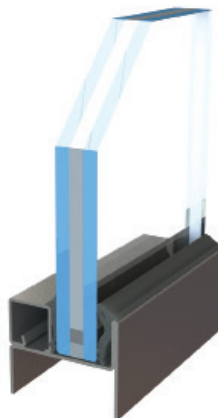


# CONTRAFLAM® 45

Fire-Rated Clear Laminated Safety Glass

## CLASSIFICATION

## PRODUCT FEATURES



## TECHNICAL SPECIFICATIONS

|   |   |
|---|---|
| Fire Rating   | 45 Minutes  |
| US Testing/Compliant                                | UL 9, 10B, UL 10C, NFPA 80, NFPA 252, NFPA 257      |
| Canadian UL Listing                                 | CAN/ULC-S104, S106                                  |
| Building Code Marking                               | D-H-NT-45, OH-45                                    |
| Impact Safety Rating                                | CPSC 16CFR 1201-CAT II; CAN/CGSB-12.1-M; ANSI Z97.1 |
| Nominal Thickness (in.; mm)                         | 3/4" (18 mm)  |
| Thickness Tolerance (in.; mm)                       | +1/16" to -1/16" (+1.5 mm to -1.5 mm)               |
| U value (BTU/hr*sqft/°F)                            | 0.79  |
| STC Rating  | 39  |
| Visible Light Transmission                          | ≈ 84%   |
| Groove (in.; mm)                                    | Depth: 5/8" (16 mm) Width: 7/8" (22 mm)             |
| Weight (lbs./ft. <sup>2</sup> ; kg/m <sup>2</sup> ) | 8.0 (39.0)  |

| MAXIMUM DIMENSIONS  | Window, Transom, Sidelight | Door Non-Temp Rise | Door Temp Rise |
|---|----------------------------|--------------------|----------------|
| Maximum Exposed Height (in; m)*                           | 95-1/2 (2.43)              | 95-1/2 (2.43)      | N/A            |
| Maximum Exposed Width (in; m)*                            | 95-1/2 (2.43)              | 35-13/16 (0.91)    | N/A            |
| Maximum Exposed Area (in <sup>2</sup> ; m <sup>2</sup> )* | 3,419 (2.21)               | 3,419 (2.21)       | N/A            |

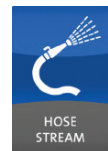
\*Height multiplied by width cannot exceed maximum exposed area.

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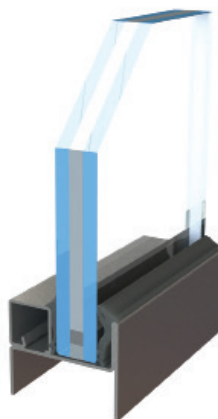
# CONTRAFLAM® 45 IGU

Fire-Rated Clear Laminated Safety Glass - Exterior Application

## CLASSIFICATION



## PRODUCT FEATURES



## TECHNICAL SPECIFICATIONS

|   |   |
|---|---|
| Fire Rating   | 45 Minutes                                |
| US Testing/Compliant                                | UL 9, 10B, UL 10C, NFPA 80, 252, 257      |
| Canadian UL Listing                                 | CAN/ULC-S104., S106                       |
| Building Code Marking                               | D-H-NT-45, OH-45                          |
| Impact Safety Rating                                | CPSC 16CFR 1201-CAT II; CAN/CGSB-12.1-M   |
| Nominal Thickness (in.; mm)                         | 1-1/4" (32 mm)                            |
| Thickness Tolerance (in.; mm)                       | +1/8" to -1/16" (+3 mm to -1.5 mm)        |
| U value (BTU/hr*sqft/°F)                            | 0.44                                      |
| STC Rating  | 42  |
| Visible Light Transmission                          | ≈ 80%                                     |
| Groove (in.; mm)                                    | Depth: 5/8" (16 mm) Width: 1-1/2" (38 mm) |
| Weight (lbs./ft. <sup>2</sup> ; kg/m <sup>2</sup> ) | 11.0 (54.0)                               |

