

 **Cardinal[®] IG**

with **XEDGE[™]**

A New Direction,
With Reduced Risk.

Reducing Risk.

Cutting Hidden Costs & IG Failures

How many insulating glass units does your company make every year? What percentage of those units fail? How much are you spending on replacement costs?

Based on extensive research and experience, Cardinal IG estimates that the real cost for every glass unit you replace is approximately \$200. This includes hard and soft costs for:

- Replacement windows, sash or glass
- Service calls
- Labor
- Factory overhead
- Disruption to your business
- Damage to customer faith in your trusted brand

Add it up. At \$200 per unit, how much are insulating glass failures costing you and your channel partners in the long run?

Cardinal IG offers the lowest failure rates in the industry – developed in part from over 40 years of experience in manufacturing IG units, 24 of these years utilizing a dual-seal silicone system. We also offer the only comprehensive 20-year factory warranty. By using our patented Cardinal IG with XL Edge™, you will be managing your risk of failure. This will improve tomorrow's bottom line and give you peace of mind.



Risk Assessment.

XLEDGE™: The 20-Year Commitment

What are your current IG failure rates costing you over time? How much financial risk are you assuming? Based on our own experience, we can demonstrate that unacceptably high IG failure rates will slowly, but surely erode your profits.

The accompanying graphs approximate the service costs associated with making your own insulating glass versus buying Cardinal IG units with an aluminum spacer or Cardinal IG with XL Edge. These statistics show the cumulative percentage of the original profit margin on your window sales that could be lost to service costs over time.

Contrast that with XL Edge. As these graphs underscore, the fewer IG failures, the greater percentage of profits you can keep.

Cardinal IG stands firmly behind its units. XL Edge carries a 20-year warranty. No one in the industry can match its proven performance. It's like an insurance policy for your business. There are industry standards, and then there is the Cardinal standard.

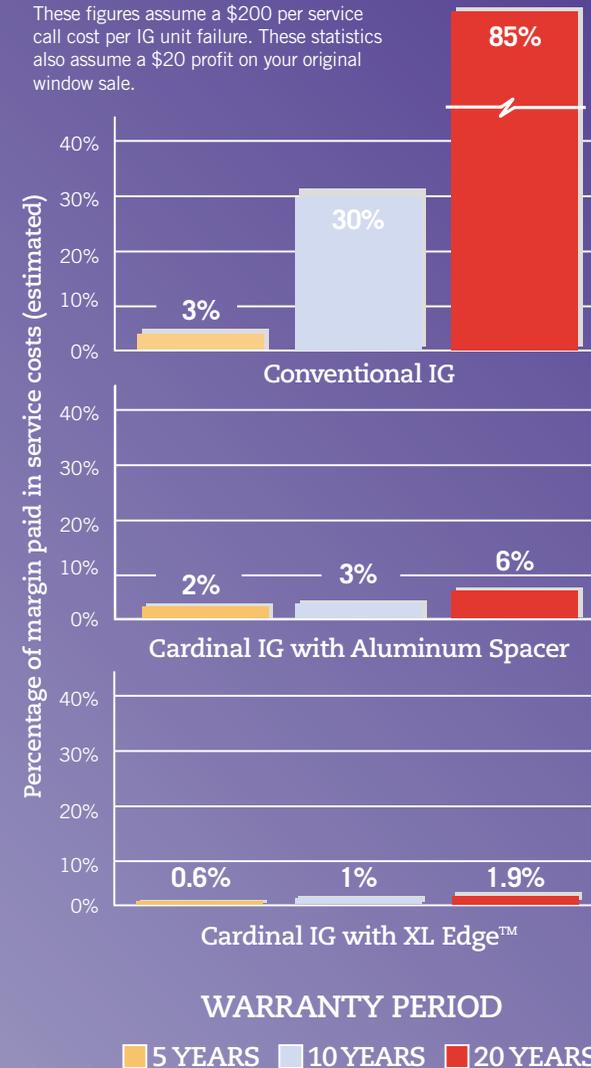
A Competitive Edge

Cardinal IG with XL Edge carries a 20-year warranty, featuring a 200% credit of the original IG unit cost. Can you think of a better insurance policy?

