# KOREA HOT FIX CO

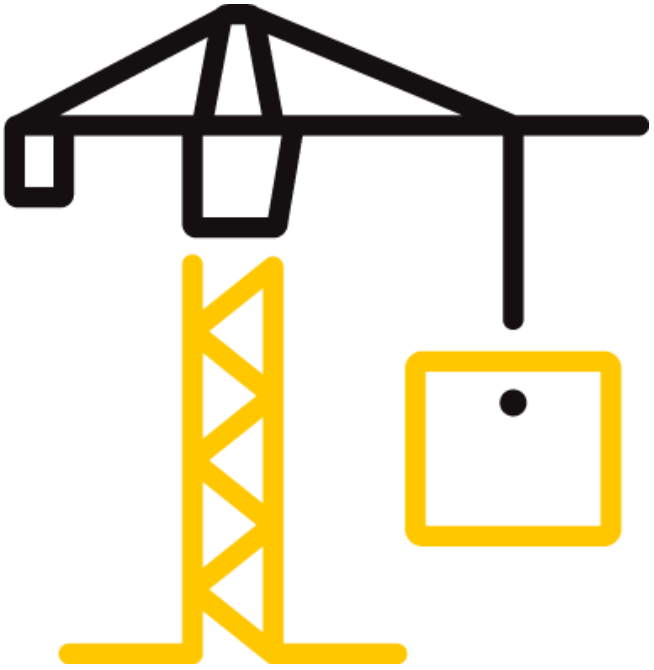
# TEST REPORT

**SCOPE OF WORK**
SMALL HARD BODY IMPACT RESISTANCE IN ACCORDANCE WITH CLAUSE 6.5.2 OF EN 14963:2006
MECHANICAL STRENGTH IN ACCORDANCE WITH CLAUSE 6.5.1 OF EN 14963:2006

**TEST DATE**
20.04.2021 – 03.08.2021

**ISSUE DATE**
14.09.2021

**PAGE**
32



**Intertek Testing Service Korea Ltd.**
(1st Floor, A-ju Digital Tower, Seongsu-dong 2-ga) 7,
Achasan-ro 5-gil, Seongdong-gu, Seoul, 04793, Korea

NUMBER : **KORT21020490**
DATE : **14-SEP-2021**

APPLICANT: **KOREA HOT FIX CO**
1318, BOGWANG-RO, GWANGTAN-MYEON PAJU-SI, GYEONGGI-DO, KOREA (10951)

ATTN: **DANA (NA KYOUNG) KIM**

| | | |
|---|---|---|
| Sample Description As Declared | : | CANOFIX Canopy<br>(PC 1000*1000, PC 1270*1500, PC 1500*1500) |
| End Use. | : | - |
| Style No. | : | - |
| Order No./PO No. | : | - |
| Buyer Name | : | - |
| Agent | : | - |
| Manufacturer | : | KOREA HOT FIX CO |
| Ref. | : | - |
| Date Received | : | 19 Apr 2021 |
| Date Confirmation Received | : | - |

**TEST CONDUCTED: AS PER THE REQUEST OF THE APPLICANT. FOR FURTHER DETAILS PLEASE REFER TO ENCLOSED PAGE(S)**

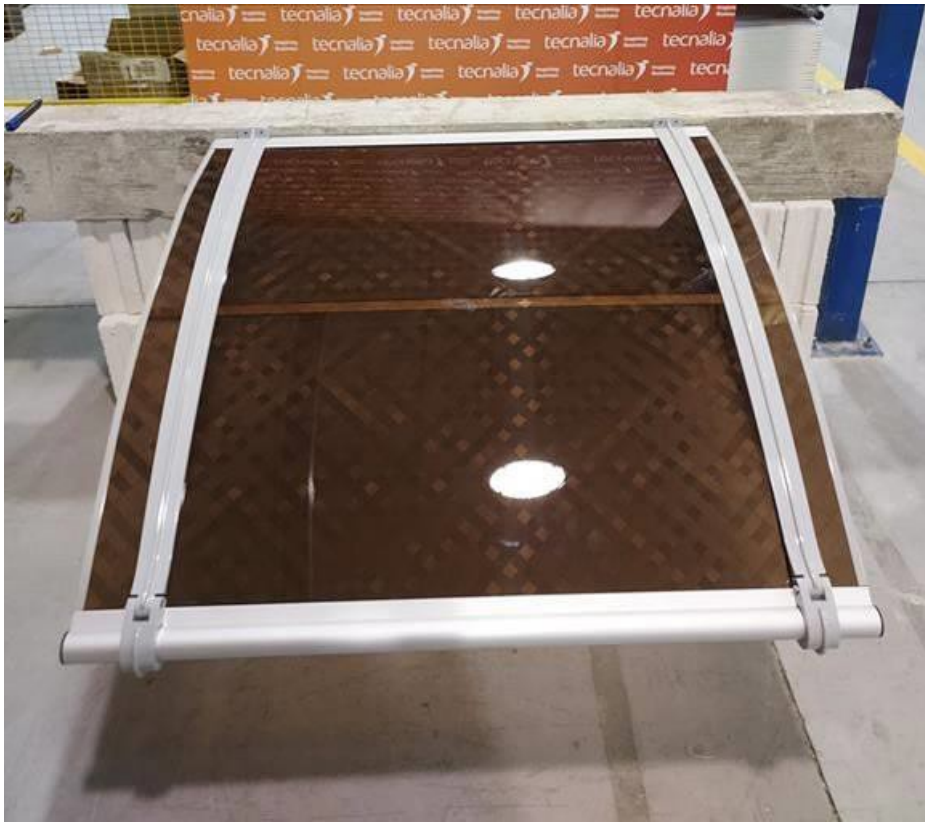
AUTHORIZED BY
For Intertek Testing Services Korea Ltd. [Korea-TXT]

Jack Kim General Manager

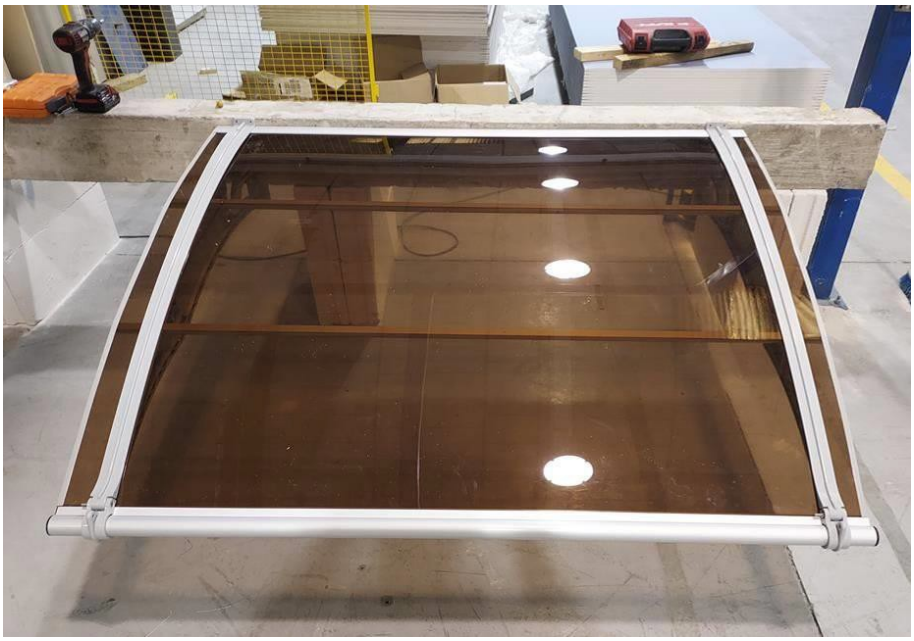
# SAMPLE CHARACTERISTICS

On 31th Mar 2021, INTERTEK KOREA received from the company KOREA HOT FIX CO:

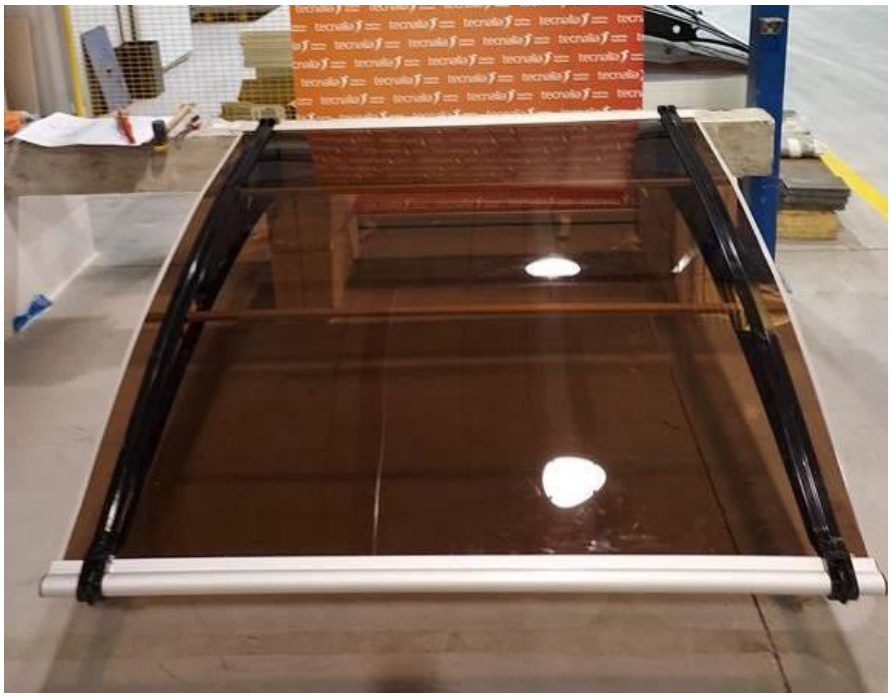
- 3 samples: -- Model No.: PC 1000*1000
- 2 samples: -- Model No.: PC 1270*1500
- 2 samples: -- Model No.: PC 1500*1500
- 10 test specimens of polycarbonate measuring 35 mm x 30 mm x 2 mm and referred to as «PC». The total thickness of the test specimens ranges from 1.98 to 2.00 mm.




*Photograph 1: General overview of the Model sample No.: PC 1000*1000.*



*Photograph 2: General overview of the Model sample No.: PC 1270*1500.*



*Photograph 3: General overview of the Model sample No.: PC 1500*1500.*

Photographs taken during the tests and the technical datasheet provided by the customer can be found in the Annex.

# TESTS REQUESTED

The client requested INTERTEK KOREA to carry out the testing indicated in the next table.

| Test | References to be tested |
|---|---|
| Small hard body impact resistance in accordance with clause 6.5.2 of EN 14963:2006 standard | 1 CANOPY Model No.: PC 1000*1000 |
| *Mechanical strength* in accordance with clause 6.5.1 of EN 14963:2006 standard: | |
| ▪ Resistance to upward load | 1 CANOPY Model No.: PC 1000*1000<br>1 CANOPY Model No.: PC 1270*1500<br>1 CANOPY Model No.: PC 1000*1000 |
| ▪ Resistance to downward loads | 1 CANOPY Model No.: PC 1000*1000<br>1 CANOPY Model No.: PC 1270*1500<br>1 CANOPY Model No.: PC 1500*1500 |
| Durability test (optical properties) in accordance with clause 6.2 of EN 14963:2006 standard | 10 test specimens of polycarbonate measuring 35 mm x 30 mm x 2 mm |
| Determination of luminous and solar characteristics in accordance with ISO 9050:2003 standard | One test specimen of polycarbonate measuring 35 mm x 30 mm x 2 mm |

*Table 1: Tests requested.*

# 3. TESTS PERFORMED AND RESULTS

## 3.1. Small hard body impact resistance test, Clause 5.4.4.1 (EN 14963:2006)

### Assembly

The test sample was fixed on a concrete beam with the bolts provided by the manufacturer, in accordance with their installation instructions.

### Test method

The test method consists of dropping a 250 g steel ball fall from 1 m to three spots in the span of the canopy: in the centre, on a corner, and in the least favourable position.

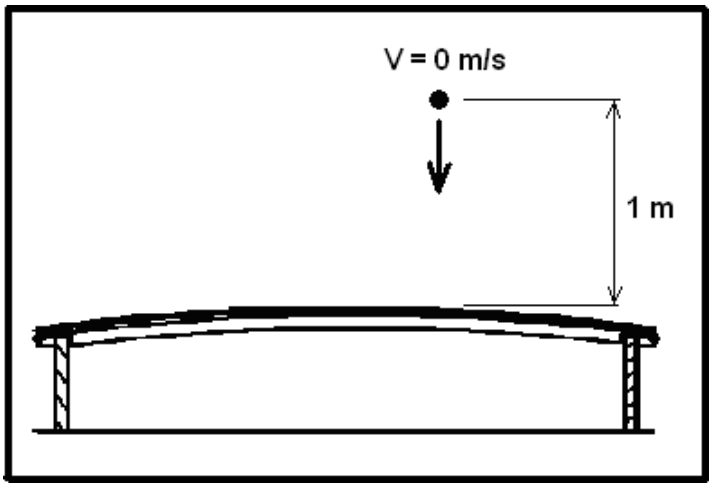



*Figure 1: Test diagram with the small hard body.*

### Acceptance criterion

The test shall be considered satisfactory when the steel ball does not pass through the product in any of the three positions.

### Results

| Tested reference | Height 1 m | Result |
|---|---|---|
| CANOPY Model No.: PC 1000*1000 | First impact | **SATISFACTORY** |
| | Second impact | **SATISFACTORY** |
| | Third impact | **SATISFACTORY** |

*Table 2: Small hard body impact resistance test results.*

### 3.2. Resistance to upwards load test, Clause 5.4.2 (EN 14963:2006)

**Assembly**

The test sample was fixed on a concrete beam with the bolts provided by the manufacturer, in accordance with their installation instructions. In this case, it was installed upside down.

**Test method**

The test is performed placing 5 kg and 10 kg masses on top of the canopy and leaving the weight for 6 minutes (see photos A.I-2-5 in Annex I). Depending on the performance of the sample it is classified as:

UL 500 for a load of 500 $N/m^2$

UL 1000 for a load of 1000 $N/m^2$

**Acceptance criterion**

The test shall be considered satisfactory when there is no permanent damage or deformation that might affect its fitness for use.

**Results**

| Tested reference | Classification | Result |
|---|---|---|
| 1 CANOPY Model No.: PC 1000*1000 | UL 500 | **COMPLIANT** |
| 1 CANOPY Model No.: PC 1000*1000 | UL 1000 | **COMPLIANT** |
| 1 CANOPY Model No.: PC 1270*1500 | UL 1000 | **NON-COMPLIANT** |
| 1 CANOPY Model No.: PC 1270*1500 | UL 500 | **NON-COMPLIANT** |
| 1 CANOPY Model No.: PC 1500*1500 | UL 500 | **NON-COMPLIANT** |

*Table 3: Resistance to upward loads test results.*

The classification resulting from the test is shown in the following table:

| **Resistance to upward loads classification** | |
|---|---|
| 1 CANOPY Model No.: PC 1000*1000 | ***UL 1000*** |

*Table 4: Resistance to upwards load classification.*

### 3.3. Resistance to downwards loads test, Clause 5.4.3 (EN 14963:2006)

**Assembly**

The test sample was fixed on a concrete beam with the bolts provided by the manufacturer, in accordance with their installation instructions.

**Test method**

The test is performed placing 25 kg and 10kg masses on top of the CANOPY and leaving the weight for 6 minutes (see photos A.I-6/7 in Annex I).. Depending on the performance of the sample, it is classified as:

DL 1125 for a load of 1125 N/m$^2$

**Acceptance criterion**

The test shall be considered satisfactory when there is no permanent damage or deformation that might affect its fitness for use.