## MAXIMUM DIMENSIONS

Window, Transom, Sidelight      Door Non-Temp Rise      Door Temp Rise

|   |               |                 |     |
|---|---------------|-----------------|-----|
| Maximum Exposed Height (in; m)*                           | 95-1/2 (2.43) | 95-1/2 (2.43)   | N/A |
| Maximum Exposed Width (in; m)*                            | 95-1/2 (2.43) | 35-13/16 (0.91) | N/A |
| Maximum Exposed Area (in <sup>2</sup> ; m <sup>2</sup> )* | 3,419 (2.21)  | 3,419 (2.21)    | N/A |

\*Height multiplied by width cannot exceed maximum exposed area.

Low iron glass available upon request.

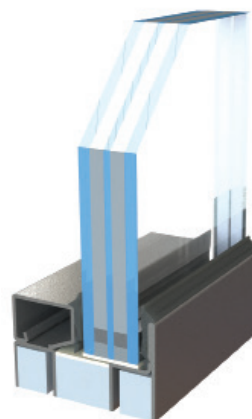
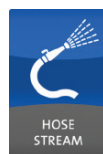
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# CONTRAFLAM® 60

Fire-Rated Clear Tempered Safety Glass

## CLASSIFICATION

## PRODUCT FEATURES



## TECHNICAL SPECIFICATIONS

|   |   |
|---|---|
| Fire Rating   | 60 Minutes  |
| US Testing/Compliant                                | UL 9, 10B, UL 10C, NFPA 80, NFPA 251, NFPA 252, NFPA 257, ASTM E119, UL 263 |
| Canadian UL Listing                                 | CAN/ULC-S101, S104, S106  |
| Building Code Marking                               | D-H-T-60, OH-60, W-60   |
| Impact Safety Rating                                | CPSC 16CFR 1201-CAT II; CAN/CGSB-12.1-M; ANSI Z97.1                         |
| Nominal Thickness (in.; mm)                         | 1" (25 mm)  |
| Thickness Tolerance (in.; mm)                       | +1/8" to -1/16" (+3 mm to -1.5 mm)  |
| U value (BTU/hr*sqft/°F)                            | 0.34  |
| STC Rating  | 40  |
| Visible Light Transmission                          | ≈ 80%   |
| Groove (in.; mm)                                    | Depth: 7/8" (22 mm) Width: 1-3/4" (45 mm)                                   |
| Weight (lbs./ft. <sup>2</sup> ; kg/m <sup>2</sup> ) | 10.3 (58.0)   |

| MAXIMUM DIMENSIONS  | Window, Transom, Sidelight | Door Non-Temp Rise | Door Temp Rise |
|---|----------------------------|--------------------|----------------|
| Maximum Exposed Height (in; m)*                           | 94-13/16 (2.41)            | 89-1/2 (2.27)      | 89-1/2 (2.27)  |
| Maximum Exposed Width (in; m)*                            | 94-13/16 (2.41)            | 30 (0.76)          | 30 (0.76)      |
| Maximum Exposed Area (in <sup>2</sup> ; m <sup>2</sup> )* | 4,449 (2.87)               | 2,685 (1.73)       | 2,685 (1.73)   |

\*Height multiplied by width cannot exceed maximum exposed area.

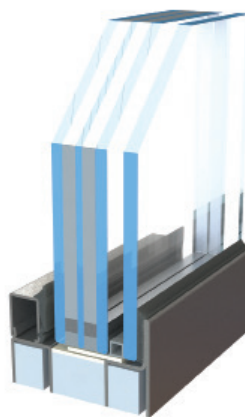
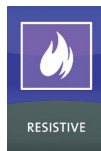
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# CONTRAFLAM® 60 IGU