Where are your profits going?

These graphs estimate the cumulative percentage of your profit margin from window sales that can be lost to service costs. Over time, conventional IG units are increasingly prone to failure. The longer the warranty period, the more your profits may be eroded by service costs.

These figures assume a \$200 per service call cost per IG unit failure. These statistics also assume a \$20 profit on your original window sale.

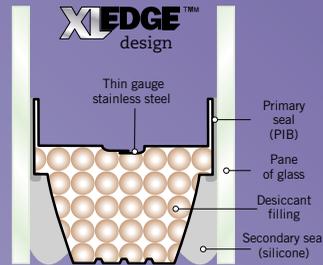


The Value of Experience.

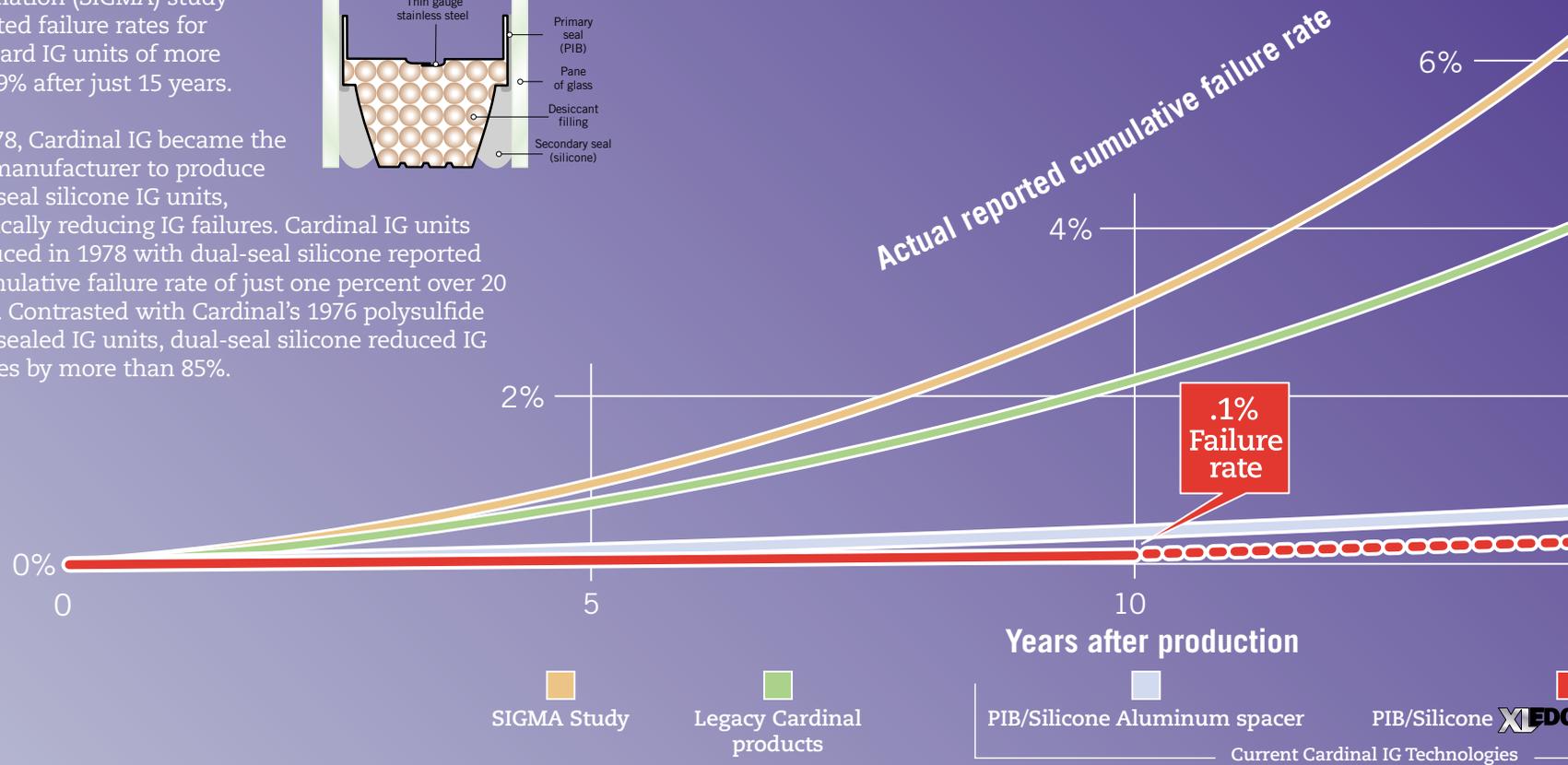
Cardinal IG Expertise = Low Failure Rates

