



# the SmartShield *packages*



Technical Guide  
presented by **Joyce**



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## The Joyce Promise

Since 1955, we have been committed to excellence through product innovation, state-of-the-art manufacturing facilities, and the lifetime warranties we stand behind. Founded on the principles of the company namesake, Joyce (our co-founder's late wife), we continue providing you with quality products that are crafted to enhance your home and last for generations – just as our company has.





# SmartShield Glass Packages

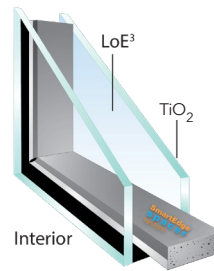
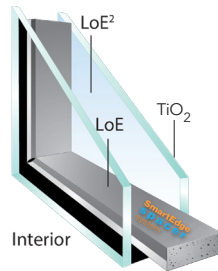


Using SmartShield Glass, Joyce Windows provides the best value and performance for homeowners. The glass packages illustrated below exceed ENERGY STAR ratings and standards as they come equipped with SmartEdge Spacer and LoE coated glass insulated with Argon gas. SmartShield has specially formulated window glass packages for any climate or budget, so no matter which ENERGY STAR climate zone you are located in, Joyce will have you covered.

## J2 with SmartClean J3 with SmartClean

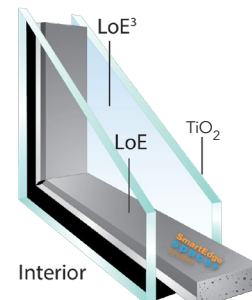
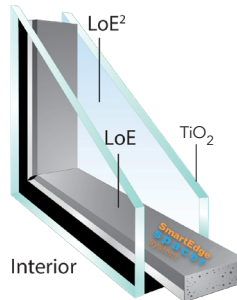
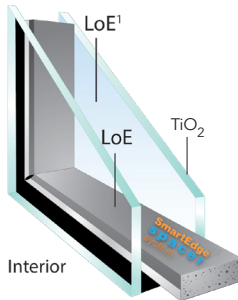
all around performance

solar all around performance



## J11 with SmartClean J21 with SmartClean J31 with SmartClean

northern dual glaze performance high dual glaze performance solar high dual glaze performance



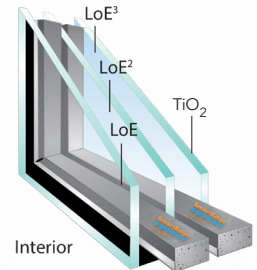
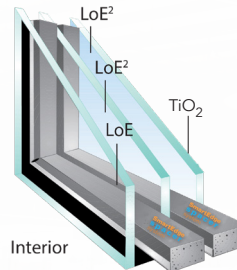
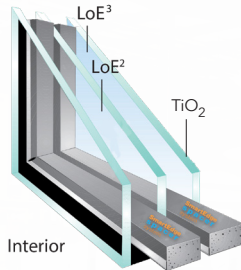
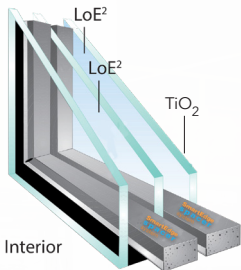
## TJ22 with SmartClean TJ32 with SmartClean TJ221 with SmartClean TJ321 with SmartClean

triple performance

solar triple performance

high triple performance

solar high triple performance




SmartShield Glass is formulated with SmartClean, an advanced and permanent coating infused with titanium dioxide ( $\text{TiO}_2$ ). SmartClean helps reduce dirt and debris particles to provide windows with a naturally cleaner view. This anti-static technology delivers up to 40% less buildup of grime and dust without homeowners having to intervene. Water sheets off the surface more quickly, reducing water spots and helping the glass dry faster. By smoothing microscopic imperfections, the  $\text{TiO}_2$  layer also makes the glass significantly easier to clean—offering lasting clarity with minimal maintenance. This low impressive coating comes as a standard on all glass packages.


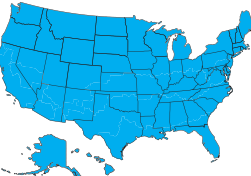

# Heritage Double-Hung

craftsmanship that lasts for generations




**J2**  
with  
SmartClean

 <b>Joyce Manufacturing Company</b> 800.824.7988 Heritage Double Hung (HTDH) Vinyl Frame • LoE/Clear Argon • SuperSpacer Vertical Slider Window		Although J2 is not an ENERGY STAR® certified glass, this option is still an excellent choice for homes in any area of the country. It offers enhanced energy efficiency that will make your home more comfortable and help keep your home energy bills lower.
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.27</b> <b>0.29</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.54</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer's literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		

**TJ22**  
with  
SmartClean


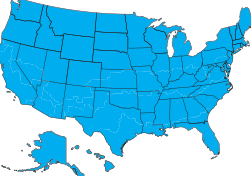

 <b>Joyce Manufacturing Company</b> 800.824.7988 Heritage Double Hung (HTDH) Vinyl Frame • Triple Glazing LoE(2&4) • Argon • SS Vertical Slider Window		<b>ENERGY STAR® Certified in Highlighted Regions</b>  <a href="http://energystar.gov/windows">energystar.gov/windows</a> 
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.22</b> <b>0.22</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.42</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer's literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		