Fire-Rated Clear Tempered Safety Glass - Exterior Application

## CLASSIFICATION

## PRODUCT FEATURES



## TECHNICAL SPECIFICATIONS

|   |  |
|---|--|
| Fire Rating   | 60 Minutes   |
| US Testing/Compliant                                | UL 9, 10B, UL 10C, 263; NFPA 80, NFPA 251, NFPA 252, NFPA 257, ASTM E119, UL 263 |
| Canadian UL Listing                                 | CAN/ULC-S101, S104, S106   |
| Building Code Marking                               | D-H-T-60, OH-60, W-60  |
| Impact Safety Rating                                | CPSC 16CFR 1201-CAT II; CAN/CGSB-12.1-M; ANSI Z97.1                              |
| Nominal Thickness (in.; mm)                         | 1-9/16" (40 mm)  |
| Thickness Tolerance (in.; mm)                       | +1/8" to -1/16" (+3 mm to -1.5 mm)   |
| U value (BTU/hr*sqft/°F)                            | 0.76   |
| STC Rating  | 44   |
| Visible Light Transmission                          | ≈ 85%  |
| Groove (in.; mm)                                    | Depth: 7/8" (22 mm) Width: 1-1/4" (32 mm)  |
| Weight (lbs./ft. <sup>2</sup> ; kg/m <sup>2</sup> ) | 10.3 (50.5)  |

| MAXIMUM DIMENSIONS  | Window, Transom, Sidelight | Door Non-Temp Rise | Door Temp Rise |
|---|----------------------------|--------------------|----------------|
| Maximum Exposed Height (in; m)*                           | 94-13/16 (2.41)            | 89-1/2 (2.27)      | 89-1/2 (2.27)  |
| Maximum Exposed Width (in; m)*                            | 94-13/16 (2.41)            | 30 (0.76)          | 30 (0.76)      |
| Maximum Exposed Area (in <sup>2</sup> ; m <sup>2</sup> )* | 4,449 (2.87)               | 2,685 (1.73)       | 2,685 (1.73)   |

\*Height multiplied by width cannot exceed maximum exposed area.

Low iron glass available upon request.

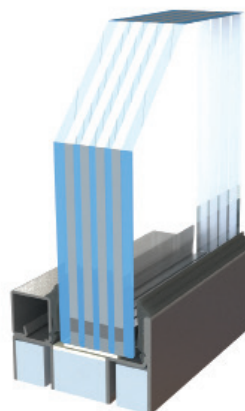
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# CONTRAFLAM®

Fire-Rated Clear Tempered Safety Glass

## CLASSIFICATION

## PRODUCT FEATURES



## TECHNICAL SPECIFICATIONS

|   |   |
|---|---|
| Fire Rating   | 90 Minutes  |
| US Testing/Compliant                                | UL 9, 10B, UL 10C, NFPA 80, NFPA 252, NFPA 257      |
| Canadian UL Listing                                 | CAN/ULC S104, S106                                  |
| Building Code Marking                               | D-H-T-90, OH-90                                     |
| Impact Safety Rating                                | CPSC 16CFR 1201-CAT II; CAN/CGSB-12.1-M; ANSI Z97.1 |
| Nominal Thickness (in.; mm)                         | 1-1/2" (37 mm)                                      |
| Thickness Tolerance (in.; mm)                       | +1/8" to -1/16" (+3 mm to -1.5 mm)                  |
| U value (BTU/hr*sqft/°F)                            | 0.69  |
| STC Rating  | 45  |
| Visible Light Transmission                          | ≈ 82%   |
| Groove (in.; mm)                                    | Depth: 13/16" (21 mm) Width: 1-15/16" (49 mm)       |
| Weight (lbs./ft. <sup>2</sup> ; kg/m <sup>2</sup> ) | 14.6 (71.5)   |

| MAXIMUM DIMENSIONS  | Window, Transom, Sidelight | Door Non-Temp Rise | Door Temp Rise |
|---|----------------------------|--------------------|----------------|
| Maximum Exposed Height (in; m)*                           | 88-9/16 (2.25)             | 88-9/16 (2.25)     | 88-9/16 (2.25) |
| Maximum Exposed Width (in; m)*                            | 88-9/16 (2.25)             | 35-3/4 (0.91)      | 35-3/4 (0.91)  |
| Maximum Exposed Area (in <sup>2</sup> ; m <sup>2</sup> )* | 3,174 (2.05)               | 3,174 (2.05)       | 3,174 (2.05)   |

\*Height multiplied by width cannot exceed maximum exposed area.