If IG failures are cutting into your company's or channel partner's margins, Cardinal understands. Cardinal IG has used dual-seal polysulfide seals in its units for years. As this chart indicates, Cardinal units produced in 1976 showed a failure rate of 8.5% after 20 years. That's on par with industry statistics: a Sealed Insulating Glass Manufacturing Association (SIGMA) study reported failure rates for standard IG units of more than 9% after just 15 years.

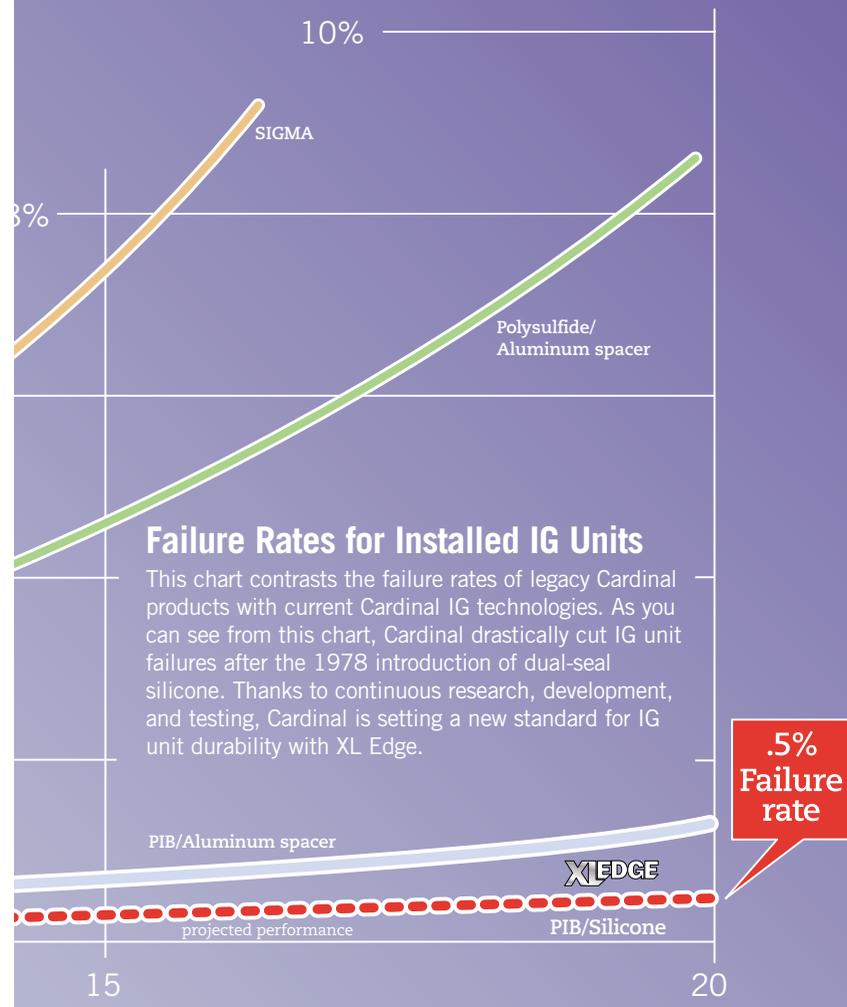
In 1978, Cardinal IG became the first manufacturer to produce dual-seal silicone IG units, drastically reducing IG failures. Cardinal IG units produced in 1978 with dual-seal silicone reported a cumulative failure rate of just one percent over 20 years. Contrasted with Cardinal's 1976 polysulfide dual-sealed IG units, dual-seal silicone reduced IG failures by more than 85%.