**J3**  
with  
SmartClean


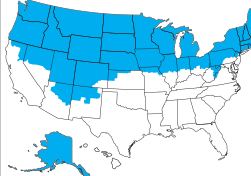

 <b>Joyce Manufacturing Company</b> 800.824.7988 Heritage Double Hung (HTDH) Vinyl Frame • LoE/Clear Argon • SuperSpacer Vertical Slider Window		<b>ENERGY STAR® Certified in Highlighted Regions</b>  <a href="http://energystar.gov/windows">energystar.gov/windows</a> 
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.27</b> <b>0.21</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.49</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer's literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		

**TJ32**  
with  
SmartClean

  
**Most Efficient 2025**  
[www.energystar.gov](http://www.energystar.gov)  
 Southern Zone


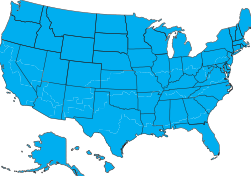

 <b>Joyce Manufacturing Company</b> 800.824.7988 Heritage Double Hung (HTDH) Vinyl Frame • Triple Glazing LoE(2)/LoE(4) • Argon Vertical Slider Window		<b>ENERGY STAR® Certified in Highlighted Regions</b>  <a href="http://energystar.gov/windows">energystar.gov/windows</a> 
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.21</b> <b>0.18</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.39</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer's literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		

**J11**  
with  
SmartClean


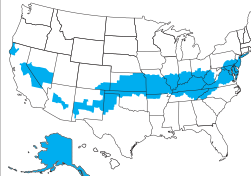

 <b>Joyce Manufacturing Company</b> 800.824.7988 Heritage Double Hung (HTDH) Vinyl Frame • LoE/LoE Argon • SuperSpacer Vertical Slider Window		<b>ENERGY STAR® Certified in Highlighted Regions</b>  <a href="http://energystar.gov/windows">energystar.gov/windows</a> 
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.24</b> <b>0.48</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.59</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer's literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		

**TJ221**  
with  
SmartClean

  
**Most Efficient 2025**  
[www.energystar.gov](http://www.energystar.gov)  
 Northern Zone  
 North Central Zone  
 South Central Zone  
 Southern Zone


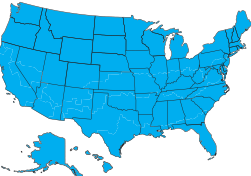

 <b>Joyce Manufacturing Company</b> 800.824.7988 Heritage Double Hung (HTDH) Vinyl Frame • Triple Glazing LoE(2&4)/LoE(6) • SS Vertical Slider Window		<b>ENERGY STAR® Certified in Highlighted Regions</b>  <a href="http://energystar.gov/windows">energystar.gov/windows</a> 
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.20</b> <b>0.22</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.41</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer's literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		

**J21**  
with  
SmartClean




 <b>Joyce Manufacturing Company</b> 800.824.7988 Heritage Double Hung (HTDH) Vinyl Frame • LoE/LoE Argon • SuperSpacer Vertical Slider Window		<b>ENERGY STAR® Certified in Highlighted Regions</b>  <a href="http://energystar.gov/windows">energystar.gov/windows</a> 
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.23</b> <b>0.28</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.52</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer's literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		

**TJ321**  
with  
SmartClean

  
**Most Efficient 2025**  
[www.energystar.gov](http://www.energystar.gov)  
 North Central Zone  
 South Central Zone  
 Southern Zone

 <b>Joyce Manufacturing Company</b> 800.824.7988 Heritage Double Hung (HTDH) Vinyl Frame • Triple Glazing LoE(2)/LoE(4)/LoE(6) Argon • Vertical Slider Window		<b>ENERGY STAR® Certified in Highlighted Regions</b>  <a href="http://energystar.gov/windows">energystar.gov/windows</a> 
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.19</b> <b>0.17</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.38</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer's literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		

**J31**  
with  
SmartClean

 <b>Joyce Manufacturing Company</b> 800.824.7988 Heritage Double Hung (HTDH) Vinyl Frame • LoE/LoE Argon • SuperSpacer Vertical Slider Window		<b>ENERGY STAR® Certified in Highlighted Regions</b>  <a href="http://energystar.gov/windows">energystar.gov/windows</a> 
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.23</b> <b>0.21</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.48</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer's literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		

Performance ratings for J3, J11, J21, and J31 are calculated using 1/8" double-strength glass unless noted on product series page.


Performance ratings for J2, TJ22, TJ32, TJ221, and TJ321 are calculated using 3/32" single-strength glass unless noted on product series page.







# Trinity Double-Hung

performance that lasts for a lifetime  
(non foam filled)





**J2**  
with  
SmartClean

 Joyce Manufacturing Company 800.824.7988 Trinity Double Hung (TNTDH) Vinyl Frame • LoE/Clear Argon • SuperSpacer Vertical Slider Window		Although J2 is not an ENERGY STAR® certified glass, this option is still an excellent choice for homes in any area of the country. It offers enhanced energy efficiency that will make your home more comfortable and help keep your home energy bills lower.
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.29</b> <b>0.29</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.54</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer's literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		





**J21**  
with  
SmartClean

 Joyce Manufacturing Company 800.824.7988 Trinity Double Hung (TNTDH) Vinyl Frame • LoE/LoE Argon • SuperSpacer Vertical Slider Window		<b>ENERGY STAR® Certified in Highlighted Regions</b>  
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.25</b> <b>0.28</b>		<b>energystar.gov/windows</b> 
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.52</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer's literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		