**Results**

| Tested reference | Classification | Result |
|---|---|---|
| 1 CANOPY Model No.: PC 1000*1000 | DL 1125 | **SATISFACTORY** |
| 1 CANOPY Model No.: PC 1270*1500 | DL 1125 | **SATISFACTORY** |
| 1 CANOPY Model No.: PC 1500*1500 | DL 1125 | **SATISFACTORY** |

*Table 5: Resistance to downward loads test results.*

The classification resulting from the test is shown in the following table:

| **Resistance to downward loads classification** | |
|---|---|
| 1 CANOPY Model No.: PC 1000*1000 | ***DL 1125*** |
| 1 CANOPY Model No.: PC 1270*1500 | ***DL 1125*** |
| 1 CANOPY Model No.: PC 1500*1500 | ***DL 1125*** |

*Table 6: Resistance to downwards load classification.*

## 3.4. Durability test (Optical properties) Clause 5.4.2 (EN 14963:2006)

### Test method

The test consisted of submitting the test specimens to 2,000 hours of radiation. To this end, the test specimens were placed in a test chamber with the following test conditions:

- The test is carried out according to EN ISO4892-1:2016
- The spectral distribution of the filtered xenon arc radiation in accordance with EN ISO 4892-2:2013
- Black-standard temperature: (65±3)ºC
- Air temperature in the test chamber: 30-35ºC
- Relative humidity of the air in the dry period: (65±3)%
- Spray cycle, 120 minutes (duration of spraying 18 minutes and dry interval between spraying 102 minutes

In order to evaluate the durability, the light transmittance spectrum was measured between 380 nm and 780 nm before the test and after 2,000 hours of exposure. Two transmittance measurements were taken of each test specimen and the average of these was calculated.

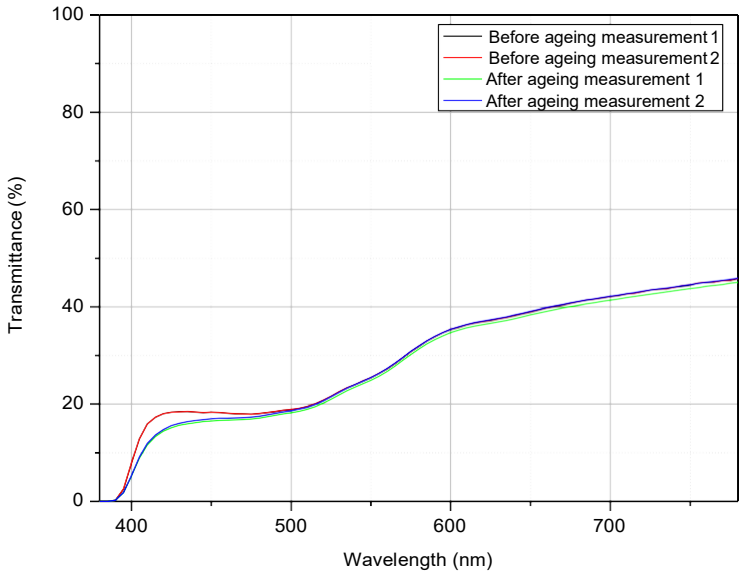
From the average transmittance spectra, the next values were calculated for each of the test specimens received:

- The luminous transmittance in accordance with the provisions of standard UNE- EN 410:2011
- The colour coordinates for the Illuminant D65 and the observer 2º in accordance with CIE
- The yellowness index in accordance with clause 6.2.3 of EN 14963:2006 standard,

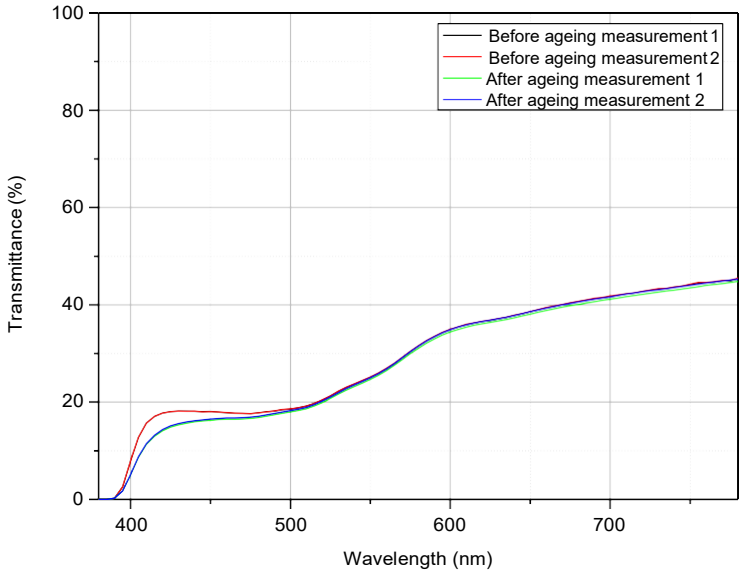
The test specimens were also inspected in order to check for the presence of faults (bubbles, cloudiness, etc.)

## Results

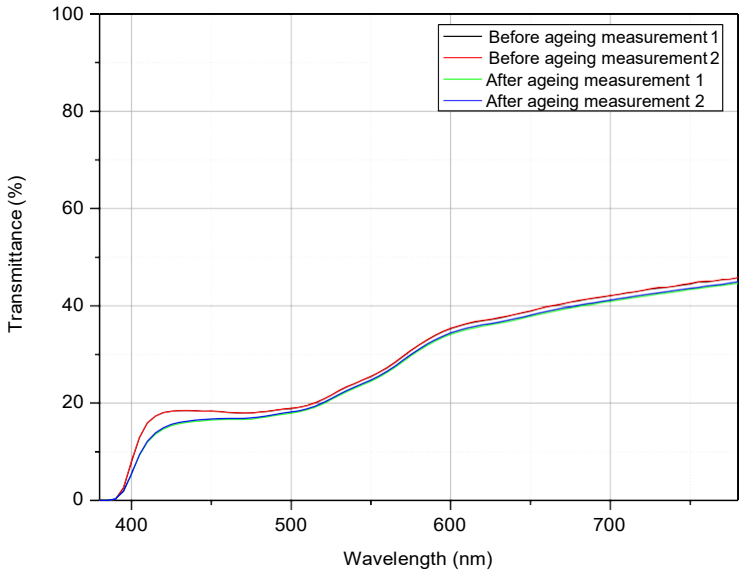
The following graphs show the average transmittance spectra of each test specimen before and after ageing.