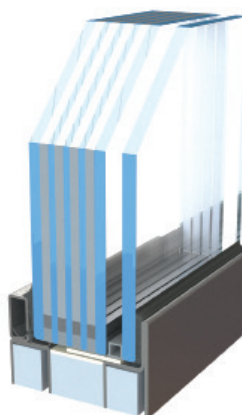
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# CONTRAFLAM® 90 IGU

Fire-Rated Clear Tempered Safety Glass - Exterior Application

## CLASSIFICATION

## PRODUCT FEATURES



## TECHNICAL SPECIFICATIONS

|   |   |
|---|---|
| Fire Rating   | 90 Minutes  |
| US Testing/Compliant                                | UL 9, 10B, UL 10C, NFPA 80, NFPA 252, NFPA 257      |
| Canadian UL Listing                                 | CAN/ULC-S101, S104, S106                            |
| Building Code Marking                               | D-H-T-90, OH-90                                     |
| Impact Safety Rating                                | CPSC 16CFR 1201-CAT II; CAN/CGSB-12.1-M; ANSI Z97.1 |
| Nominal Thickness (in.; mm)                         | 1-15/16" (50 mm)                                    |
| Thickness Tolerance (in.; mm)                       | +1/8" to -1/16" (+3 mm to -1.5 mm)                  |
| U value (BTU/hr*sqft/°F)                            | 0.33  |
| STC Rating  | 47  |
| Visible Light Transmission                          | ≈ 70%   |
| Groove (in.; mm)                                    | Depth: 13/16" (21 mm) Width: 2-3/16" (56 mm)        |
| Weight (lbs./ft. <sup>2</sup> ; kg/m <sup>2</sup> ) | 17.7 (86.5)   |

| MAXIMUM DIMENSIONS  | Window, Transom, Sidelight | Door Non-Temp Rise | Door Temp Rise |
|---|----------------------------|--------------------|----------------|
| Maximum Exposed Height (in; m)*                           | 88-9/16 (2.25)             | 88-9/16 (2.25)     | 88-9/16 (2.25) |
| Maximum Exposed Width (in; m)*                            | 88-9/16 (2.25)             | 35-3/4 (0.91)      | 35-3/4 (0.91)  |
| Maximum Exposed Area (in <sup>2</sup> ; m <sup>2</sup> )* | 3,174 (2.05)               | 3,174 (2.05)       | 3,174 (2.05)   |

\*Height multiplied by width cannot exceed maximum exposed area.

Low iron glass available upon request.

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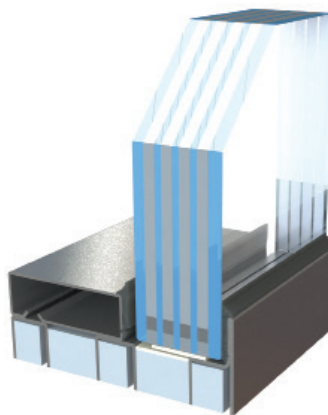
# CONTRAFLAM® 120

Fire-Rated Clear Tempered Safety Glass

## CLASSIFICATION



## PRODUCT FEATURES



## TECHNICAL SPECIFICATIONS

|   |   |
|---|---|
| Fire Rating   | 120 Minutes   |
| US Testing/Compliant                                | UL 263, NFPA 251, ASTM E 119                        |
| Canadian UL Listing                                 | CAN/ULC-S101  |
| Building Code Marking                               | W-120   |
| Impact Safety Rating                                | CPSC 16CFR 1201-CAT II; CAN/CGSB-12.1-M; ANSI Z97.1 |
| Nominal Thickness (in.; mm)                         | 1-9/16" (39 mm)                                     |
| Thickness Tolerance (in.; mm)                       | +1/8" to -1/16" (+3 mm to -1.5 mm)                  |
| U value (BTU/hr*sqft/°F)                            | 0.65  |
| STC Rating  | 46  |
| Visible Light Transmission                          | ≈ 82%   |
| Groove (in.; mm)                                    | Depth: 7/8" (22 mm) Width: 2-15/16" (75 mm)         |
| Weight (lbs./ft. <sup>2</sup> ; kg/m <sup>2</sup> ) | 17.4 (77.5)   |