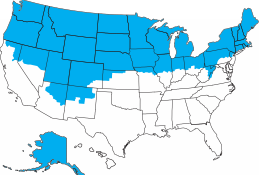

**J3**  
with  
SmartClean

 Joyce Manufacturing Company 800.824.7988 Trinity Double Hung (TNTDH) Vinyl Frame • LoE/Clear Argon • SuperSpacer Vertical Slider Window		<b>ENERGY STAR® Certified in Highlighted Regions</b>  
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.28</b> <b>0.21</b>		<b>energystar.gov/windows</b> 
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.49</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer's literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		

**J31**  
with  
SmartClean

 Joyce Manufacturing Company 800.824.7988 Trinity Double Hung (TNTDH) Vinyl Frame • LoE/LoE Argon • SuperSpacer Vertical Slider Window		<b>ENERGY STAR® Certified in Highlighted Regions</b>  
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.24</b> <b>0.21</b>		<b>energystar.gov/windows</b> 
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.48</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer's literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		

**J11**  
with  
SmartClean

 Joyce Manufacturing Company 800.824.7988 Trinity Double Hung (TNTDH) Vinyl Frame • LoE/LoE Argon • SuperSpacer Vertical Slider Window		<b>ENERGY STAR® Certified in Highlighted Regions</b>  
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.25</b> <b>0.48</b>		<b>energystar.gov/windows</b> 
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.59</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer's literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		

Performance ratings for J3, J11, J21, and J31 are calculated using 1/8" double-strength glass unless noted on product series page.


Performance ratings for J2 is calculated using 3/32" single-strength glass unless noted on product series page.

# Trinity Double-Hung


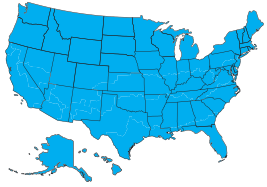

performance that lasts for a lifetime

(foam filled frames and sashes)




**J2**  
with  
SmartClean

 Joyce Manufacturing Company 800.824.7988 Trinity Double Hung (TNTDH) Vinyl Frame • LoE/Clear Argon • SuperSpacer Vertical Slider Window		Although J2 is not an ENERGY STAR® certified glass, this option is still an excellent choice for homes in any area of the country. It offers enhanced energy efficiency that will make your home more comfortable and help keep your home energy bills lower.
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.27</b> <b>0.29</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.54</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		

**TJ22**  
with  
SmartClean

 Joyce Manufacturing Company 800.824.7988 Trinity Double Hung (TNTDH) Vinyl Frame • Triple Glazing LoE <sup>2</sup> (2&4) • Argon • SS Vertical Slider Window		<b>ENERGY STAR® Certified in Highlighted Regions</b>  <a href="http://energystar.gov/windows">energystar.gov/windows</a> 
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.22</b> <b>0.22</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.42</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		


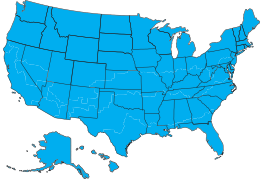

**J3**  
with  
SmartClean

 Joyce Manufacturing Company 800.824.7988 Trinity Double Hung (TNTDH) Vinyl Frame • LoE/Clear Argon • SuperSpacer Vertical Slider Window		<b>ENERGY STAR® Certified in Highlighted Regions</b>  <a href="http://energystar.gov/windows">energystar.gov/windows</a> 
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.27</b> <b>0.21</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.49</b> <b>≤0.3</b>		
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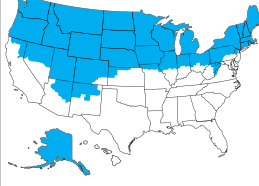

**TJ32**  
with  
SmartClean

 **Most Efficient 2025**  
[www.energystar.gov](http://www.energystar.gov)

Southern Zone

 Joyce Manufacturing Company 800.824.7988 Trinity Double Hung (TNTDH) Vinyl Frame • Triple Glazing LoE <sup>2</sup> (2)/LoE <sup>2</sup> (4) • SS Argon • Vertical Slider Window		<b>ENERGY STAR® Certified in Highlighted Regions</b>  <a href="http://energystar.gov/windows">energystar.gov/windows</a> 
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.21</b> <b>0.18</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.39</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		


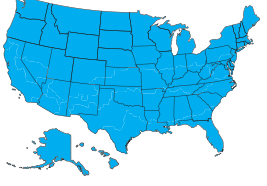

**J11**  
with  
SmartClean

 Joyce Manufacturing Company 800.824.7988 Trinity Double Hung (TNTDH) Vinyl Frame • LoE/LoE Argon • SuperSpacer Vertical Slider Window		<b>ENERGY STAR® Certified in Highlighted Regions</b>  <a href="http://energystar.gov/windows">energystar.gov/windows</a> 
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.24</b> <b>0.48</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.59</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		


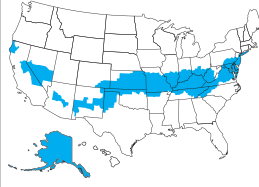

**TJ221**  
with  
SmartClean

 **Most Efficient 2025**  
[www.energystar.gov](http://www.energystar.gov)

Northern Zone  
North Central Zone  
South Central Zone  
Southern Zone

 Joyce Manufacturing Company 800.824.7988 Trinity Double Hung (TNTDH) Vinyl Frame • Triple Glazing LoE <sup>2</sup> (2&4)/LoE <sup>2</sup> (6) • SS Vertical Slider Window		<b>ENERGY STAR® Certified in Highlighted Regions</b>  <a href="http://energystar.gov/windows">energystar.gov/windows</a> 
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.20</b> <b>0.22</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.41</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		