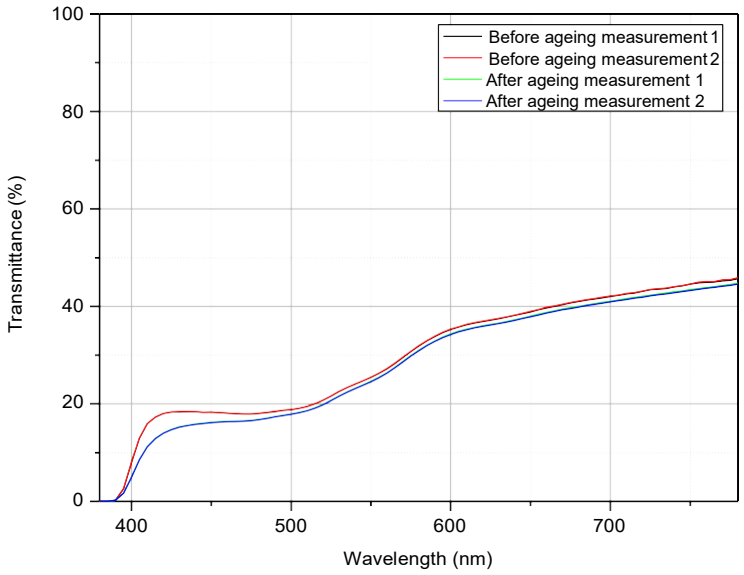

*Graph 1: Transmittance spectrum test specimen 1 «PC».*



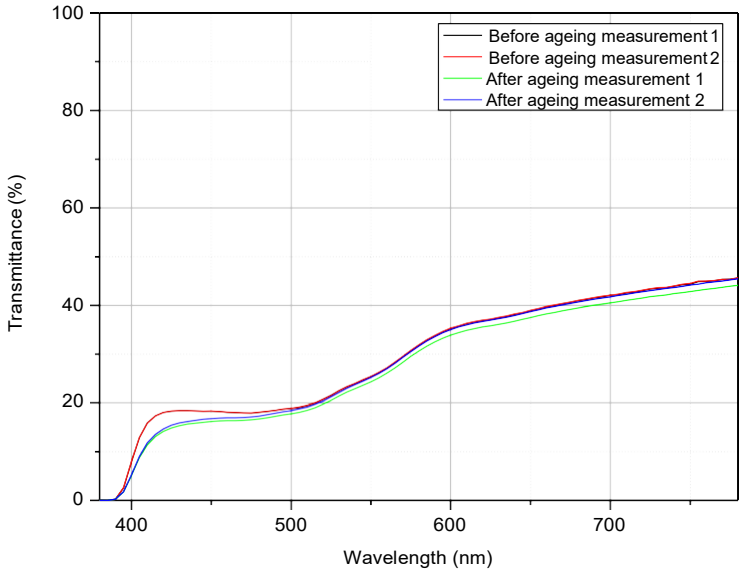

*Graph 2: Transmittance spectrum test specimen 2 «PC».*



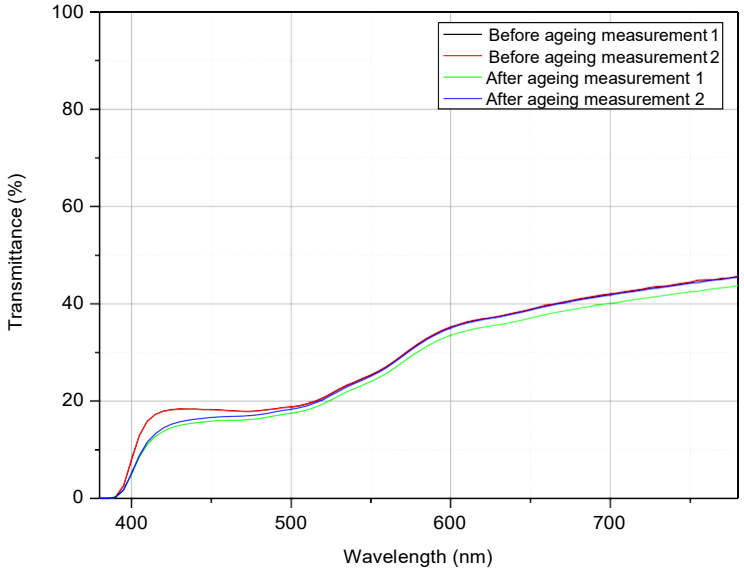

*Graph 3: Transmittance spectrum test specimen 3 «PC».*



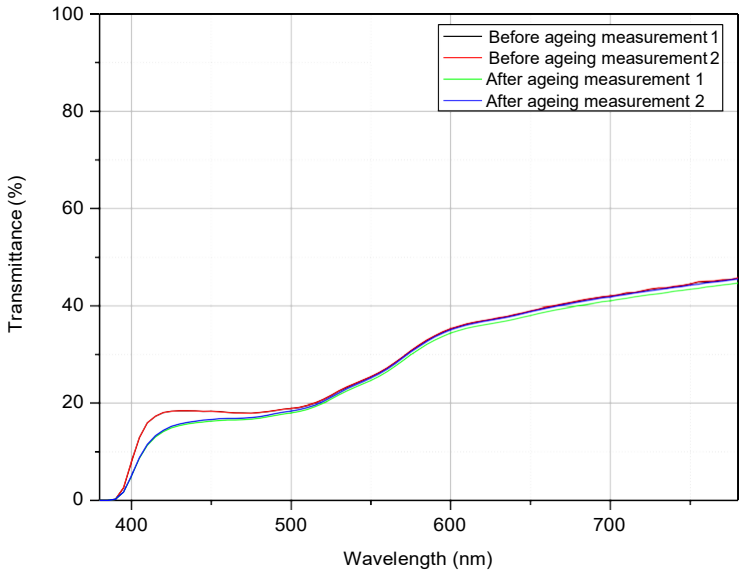

*Graph 4: Transmittance spectrum test specimen 4 «PC».*



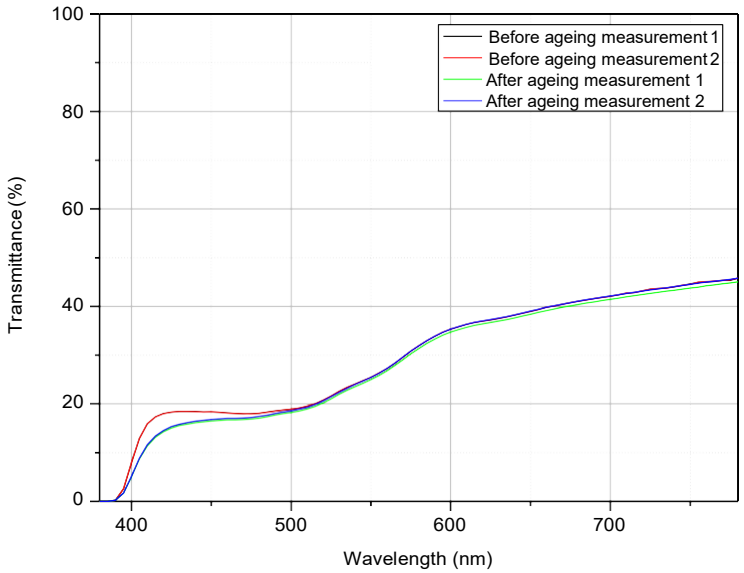

*Graph 5: Transmittance spectrum test specimen 5 «PC».*



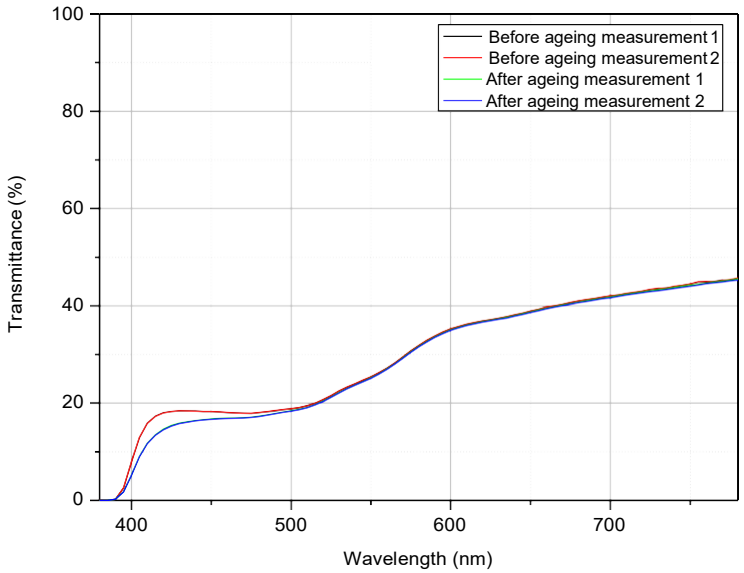

*Graph 6: Transmittance spectrum test specimen 6 «PC».*



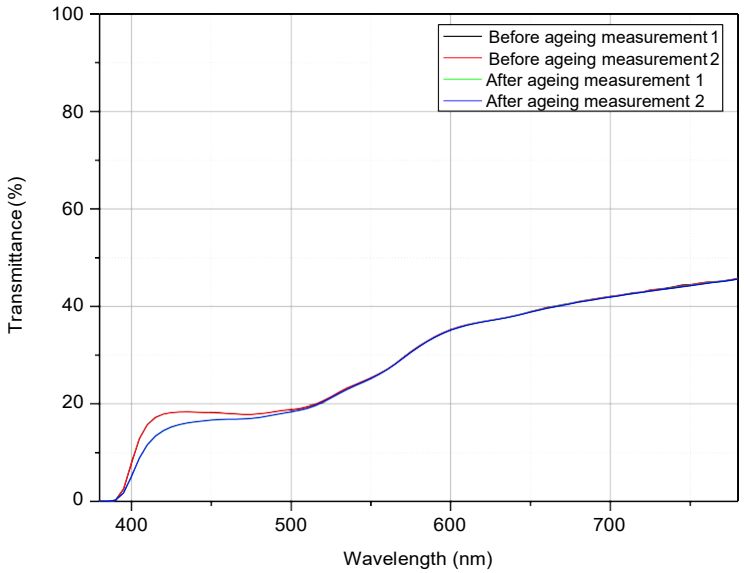

*Graph 7: Transmittance spectrum test specimen 7 «PC».*




*Graph 8: Transmittance spectrum test specimen 8 «PC».*




*Graph 9: Transmittance spectrum test specimen 9 «PC».*




*Graph 10: Transmittance spectrum test specimen 10 «PC».*

The luminous transmittance results before and after 2,000 hours of exposure are shown below.