| MAXIMUM DIMENSIONS  | Window, Transom, Sidelight | Door Non-Temp Rise | Door Temp Rise |
|---|----------------------------|--------------------|----------------|
| Maximum Exposed Height (in; m)*                           | 94-5/8 (2.40)              | N/A                | N/A            |
| Maximum Exposed Width (in; m)*                            | 94-5/8 (2.40)              | N/A                | N/A            |
| Maximum Exposed Area (in <sup>2</sup> ; m <sup>2</sup> )* | 4,435 (2.86)               | N/A                | N/A            |

\*Height multiplied by width cannot exceed maximum exposed area.

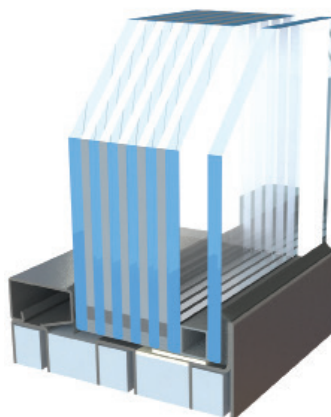
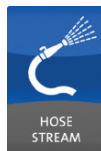
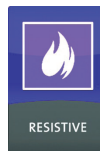
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# CONTRAFLAM® 120 IGU

Fire-Rated Clear Tempered Safety Glass - Exterior Application

## CLASSIFICATION

## PRODUCT FEATURES



## TECHNICAL SPECIFICATIONS

|   |   |
|---|---|
| Fire Rating   | 120 Minutes   |
| US Testing/Compliant                                | UL 263, NFPA 251, ASTM E 119                        |
| Canadian UL Listing                                 | CAN/ULC-S101  |
| Building Code Marking                               | W-120   |
| Impact Safety Rating                                | CPSC 16CFR 1201-CAT II; CAN/CGSB-12.1-M; ANSI Z97.1 |
| Nominal Thickness (in.; mm)                         | 2-1/4" (58 mm)                                      |
| Thickness Tolerance (in.; mm)                       | +1/8" to -1/16" (+3 mm to -1.5 mm)                  |
| U value (BTU/hr*sqft/°F)                            | 0.31  |
| STC Rating  | 47  |
| Visible Light Transmission                          | ≈ 78%   |
| Groove (in.; mm)                                    | Depth: 13/16" (21 mm) Width: 2-9/16" (65 mm)        |
| Weight (lbs./ft. <sup>2</sup> ; kg/m <sup>2</sup> ) | 21.4 (92.5)   |

| MAXIMUM DIMENSIONS  | Window, Transom, Sidelight | Door Non-Temp Rise | Door Temp Rise |
|---|----------------------------|--------------------|----------------|
| Maximum Exposed Height (in; m)*                           | 94-5/8 (2.40)              | N/A                | N/A            |
| Maximum Exposed Width (in; m)*                            | 94-5/8 (2.40)              | N/A                | N/A            |
| Maximum Exposed Area (in <sup>2</sup> ; m <sup>2</sup> )* | 4,435 (2.86)               | N/A                | N/A            |

\*Height multiplied by width cannot exceed maximum exposed area.

Low iron glass available upon request.

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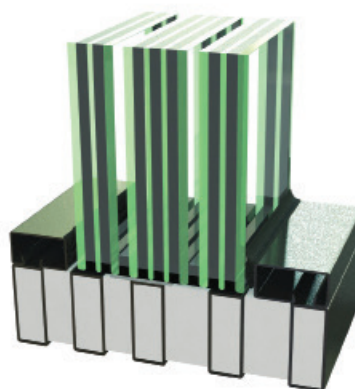
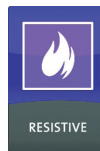