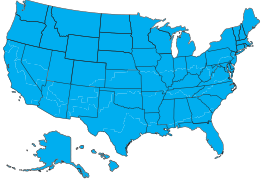

**J21**  
with  
SmartClean

 Joyce Manufacturing Company 800.824.7988 Trinity Double Hung (TNTDH) Vinyl Frame • LoE/LoE Argon • SuperSpacer Vertical Slider Window		<b>ENERGY STAR® Certified in Highlighted Regions</b>  <a href="http://energystar.gov/windows">energystar.gov/windows</a> 
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.23</b> <b>0.28</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.52</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		


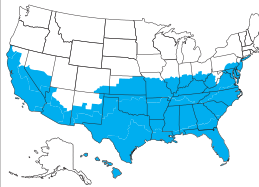

**TJ321**  
with  
SmartClean

 **Most Efficient 2025**  
[www.energystar.gov](http://www.energystar.gov)

North Central Zone  
South Central Zone  
Southern Zone

 Joyce Manufacturing Company 800.824.7988 Trinity Double Hung (TNTDH) Vinyl Frame • Triple Glazing LoE <sup>2</sup> (2&4)/LoE <sup>2</sup> (6) • Argon • Vertical Slider Window		<b>ENERGY STAR® Certified in Highlighted Regions</b>  <a href="http://energystar.gov/windows">energystar.gov/windows</a> 
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.19</b> <b>0.17</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.38</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		

**J31**  
with  
SmartClean

 Joyce Manufacturing Company 800.824.7988 Trinity Double Hung (TNTDH) Vinyl Frame • LoE/LoE Argon • SuperSpacer Vertical Slider Window		<b>ENERGY STAR® Certified in Highlighted Regions</b>  <a href="http://energystar.gov/windows">energystar.gov/windows</a> 
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.23</b> <b>0.21</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.48</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		

Performance ratings for J3, J11, J21, and J31 are calculated using 1/8" double-strength glass unless noted on product series page.


Performance ratings for J2, TJ22, TJ32, TJ221, and TJ321 are calculated using 3/32" single-strength glass unless noted on product series page.




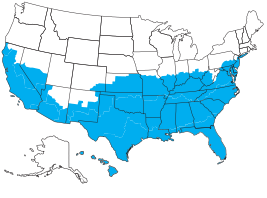

# VueLine Double-Hung

a fresh perspective on value


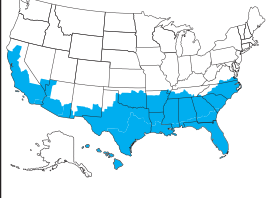

J2  
with  
SmartClean

 <b>Joyce Manufacturing Company</b> 800.824.7988 VueLine Double Hung (VLDH) Vinyl Frame • LoE/Clear Argon • SuperSpacer Vertical Slider Window		<p>Although J2 is not an ENERGY STAR® certified glass, this option is still an excellent choice for homes in any area of the country. It offers enhanced energy efficiency that will make your home more comfortable and help keep your home energy bills lower.</p>
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.29</b> <b>0.29</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.55</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer's literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		


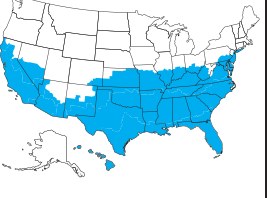

TJ22  
with  
SmartClean

 <b>Joyce Manufacturing Company</b> 800.824.7988 VueLine Double Hung (VLDH) Vinyl Frame • Triple Glazing LoE(2&4) • Argon • SS Vertical Slider Window		<p><b>ENERGY STAR® Certified in Highlighted Regions</b></p>  <p><a href="http://energystar.gov/windows">energystar.gov/windows</a>  Certified</p>
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.23</b> <b>0.23</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.43</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer's literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		


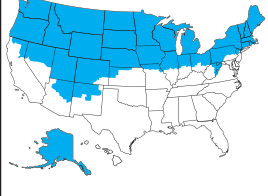

J3  
with  
SmartClean

 <b>Joyce Manufacturing Company</b> 800.824.7988 VueLine Double Hung (VLDH) Vinyl Frame • LoE/Clear Argon • SuperSpacer Vertical Slider Window		<p><b>ENERGY STAR® Certified in Highlighted Regions</b></p>  <p><a href="http://energystar.gov/windows">energystar.gov/windows</a>  Certified</p>
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.28</b> <b>0.22</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.51</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer's literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		

TJ32  
with  
SmartClean


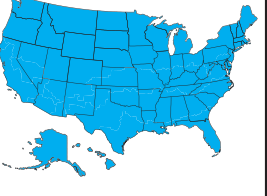

 <b>Joyce Manufacturing Company</b> 800.824.7988 VueLine Double Hung (VLDH) Vinyl Frame • Triple Glazing LoE(2)/LoE(4) • SS Argon • Vertical Slider Window		<p><b>ENERGY STAR® Certified in Highlighted Regions</b></p>  <p><a href="http://energystar.gov/windows">energystar.gov/windows</a>  Certified</p>
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.23</b> <b>0.18</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.40</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer's literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		

J11  
with  
SmartClean


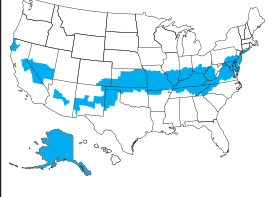

 <b>Joyce Manufacturing Company</b> 800.824.7988 VueLine Double Hung (VLDH) Vinyl Frame • LoE/LoE Argon • SuperSpacer Vertical Slider Window		<p><b>ENERGY STAR® Certified in Highlighted Regions</b></p>  <p><a href="http://energystar.gov/windows">energystar.gov/windows</a>  Certified</p>
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.26</b> <b>0.49</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.61</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer's literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		

