1.716
16	1.478	1.509	1.539	1.584	1.599	1.627	1.762
18	1.502	1.533	1.564	1.609	1.624	1.653	1.789

Table 2: 5+N+5 low-E insulated glass, U value calculated based on winter night condition.



90% content U value is 0.346W/m².k than 0% content for 5LE+9A+5.

90% argon content is 0.156W/m².k than 50% content for 5LE+9A+5.

CONCLUSION:The argon concentration has a great influence on the heat transfer coefficient of insulating glass, especially for Low-E insulating glass. For Low-E insulating glass with different spacing thicknesses, the central heat transfer coefficient is improved by an average of about 0.3 W/(m² • K)

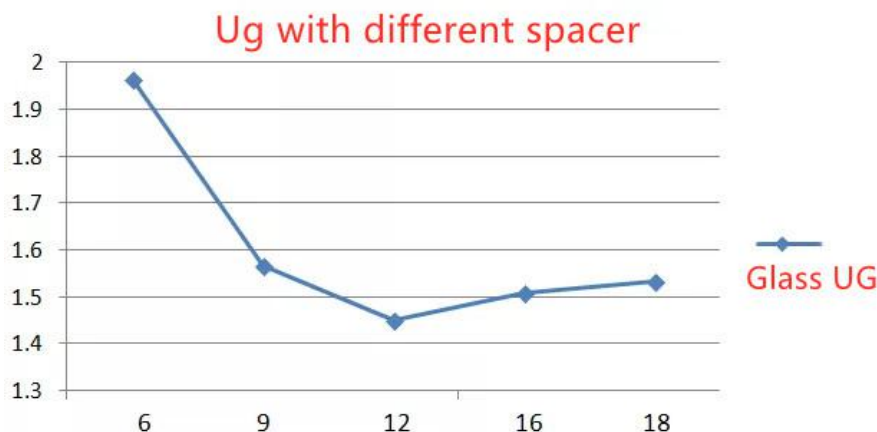


Table 3: 5LE+N+5 lowE insulated glass, U value with different spacer thickness.

When the glass thickness and argon gas concentration remain unchanged, with increased spacer thickness, the heat transfer coefficient shows a trend of "decrease first and then increase". The ideal thickness is approximately 12 mm. After reaching 12mm, the convection of enclosed air or argon increases, increasing the convective heat transfer, resulting in the heat transfer coefficient of the insulating glass decreasing first and then increase.

But if applied in aluminium windows,we can get below conclusion:

When the argon concentration drops by 10%, the U value (U_{g1}) in the center of the insulating glass will increase by about $0.03 \text{ W}/(\text{m}^2 \cdot \text{K})$, and the heat transfer coefficient (U_w) of the entire window will increase by about $0.02 \text{ W}/(\text{m}^2 \cdot \text{K})$.

To ensure the IGU used in your curtain wall,you must work with premium glass suppliers with guaranteed quality with over 90% argon content.Do work with glass processors with EN1279, and IGCC certificate,Morn would like to offer more measurements- warm edge spacer,superspacer,high performance world class coating,triple glass units etc to save more energy furthermore.

How we ensure the argon content:

1. Advanced insulating line with online argon filling function.
2. Complete argon content detect for every piece.
3. EN1279/ IGCC certificates.

Kindly contact us ,let's work on your next great building.





QINGDAO MORN BUILDING MATERIALS CO.,LTD

Your turnkey China tempered glass/laminated glass/insulated glass supplier

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