| Reference | | % Luminous transmittance | |
|---|---|---|---|
| | | 0 hours | 2,000 hours |
| «PC» | 1 | **27.4 ± 0.2** | **27.0 ± 0.8** |
| | 2 | **27.1 ± 0.2** | **26.7 ± 0.6** |
| | 3 | **27.4 ± 0.2** | **26.5 ± 0.5** |
| | 4 | **27.3 ± 0.2** | **26.4 ± 0.3** |
| | 5 | **27.3 ± 0.1** | **26.6 ± 1.3** |
| | 6 | **27.3 ± 0.1** | **26.4 ± 1.7** |
| | 7 | **27.4 ± 0.2** | **26.8 ± 0.8** |
| | 8 | **27.4 ± 0.1** | **27.0 ± 0.7** |
| | 9 | **27.3 ± 0.1** | **27.0 ± 0.2** |
| | 10 | **27.3 ± 0.1** | **27.0 ± 0.2** |

*Table 7: Luminous transmittance results.*

The difference between the initial and final luminous transmittance in a percentage is shown in the following table:

| Reference | | Luminous transmittance difference (%) |
|---|---|---|
| «PC» | 1 | **-1.2** |
| | 2 | **-1.4** |
| | 3 | **-3.4** |
| | 4 | **-3.5** |
| | 5 | **-2.8** |
| | 6 | **-3.3** |
| | 7 | **-2.2** |
| | 8 | **-1.4** |
| | 9 | **-1.3** |
| | 10 | **-0.9** |

*Table 8: Difference in luminous transmittance.*

The yellowness index results before and after 2,000 hours of exposure are shown below.

| Reference | | Yellowness index | |
|---|---|---|---|
| | | 0 hours | 2,000 hours |
| **«PC»** | 1 | **54.3 ± 0.5** | **59.6 ± 2.0** |
| | 2 | **54.7 ± 0.6** | **60.3 ± 2.0** |
| | 3 | **54.2 ± 0.6** | **58.8 ± 2.1** |
| | 4 | **54.3 ± 0.5** | **60.4 ± 2.0** |
| | 5 | **54.3 ± 0.5** | **59.6 ± 2.1** |
| | 6 | **54.4 ± 0.5** | **60.1 ± 2.1** |
| | 7 | **54.3 ± 0.6** | **60.0 ± 2.0** |
| | 8 | **54.2 ± 0.5** | **59.9 ± 2.0** |
| | 9 | **54.3 ± 0.5** | **59.6 ± 2.0** |
| | 10 | **54.4 ± 0.6** | **60.1 ± 2.0** |

*Table 9: Yellowness index results.*

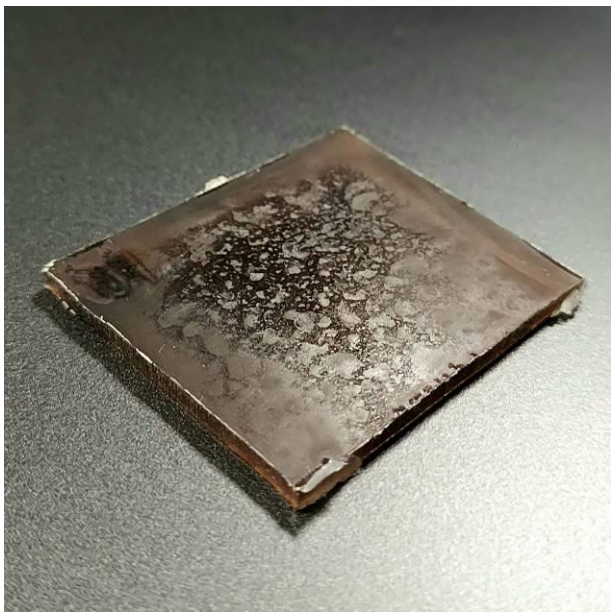
The difference between the initial and final yellowness index is shown in the following table:

| Reference | | Yellowness index difference (%) |
|---|---|---|
| **«PC»** | 1 | **5.3** |
| | 2 | **5.6** |
| | 3 | **4.5** |
| | 4 | **6.1** |
| | 5 | **5.3** |
| | 6 | **5.7** |
| | 7 | **5.7** |
| | 8 | **5.7** |
| | 9 | **5.3** |
| | 10 | **5.6** |

*Table 10: Difference in Yellowness Index.*

After the 2,000 hours of exposure, surface degradation was found in all test specimens.

The next photo shows one of the test specimens after the exposure.



*Photograph 4: One of the test specimens after the exposure.*

## 3.5. Determination of luminous and solar characteristics in accordance with ISO 9050:2003

### Test method

The determination of the transmittance and reflectance between 280 and 2,500 nm was carried out using a Perkin-Elmer Spectrometer Lambda 900 UV/VIS/NIR spectrophotometer with an integrating sphere of 150 mm in diameter, calcium fluoride standard and white standard.

The method used has the following characteristics:

- Wavelength interval: 5 nm
- Scan speed: 284.6 nm/min
- Slit UV/VIS: 1
- Detector gain NIR: 4

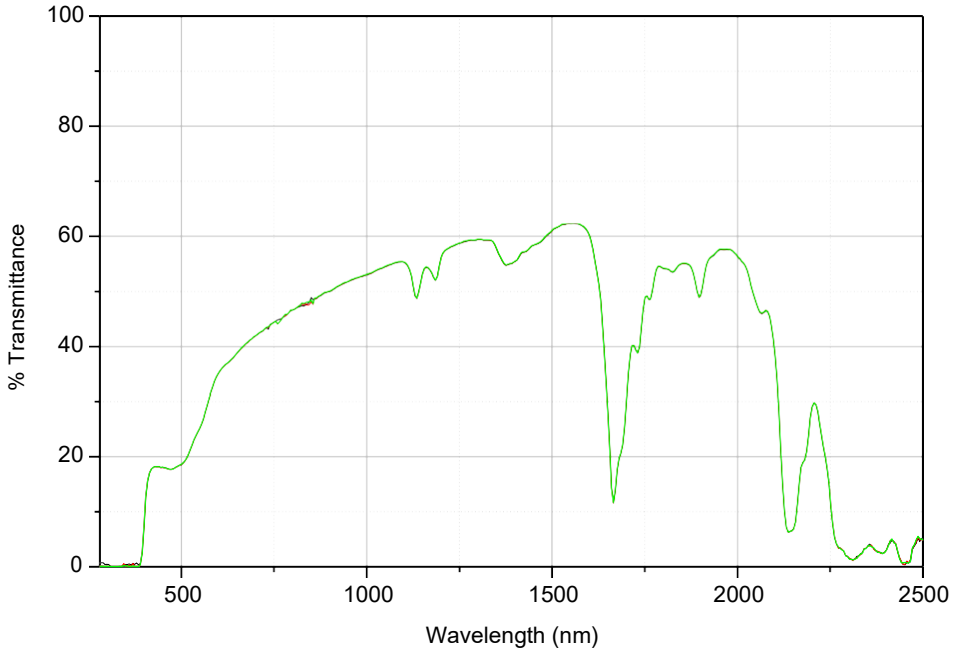
Three transmittance measurements and three reflectance measurements were taken.

From the transmittance and reflectance measurements, the **solar direct transmittance** and **reflectance**, **light transmittance** and **reflectance**, **ultraviolet transmittance** and **solar factor** of the test specimen were calculated in accordance with ISO 9050:2003.