TJ221  
with  
SmartClean

 **Most Efficient 2025**  
[www.energystar.gov](http://www.energystar.gov)  
 Southern Zone


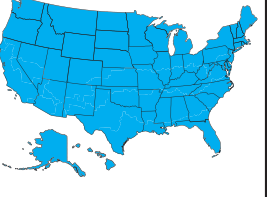

 <b>Joyce Manufacturing Company</b> 800.824.7988 VueLine Double Hung (VLDH) Vinyl Frame • Triple Glazing LoE(2&4)/LoE(6) • SS Vertical Slider Window		<p><b>ENERGY STAR® Certified in Highlighted Regions</b></p>  <p><a href="http://energystar.gov/windows">energystar.gov/windows</a>  Certified</p>
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.21</b> <b>0.22</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.42</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer's literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		

J21  
with  
SmartClean


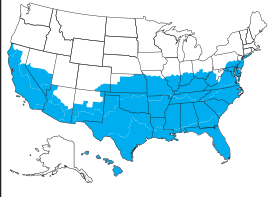

 <b>Joyce Manufacturing Company</b> 800.824.7988 VueLine Double Hung (VLDH) Vinyl Frame • LoE/LoE Argon • SuperSpacer Vertical Slider Window		<p><b>ENERGY STAR® Certified in Highlighted Regions</b></p>  <p><a href="http://energystar.gov/windows">energystar.gov/windows</a>  Certified</p>
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.25</b> <b>0.29</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.53</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer's literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		

TJ321  
with  
SmartClean

 **Most Efficient 2025**  
[www.energystar.gov](http://www.energystar.gov)  
 Southern Zone

 <b>Joyce Manufacturing Company</b> 800.824.7988 VueLine Double Hung (VLDH) Vinyl Frame • Triple Glazing LoE(2)/LoE(4)/LoE(6) Argon • Vertical Slider Window		<p><b>ENERGY STAR® Certified in Highlighted Regions</b></p>  <p><a href="http://energystar.gov/windows">energystar.gov/windows</a>  Certified</p>
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.21</b> <b>0.18</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.39</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer's literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		

J31  
with  
SmartClean

 <b>Joyce Manufacturing Company</b> 800.824.7988 VueLine Double Hung (VLDH) Vinyl Frame • LoE/LoE Argon • SuperSpacer Vertical Slider Window		<p><b>ENERGY STAR® Certified in Highlighted Regions</b></p>  <p><a href="http://energystar.gov/windows">energystar.gov/windows</a>  Certified</p>
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.24</b> <b>0.21</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.49</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer's literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		


Performance ratings for J3, J11, J21, and J31 are calculated using 1/8" double-strength glass unless noted on product series page.

Performance ratings for J2, TJ22, TJ32, TJ221, and TJ321 are calculated using 3/32" single-strength glass unless noted on product series page.

# Casement


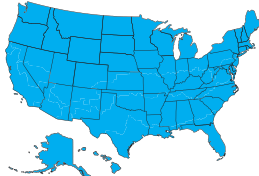

timeless durability with exceptional efficiency

**J2**  
with  
SmartClean




 <b>Joyce Manufacturing Company</b> 800.824.7988 Casement (CSMT) Vinyl Frame • LoE/Clear Argon • SuperSpacer Vertical Slider Window		<p>Although J2 is not an ENERGY STAR® certified glass, this option is still an excellent choice for homes in any area of the country. It offers enhanced energy efficiency that will make your home more comfortable and help keep your home energy bills lower.</p> <p><a href="http://www.energystar.gov">www.energystar.gov</a></p>
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.27</b> <b>0.25</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.46</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer literature for other product performance information.</small>		

**TJ22**  
with  
SmartClean




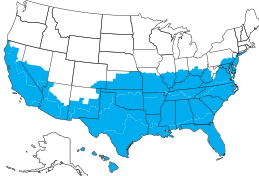

 <b>Joyce Manufacturing Company</b> 800.824.7988 Casement (CSMT) Vinyl Frame • Triple Glazing LoE(2&4) • Argon • SS Vertical Slider Window		<p><b>ENERGY STAR® Certified in Highlighted Regions</b></p>  <p><a href="http://energystar.gov/windows">energystar.gov/windows</a> </p>
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.22</b> <b>0.19</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.36</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer literature for other product performance information.</small>		

**J3**  
with  
SmartClean


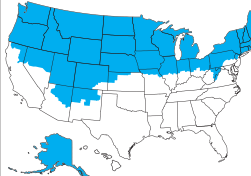

 <b>Joyce Manufacturing Company</b> 800.824.7988 Casement (CSMT) Vinyl Frame • LoE/Clear Argon • SuperSpacer Vertical Slider Window		<p><b>ENERGY STAR® Certified in Highlighted Regions</b></p>  <p><a href="http://energystar.gov/windows">energystar.gov/windows</a> </p>
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.27</b> <b>0.18</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.42</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer literature for other product performance information.</small>		

**TJ32**  
with  
SmartClean




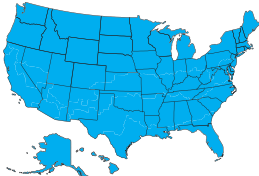

 <b>Joyce Manufacturing Company</b> 800.824.7988 Casement (CSMT) Vinyl Frame • Triple Glazing LoE(2)/LoE(4) • Argon Vertical Slider Window		<p><b>ENERGY STAR® Certified in Highlighted Regions</b></p>  <p><a href="http://energystar.gov/windows">energystar.gov/windows</a> </p>
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.22</b> <b>0.15</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.33</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer literature for other product performance information.</small>		