# CONTRAFLAM® 180

Fire-Rated Clear Tempered Safety Glass

## CLASSIFICATION

## PRODUCT FEATURES



## TECHNICAL SPECIFICATIONS

|                               |  |
|-------------------------------|--|
| Fire Rating                   | 180 Minutes  |
| US Testing/Compliant          | UL 263, ASTM E 119   |
| Canadian UL Listing           | CAN/ULC-S101   |
| Impact Safety Rating          | CPSC 16CFR 1201 (Categories I & II); CAN/CGSB-12.1-M; ANSI Z97.1 |
| Nominal Thickness (in.; mm)   | 3-7/8" (98 mm)   |
| Thickness Tolerance (in.; mm) | +1/8" to -1/8" (+3 mm to -3 mm)                                  |
| U value (BTU/hr*sqft/°F)      | 0.31   |
| STC Rating                    | 49   |
| Visible Light Transmission    | ≈ 75%  |
| Groove (in.; mm)              | Depth: 7/8" (22 mm) Width: 2-15/16" (75 mm)                      |
| Weight (lbs./sq. ft.)         | 34.3 (77.5)  |

## AUTHORIZED DIMENSIONS

| Rating | Application | Max Exposed Area of Glass (Sq in) | Max Width of Exposed Glass | Max Height of Exposed Glass | Min Depth of Groove | Groove Width | Building Code Marking <sup>1</sup> | UL Design Numbers <sup>1</sup> |
|--------|-------------|-----------------------------------|----------------------------|-----------------------------|---------------------|--------------|------------------------------------|--------------------------------|
| 3 hr.  | Windows     | 2304                              | 48"                        | 48"                         | 13/16"              | 4-1/8"       | W-180                              | U546, W493                     |

NOTE: Contrafl am 60, 90, 120 products are available with SGG Diamant® low iron glass.

<sup>1</sup>See Reference Page

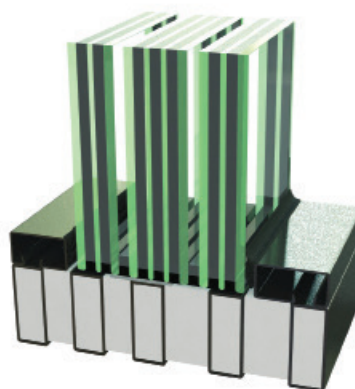
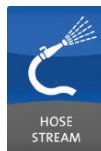
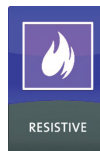
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# CONTRAFLAM® 180 IGU

Fire-Rated Clear Tempered Safety Glass - Exterior Application

## CLASSIFICATION

## PRODUCT FEATURES



## TECHNICAL SPECIFICATIONS

|                               |   |
|-------------------------------|---|
| Fire Rating                   | 180 Minutes   |
| US Testing/Compliant          | UL 263, ASTM E 119  |
| Canadian UL Listing           | CAN/ULC-S101  |
| Impact Safety Rating          | PSC 16CFR 1201 (Categories I & II); CAN/CGSB-12.1-M; ANSI Z97.1 |
| Nominal Thickness (in.; mm)   | 4-3/8" (106 mm)   |
| Thickness Tolerance (in.; mm) | +1/8" to -1/16" (+3 mm to -1.5 mm)                              |
| U value (BTU/hr*sqft/°F)      | 0.31  |
| STC Rating                    | 49  |
| Visible Light Transmission    | ≈ 75%   |
| Groove (in.; mm)              | Depth: 7/8" (22 mm) Width: 3-7/16" (87 mm)                      |
| Weight (lbs./sq. ft.)         | 37.4 (92.5)   |

## AUTHORIZED DIMENSIONS

| Rating | Application | Max Exposed Area of Glass (Sq in) | Max Width of Exposed Glass | Max Height of Exposed Glass | Min Depth of Groove | Groove Width | Building Code Marking <sup>1</sup> | UL Design Numbers <sup>1</sup> |
|--------|-------------|-----------------------------------|----------------------------|-----------------------------|---------------------|--------------|------------------------------------|--------------------------------|
| 3 hr.  | Windows     | 2304                              | 48"                        | 48"                         | 13/16"              | 4-7/8"       | W-180                              | U546, W493                     |

<sup>1</sup>See Reference Page

Low iron glass available upon request.

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