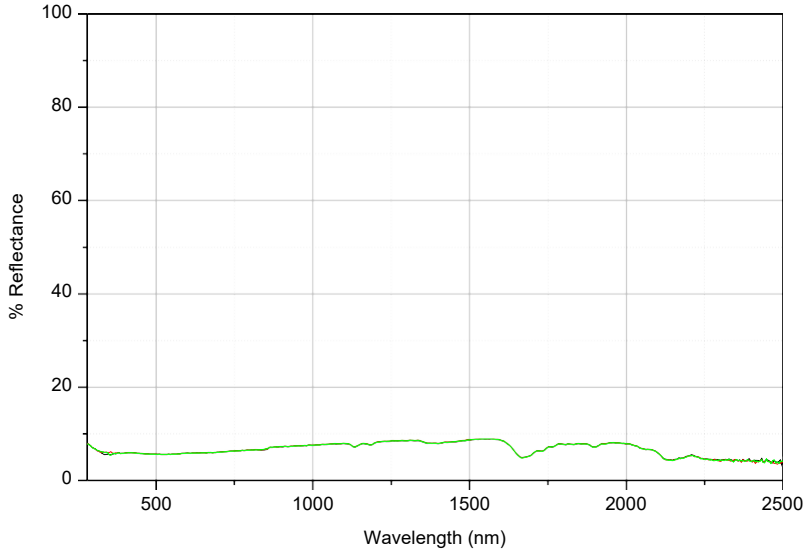
The heat transfer coefficient of the glazing towards the outside is 23 $W/m^2K$ which in accordance with standard ISO 9050:2003. The corrected emissivity considered on the internal is 0.90. This data is the most minimum emissivity value assigned to common plastics according to the literature data consulted.

## Results

The following graphs show the data of the spectral transmittance and the reflectance of the test specimen.




*Graph 11: Spectral transmittance.*




*Graph 12: Spectral reflectance.*

The results of the luminous and solar characterization of the test specimen referenced as **«PC»** are:

| | |
|---|---|
| Light transmittance (%) | **27.0 ± 0.1** |
| Light reflectance (%) | **5.6 ± 0.1** |
| Ultraviolet transmittance (%) | **0.2 ± 0.3** |
| Solar direct transmittance (%) | **37.0 ± 0.2** |
| Solar direct reflectance (%) | **6.4 ± 0.2** |
| Solar factor (Expressed per unit) | **0.52 ± 0.01** |

*Table 11: luminous and solar characterization results.*

**DECLARATION OF UNCERTAINTY**
The expanded uncertainty of measurement has been obtained by multiplying the standard uncertainty by the coverage factor k=2 which, for a normal distribution, corresponds to a coverage probability of approximately 95%.
Note: Uncertainty value after ± symbol.

# ANNEX I

# Technical datasheet

대한민국우수상표디자인권

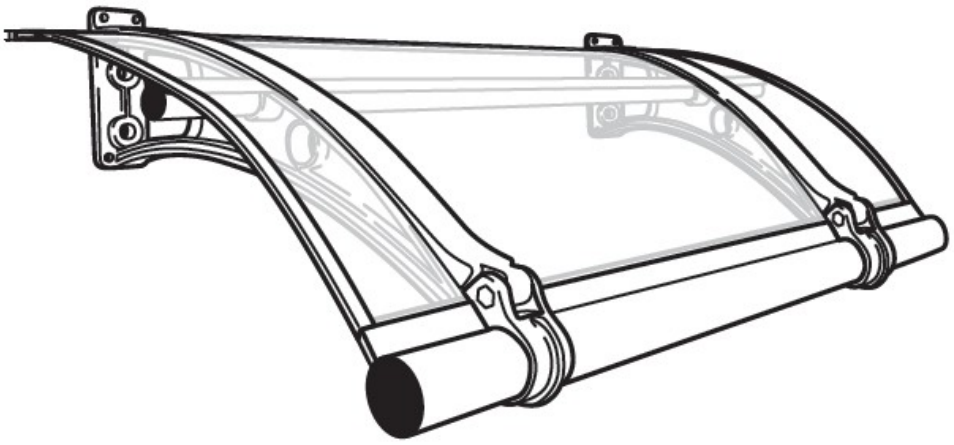
KOREA HOT FIX CO.

# CANOFIX®

캐노픽스 BUILD IT YOUR WAY.

*Eco Friendly Canopy / Awning Professional*

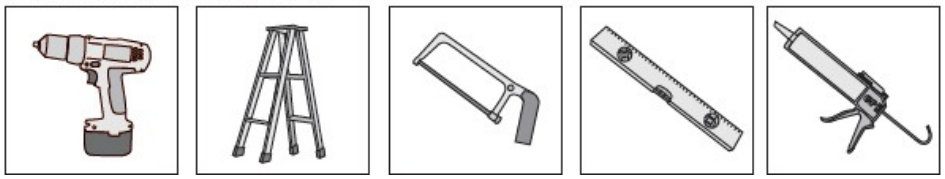
## Installation Manual 설치매뉴얼



캐노픽스를 구매해주셔서 감사합니다.
Thank you for purchasing CANOFIX. Please give us a call or email
설치관련 문의사항은 전화 또는 이메일로 문의해주세요
if you have any questions regards to installation.

☎ 031-977-0888 ~9 fax:0505-116-3888
✉ canofixkorea@gmail.com

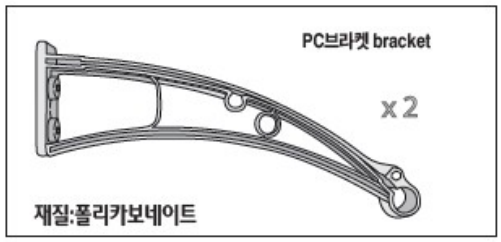
*Required Tools
캐노픽스차양 설치 시 필요한 홈픽스® 공구

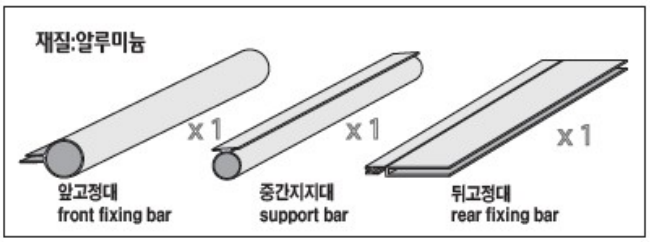


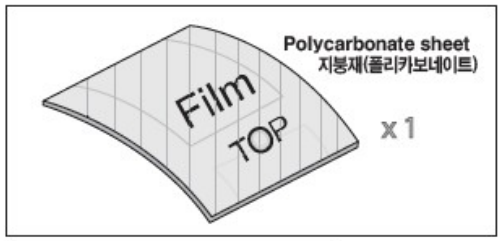
## Assembly Contents 조립 구성품

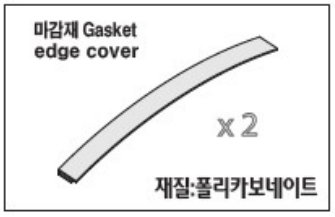
*Note : You will receive extra parts if you ordered over 40″ model
주의: 1000모델이상의 모델을 주문했다면 추가적인 부품을 받게 될 것입니다.