**J11**  
with  
SmartClean


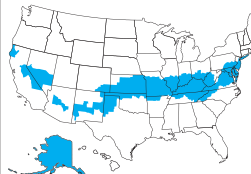

 <b>Joyce Manufacturing Company</b> 800.824.7988 Casement (CSMT) Vinyl Frame • LoE/LoE Argon • SuperSpacer Vertical Slider Window		<p><b>ENERGY STAR® Certified in Highlighted Regions</b></p>  <p><a href="http://energystar.gov/windows">energystar.gov/windows</a> </p>
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.24</b> <b>0.41</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.50</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer literature for other product performance information.</small>		

**TJ221**  
with  
SmartClean




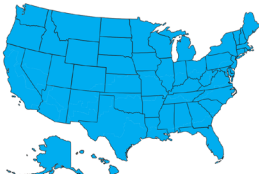

 <b>Joyce Manufacturing Company</b> 800.824.7988 Casement (CSMT) Vinyl Frame • Triple Glazing LoE(2&4)/LoE(6) • SS Vertical Slider Window		<p><b>ENERGY STAR® Certified in Highlighted Regions</b></p>  <p><a href="http://energystar.gov/windows">energystar.gov/windows</a> </p>
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.20</b> <b>0.19</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.35</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer literature for other product performance information.</small>		

**J21**  
with  
SmartClean




 <b>Joyce Manufacturing Company</b> 800.824.7988 Casement (CSMT) Vinyl Frame • LoE/LoE Argon • SuperSpacer Vertical Slider Window		<p><b>ENERGY STAR® Certified in Highlighted Regions</b></p>  <p><a href="http://energystar.gov/windows">energystar.gov/windows</a> </p>
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.24</b> <b>0.24</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.45</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer literature for other product performance information.</small>		

**TJ321**  
with  
SmartClean



 <b>Joyce Manufacturing Company</b> 800.824.7988 Heritage Double Hung (HTDH) Vinyl Frame • Triple Glazing LoE(2)/LoE(4)/LoE(6) Argon • Vertical Slider Window		<p><b>ENERGY STAR® Certified in Highlighted Regions</b></p>  <p><a href="http://energystar.gov/windows">energystar.gov/windows</a> </p>
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.19</b> <b>0.17</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.38</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer literature for other product performance information.</small>		

**J31**  
with  
SmartClean

 <b>Joyce Manufacturing Company</b> 800.824.7988 Casement (CSMT) Vinyl Frame • LoE/LoE Argon • SuperSpacer Vertical Slider Window		<p><b>ENERGY STAR® Certified in Highlighted Regions</b></p>  <p><a href="http://energystar.gov/windows">energystar.gov/windows</a> </p>
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.24</b> <b>0.18</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.41</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer literature for other product performance information.</small>		

Performance ratings for J3, J11, J21, and J31 are calculated using 1/8" double-strength glass unless noted on product series page.



Performance ratings for J2, TJ22, TJ32, TJ221, and TJ321 are calculated using 3/32" single-strength glass unless noted on product series page.





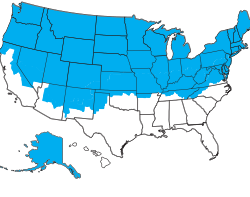

# Arete Patio Doors

excellence in every way possible





**J2**  
with  
SmartClean

 Joyce Manufacturing Company 800.824.7988 Arete (JPD) Vinyl Frame • LoE/Clear Argon • SuperSpacer Sliding Doors 		Although J2 is not an ENERGY STAR® certified glass, this option is still an excellent choice for homes in any area of the country. It offers enhanced energy efficiency that will make your home more comfortable and help keep your home energy bills lower.
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.28</b> <b>0.30</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.56</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product use. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer's literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		



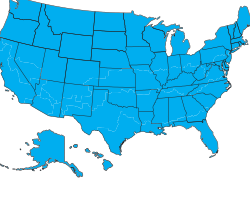

**J21**  
with  
SmartClean

 Joyce Manufacturing Company 800.824.7988 Arete (JPD) Vinyl Frame • LoE/LoE Argon • SuperSpacer Sliding Doors 		<b>ENERGY STAR® Certified in Highlighted Regions</b>  <a href="http://energystar.gov/windows">energystar.gov/windows</a> 
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.24</b> <b>0.29</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.55</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product use. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer's literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		

**J3**  
with  
SmartClean

 Joyce Manufacturing Company 800.824.7988 Arete (JPD) Vinyl Frame • LoE/Clear Argon • SuperSpacer Sliding Doors 		<b>ENERGY STAR® Certified in Highlighted Regions</b>  <a href="http://energystar.gov/windows">energystar.gov/windows</a> 
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.27</b> <b>0.22</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.52</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product use. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer's literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		



**J31**  
with  
SmartClean

 Joyce Manufacturing Company 800.824.7988 Arete (JPD) Vinyl Frame • LoE/LoE Argon • SuperSpacer Sliding Doors 		<b>ENERGY STAR® Certified in Highlighted Regions</b>  <a href="http://energystar.gov/windows">energystar.gov/windows</a> 
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.23</b> <b>0.22</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.51</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product use. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer's literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		