In 1993, we introduced XL Edge, a revolutionary IG unit combining a dual-seal silicone system with patented stainless steel – rather than aluminum – spacers. XL Edge is the most durable IG unit available today. Based on a decade's worth of experience, we project that the failure rate for Cardinal IG with XL Edge over 20 years will be well below 0.5 percent. Where are you sitting on the failure rate chart?



Spacer Performance.



.5% Failure rate

A New Direction in Spacer Performance

Thermal Performance

The insulating capability of XL Edge improves the window U-factor by as much as 0.03 btu/hr/ft²/°F versus an identical configuration using an aluminum spacer. Whether you use ordinary clear glass or advanced glazing products like LoE², XL Edge provides better thermal performance.

The thermal improvements derived from XL Edge can make a difference in compliance with local energy codes.

U-factor improvement:
XL Edge versus Aluminum

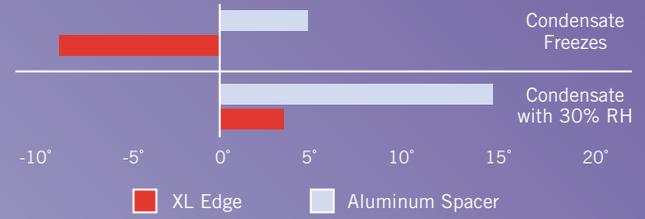
Frame Type	Clear Glass	LoE ²
Thermally Broken Alum.	3%	5%
Alum. Clad Wood	4%	5%
Wood or Vinyl	4%	6%

If your marketing plan includes the Energy Star Windows program, XL Edge can be effective in getting more of your glazing options and window configurations qualified to use this designation.

Condensation Resistance

In all windows, condensation can appear around the perimeter of the glass, making the window aesthetically unappealing and potentially damaging the sash and frame components over time. The warm-edge characteristics of XL Edge reduce the frequency and amount of condensation during the most extreme temperature conditions. The chart below shows that for a typical wood/vinyl window design, it would have to be 12°F colder outside before condensation forms on a unit with XL Edge.

Outdoor temperature (°F) when condensation event occurs



Peace of Mind.

Let Us Show You How

Cardinal IG can be seamlessly integrated into your production process. Cardinal's innovation and expertise becomes your innovation and expertise. Cardinal IG protects the integrity of your brand while providing unparalleled products and services. XL Edge carries the only 20-year warranty in the industry.

Cardinal IG has the production capacity to meet your needs. We produce over 20 million insulating glass units annually – 10 million of those units are custom built. We can fulfill your custom IG requirements including special sizes or shapes, internal grilles and bars, lamination and tempering, and low-emissivity coatings – like LoE².

Cardinal IG offers electronic order processing (EDI), custom logoing as well as logistic services and solutions for the demands of today's marketplace.

We protect you from the risk of glass unit failures, so you can focus on the other aspects of your business.

Call Cardinal IG today to find out how we can lower your risk and give you peace of mind.





Cardinal IG is strategically located to provide optimum service.

IG Plants

City	Phone	Address	Zip
Minneapolis, MN	952.929.0317	7115 West Lake Street	55426
Greenfield, IA	641.343.7113	716 Northeast 6th Street	50849
Spring Green, WI	608.588.7415	1011 East Madison Street	53588
Tomah, WI	608.372.3300	1620 Townline Road	54660
Fremont, IN	260.495.4105	301 East McSwain Drive	46737
Fargo, ND	701.492.0920	4611 15th Avenue Northwest	58102
Waxahachie, TX	972.937.4969	201 Cardinal Road	75165

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