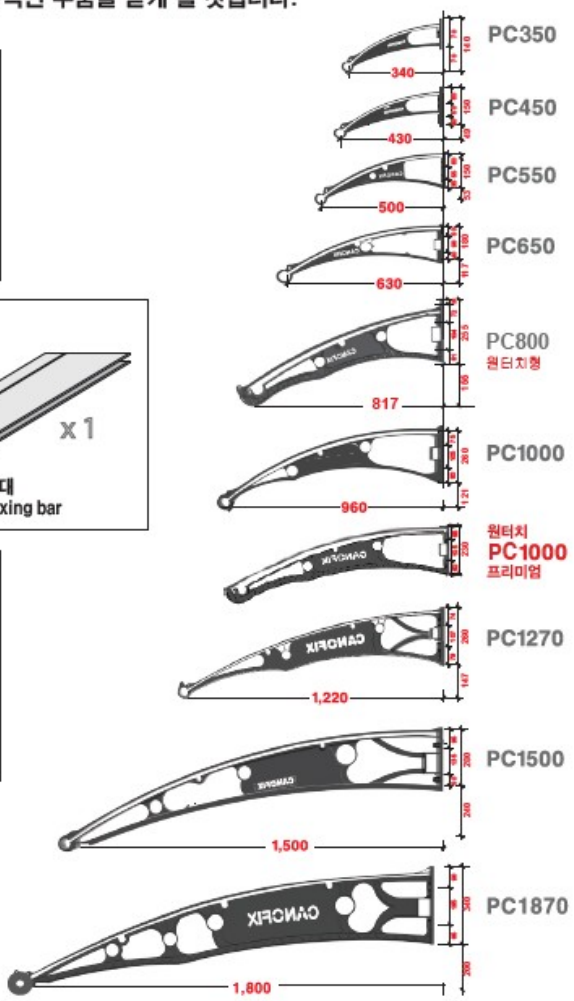
/ MODEL /

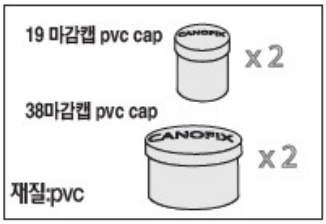


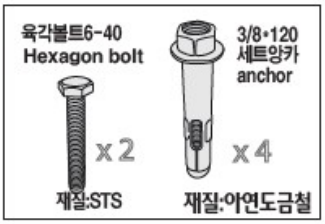



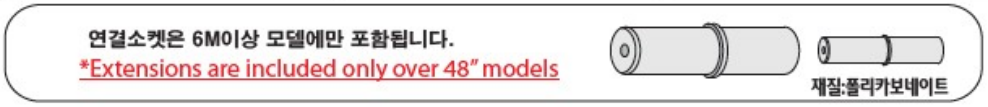





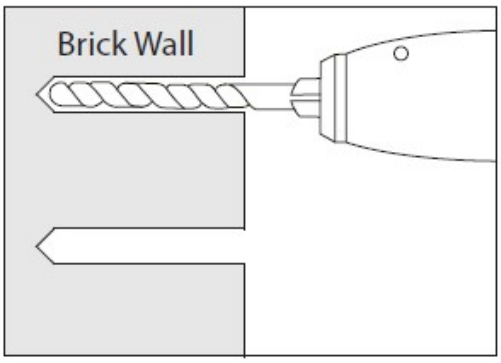



2

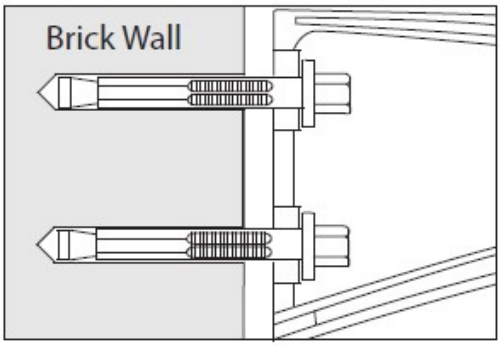
## How to use Anchor Bolt 앙카볼트 사용(고정)법

Attention:
You are solely responsible for determining whether the handling, storage, assembly, installation or use of this product is safe and appropriate in any location or for any given application. Canofix Co.,Ltd. is not responsible for any damages or injury to you, any other person or any property resulting from the improper handling, storage, installation, assembly or use of this product, or the failure to follow Canofix Co.,Ltd. written instructions regarding the handling, storage, installation, assembly and use of this product. This product is intended for normal residential use only. Do not use this product for any application that is not recommended in these instructions or building codes in effect in location where this product will be used. Always take care and use appropriate safety equipment (including eye protection) when assembling or installing this product.

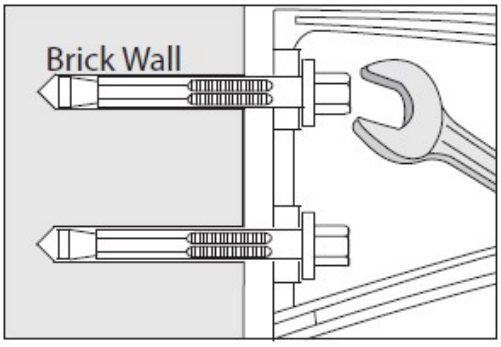
주의:
제품의 취급, 보관, 조립, 설치에 대한 결정 여부는 전적으로 귀하의 책임입니다.주식회사 캐노픽스는 부적절한 취급,보관, 설치, 조립 또는 제품의 사용 또는 이와 관련하여 설명서를 따르지 않아 야기된 물적 재산의 손해, 인적 부상에 대해 책임지지 않습니다. 이 제품은 일반적인 주거용 전용으로 만들어졌습니다. 이 설명서 또는 제품이 설치될 지역에서 시행되는 빌딩에서 권장하지 않는 곳에 적용하거나 응용하지 마세요.
제품의 조립하거나 설치할 때 항상 조심하고 적합한 안전 장비를 사용하세요 (보호안경 포함).




1. Use a bit whose diameter equals the anchor diameter.
   Determine proper size bit for anchor used.
   Drill hole to any depth exceeding minimum embedment. Clean hole.
   앙카의 직경과 동일한 직경의 비트를 사용하여 앙카길이보다 길게 깊숙이 드릴로 앙카삽입홀을 뚫으세요
   뚫어놓은 삽입홀을 이물질이 없도록 깨끗하게 청소하세요




2. Insert assembled anchor into hole, so that washer or head is flush with materials to be fastened. *DO NOT unscrew the head. Insert it as is. If it is stiff, use rubber hammer to insert.
   와샤 또는 헤드가 전체적으로 수평을 이루는지 확인하고 앙카를 고정하기위해 뚫어놓은 홀에 삽입하세요
   *헤드를 풀지 말고 그대로 삽입하세요. 만약 빡빡하다면 (고무) 망치를 사용하여 삽입하세요.