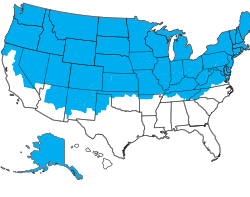

# Silensia Patio Doors

unrivalled versatility and performance



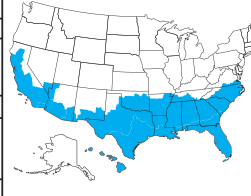

**J2**  
with  
SmartClean

 Joyce Manufacturing Company 800.824.7988 Silensia (JPD) Vinyl Frame • LoE/Clear Argon • Endur Spacer Sliding Doors 		Although J2 is not an ENERGY STAR® certified glass, this option is still an excellent choice for homes in any area of the country. It offers enhanced energy efficiency that will make your home more comfortable and help keep your home energy bills lower.
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.29</b> <b>0.27</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.51</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product use. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer's literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		



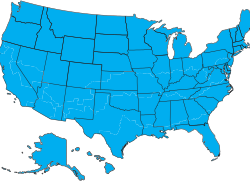

**J21**  
with  
SmartClean

 Joyce Manufacturing Company 800.824.7988 Silensia (JPD) Vinyl Frame • LoE/LoE Argon • Endur Spacer Sliding Doors 		<b>ENERGY STAR® Certified in Highlighted Regions</b>  <a href="http://energystar.gov/windows">energystar.gov/windows</a> 
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.25</b> <b>0.26</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.50</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product use. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer's literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		

**J3**  
with  
SmartClean

 Joyce Manufacturing Company 800.824.7988 Silensia (JPD) Vinyl Frame • LoE/Clear Argon • Endur Spacer Sliding Doors 		<b>ENERGY STAR® Certified in Highlighted Regions</b>  <a href="http://energystar.gov/windows">energystar.gov/windows</a> 
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.28</b> <b>0.20</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.47</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product use. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer's literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		

**J31**  
with  
SmartClean

 Joyce Manufacturing Company 800.824.7988 Silensia (JPD) Vinyl Frame • LoE/LoE Argon • Endur Spacer Sliding Doors 		<b>ENERGY STAR® Certified in Highlighted Regions</b>  <a href="http://energystar.gov/windows">energystar.gov/windows</a> 
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)    Solar Heat Gain Coefficient <b>0.24</b> <b>0.20</b>		
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance    Air Leakage (US/I-P) <b>0.46</b> <b>≤0.3</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions, and a specific product use. NFRC does not recommend any product and does not warrant the suitability of any product for specific use. Consult manufacturer's literature for other product performance information.</small> <a href="http://www.nfrc.org">www.nfrc.org</a>		

Performance ratings are for a standard size 5' or 6' patio door using 1/8" double-strength tempered glass.

# Glossary

**Air Leakage:** Measurement of how much outside air comes into a home or building through a product. The lower the air leakage, the better a product is at keeping air out.

**Argon:** A non-toxic gas used in insulating units to reduce heat transfer.

**Climate Zone:** A geographical region based on climatic criteria as specified by ENERGY STAR.

**ENERGY STAR:** A program run by the U.S. Environmental Protection Agency and U.S. Department of Energy to deliver cost-saving energy efficiency solutions that protect the climate and public health through improving air quality. The energy performance of all ENERGY STAR qualified windows, doors, and skylights must be independently tested, certified, and verified according to test procedures established by the National Fenestration Rating Council (NFRC)

**LoE:** Also known as Low-E, refers to low-emittance coating.

**National Fenestration Rating Council (NFRC):** A third-party non-profit organization that sponsors certified rating and labeling to help consumers compare the performance of windows, doors, and skylights.

**Solar Heat Gain Coefficient:** Rating ranges from 0 to 1. Measures fraction of solar radiation admitted through the window. The lower the number, the less solar heat it transmits and the greater its shading ability.

**U-Factor:** Ratings range from 0 to 1. The lower the number, the better its insulating value.

**Visible Transmittance:** The fraction of the visible spectrum that is transmitted through the window. The higher the number, the more visible light it transmits.

All ENERGY STAR Ratings are calculated using window style and series noted. Actual ratings may vary by style and size of window.

Performance ratings are shown for windows without grids or mutton bars between the panes and single-strength glass unless noted.

All ratings were calculated using a 90% argon gas fill rate, although Joyce gas chamber average fill percentage routinely exceeds 90%.

NFRC ratings are based on modeling by a third-party agency as validated by an independent test lab in compliance with NFRC program and procedural requirements.

