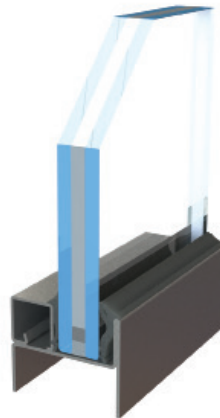


# CONTRAFLAM<sup>®</sup> 45

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            |

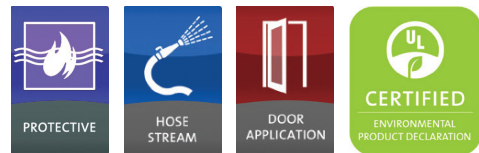
\*Height multiplied by width cannot exceed maximum exposed area.

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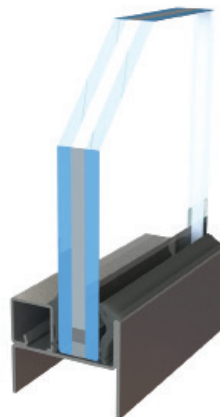
# CONTRAFLAM® 45 IGU

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.

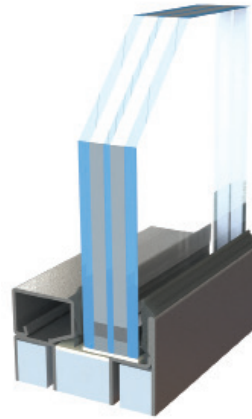
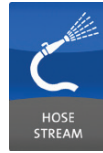
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# CONTRAFLAM<sup>®</sup> 60

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.

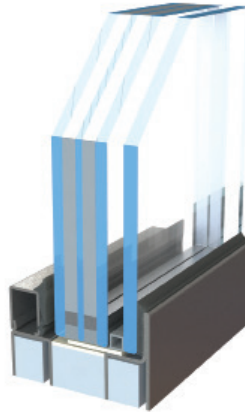
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# CONTRAFLAM® 60 IGU

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.

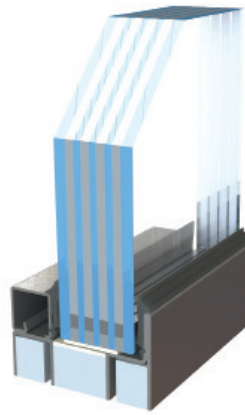
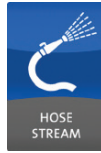
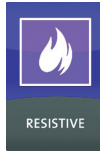
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# CONTRAFLAM®

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.

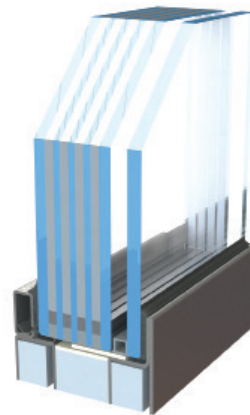
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# CONTRAFLAM® 90 IGU

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.

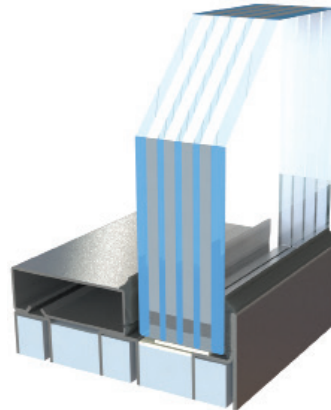
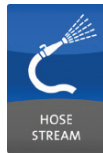
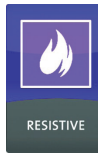
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# CONTRAFLAM<sup>®</sup> 120

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.

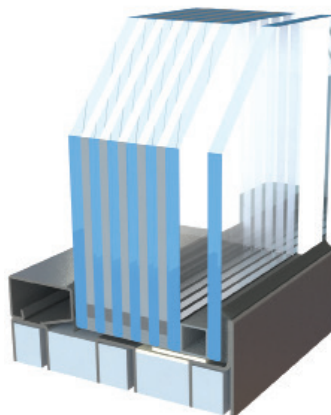
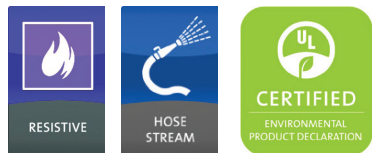
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# CONTRAFLAM® 120 IGU

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.

Rev. 11.11.15 The information published in this document is correct at the time of going to press. Such information may be subject to change and products may be modified.

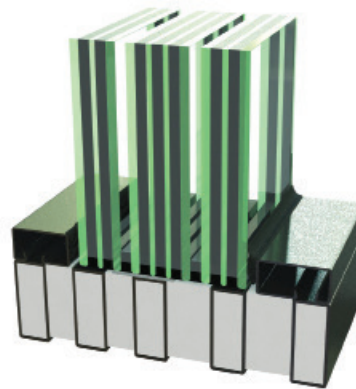


# CONTRAFLAM® 180

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

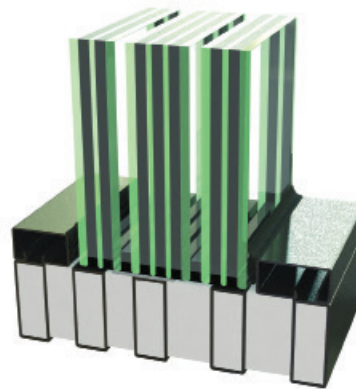
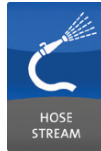
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# CONTRAFLAM® 180 IGU

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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