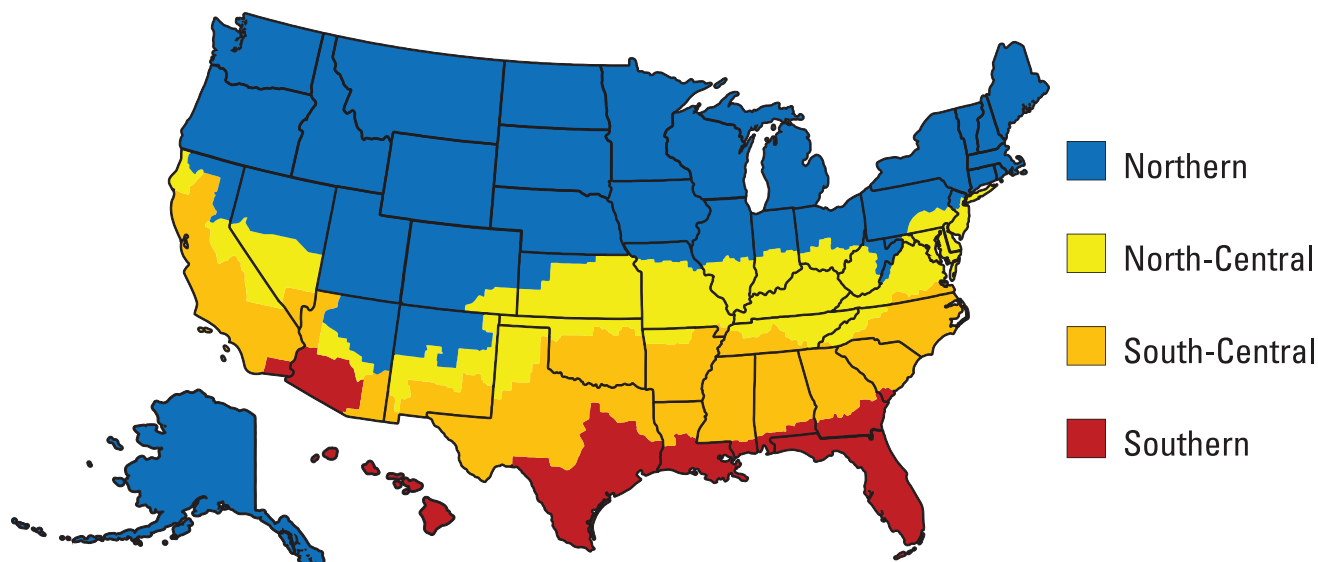
Due to ongoing product changes, updated test results or new industry standards or requirements, this data may change over time and this published technical guide is subject to change without notice. Please consult an authorized Joyce Window Dealer or Joyce Manufacturing Company to verify if any variations exist.

Heritage double-hung windows come standard with foam fill in select interior cavities of the main frame and sash profiles. Trinity double-hung test results reflect same foam fill configuration noted on page 4.



# ENERGY STAR® for Windows, Doors, and Skylights

## CLIMATE ZONE MAP



### ENERGY STAR® Certification Criteria for Residential Windows

WINDOWS			
Climate Zone	U-Factor <sup>1</sup>	SHGC <sup>2</sup>	
Northern	≤ 0.22	≥ 0.17	Prescriptive
	= 0.23	≥ 0.35	Equivalent Energy Performance
	= 0.24		
	= 0.25		
	= 0.26		
North-Central	≤ 0.25	≤ 0.40	
South-Central	≤ 0.28	≤ 0.23	
Southern	≤ 0.32	≤ 0.23	

Air Leakage ≤ 0.3 cfm/ft²

<sup>1</sup> Btu/h-ft²·°F

<sup>2</sup> Solar Heat Gain Coefficient

### ENERGY STAR® Certification Criteria for Residential Doors

DOORS			
Glazing Level	Climate Zone	U-Factor <sup>1</sup>	SHGC <sup>2</sup>
Opaque	All Zones	≤ 0.17	No Rating
≤ ½-Lite	All Zones	≤ 0.23	≤ 0.23
> ½-Lite	Northern	≤ 0.26	≤ 0.40
	North-Central		
	South-Central		
	Southern	≤ 0.28	≤ 0.23

Air Leakage for Sliding Doors ≤ 0.3 cfm/ft²

Air Leakage for Swinging Doors ≤ 0.5 cfm/ft²

<sup>1</sup> Btu/h-ft²·°F

<sup>2</sup> Solar Heat Gain Coefficient



The ENERGY STAR Most Efficient 2025 is a designation that truly represents the best of ENERGY STAR. The Most Efficient Mark is designed to recognize a select group of ENERGY STAR products as the “best of the best” for energy savings and innovation. The goal of this effort is to recognize products that deliver cutting-edge energy efficiency along with the latest in technological innovation—a simple choice for those seeking the very best of both.

To earn the ENERGY STAR Most Efficient 2025 designation, products must already qualify for the ENERGY STAR label. Then, each year, the EPA establishes criteria that specific product categories – such as windows and sliding glass patio doors – must meet to earn ENERGY STAR Most Efficient recognition. The above chart shows the 2025 certification criteria for windows and sliding patio doors.

### ENERGY STAR® Most Efficient Recognition Criteria for Windows and Sliding Glass Doors

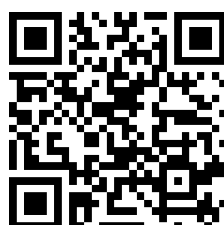
Climate Zone	U-factor	SHGC
Northern	≤ 0.20	≥ 0.20
North-Central	≤ 0.20	≤ 0.40
South-Central	≤ 0.20	≤ 0.23
Southern	≤ 0.21	≤ 0.23
	= 0.22	≤ 0.21



## Energy *Tax* Credits

The federal government and the IRS continue to offer homeowners incentives - in the form of an energy tax credit - for updating their windows to improve energy efficiency or replacing their existing windows entirely. For products purchased and installed in 2025, homeowners can receive a federal tax credit of up to 30% of the project cost, or a maximum amount of \$600, for windows or skylights annually; and up to 30% of the project cost, or a maximum amount of \$500, for doors annually (\$250 per door max). Windows must be designated as an ENERGY STAR 2025 Most Efficient product in order to qualify for the federal tax credit. Sliding patio doors will only need to meet the new ENERGY STAR Version 7.0 criteria in order to qualify for the credit. For more information, visit our web site.

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Partnership



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Your County Is In

Scan to Learn More About  
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Scan to Learn More About  
the Federal Tax Credit Using  
Most Efficient Products

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