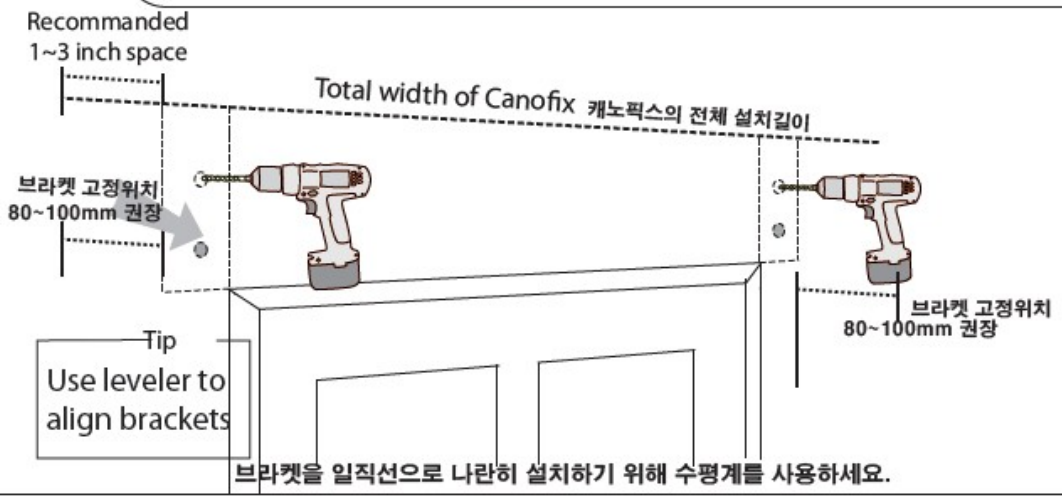



3. Expand anchor by tightening nut or head 2 to 3 turns.
   너트 또는 헤드를 수차례 돌려 조여서 앙카를 고정하세요.

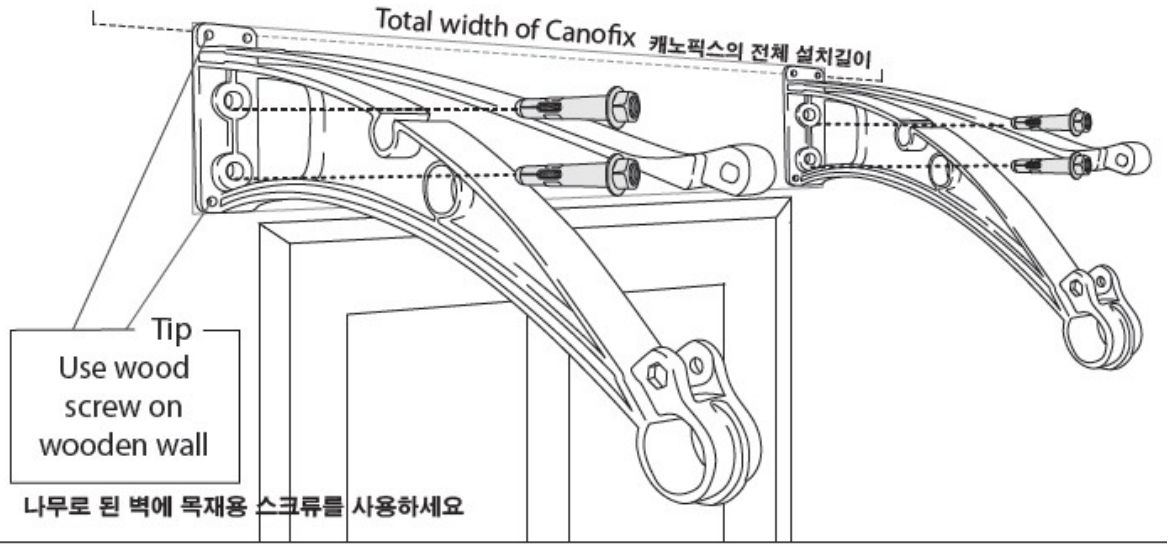
3

## 1 Anchor the Brackets 브라켓, 앙카로 고정하세요

Use anchor bolt on brick wall. 벽돌벽에 앙카 볼트를 사용하세요
Or use wood screw (not included) to anchor on wooden wall.
나무로 된 벽일 경우 목재용 스크류를 (불포함) 사용하세요.




Follow the instruction on page 02, how to use anchor bolt
2페이지 앙카볼트 사용법의 설명참조

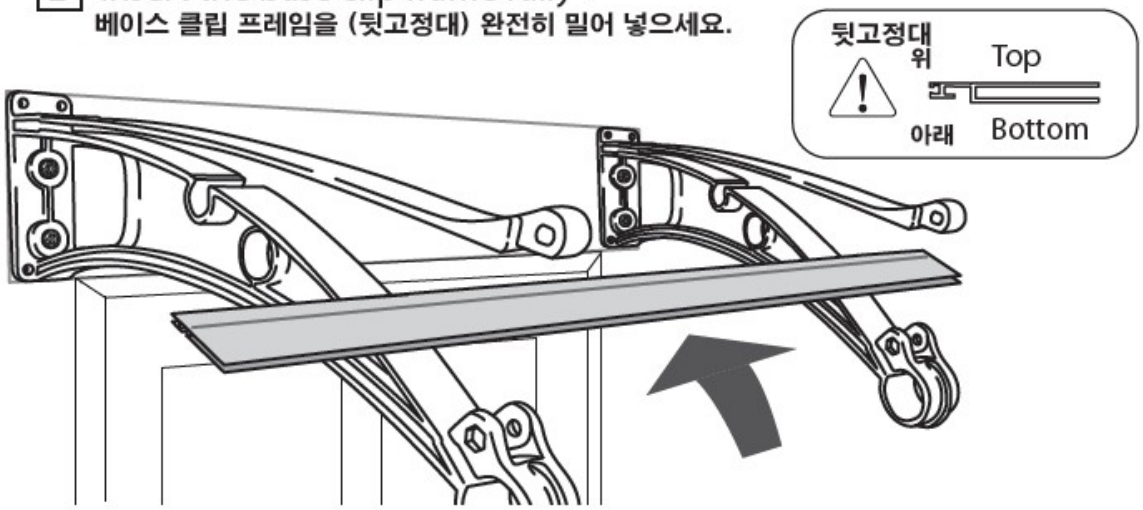



### Use the following 사용하실 부속



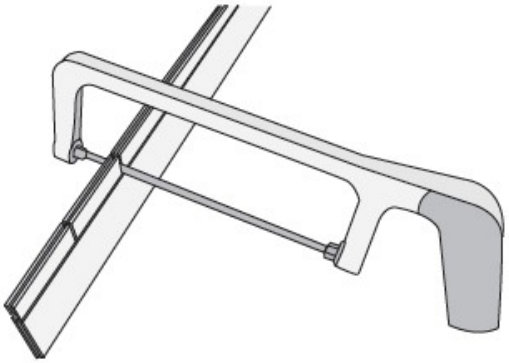
4

## 2 Insert the base clip frame fully
베이스 클립 프레임을 (뒷고정대) 완전히 밀어 넣으세요.

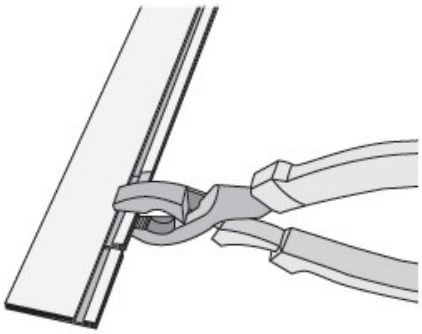



## 3 Mark the base clip frame to cut with pen
베이스 클립 프레임에 펜으로 자를 부분을 표시하세요


## 4 Cut the mark with saw
표시한 부분을 톱으로 자르세요



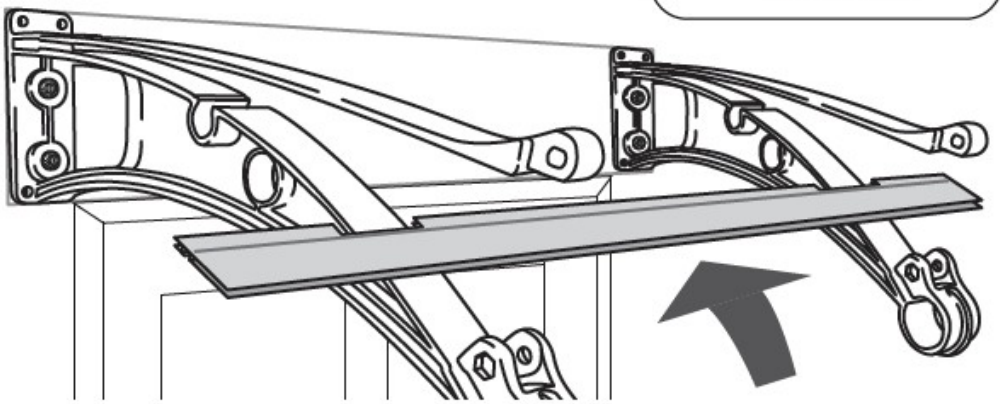
## 5 Break the part between marks
표시한 부분을 떼어내세요



## 6 Insert the base clip frame fully
뒷고정대를 완전히 밀어 넣으세요.

Insert fully against the wall
벽 쪽으로 완전히 밀어 삽입하세요

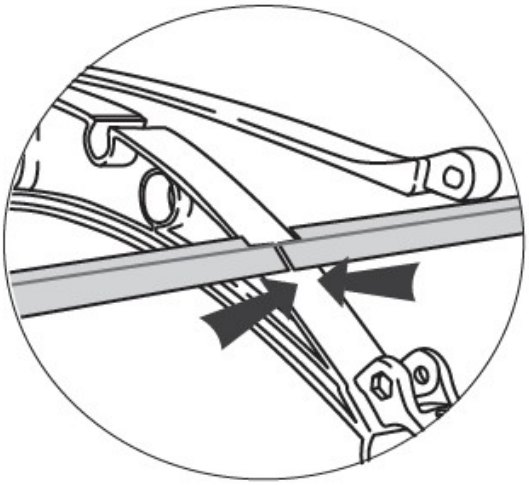
뒷고정대
위 Top
아래 Bottom



Insert fully against the wall
벽 쪽으로 완전히 밀어 삽입하세요


6M이상 모델의 경우
전체설치길이의 중간지점
센터브라켓에서
뒷고정대가 맞물리도록하세요

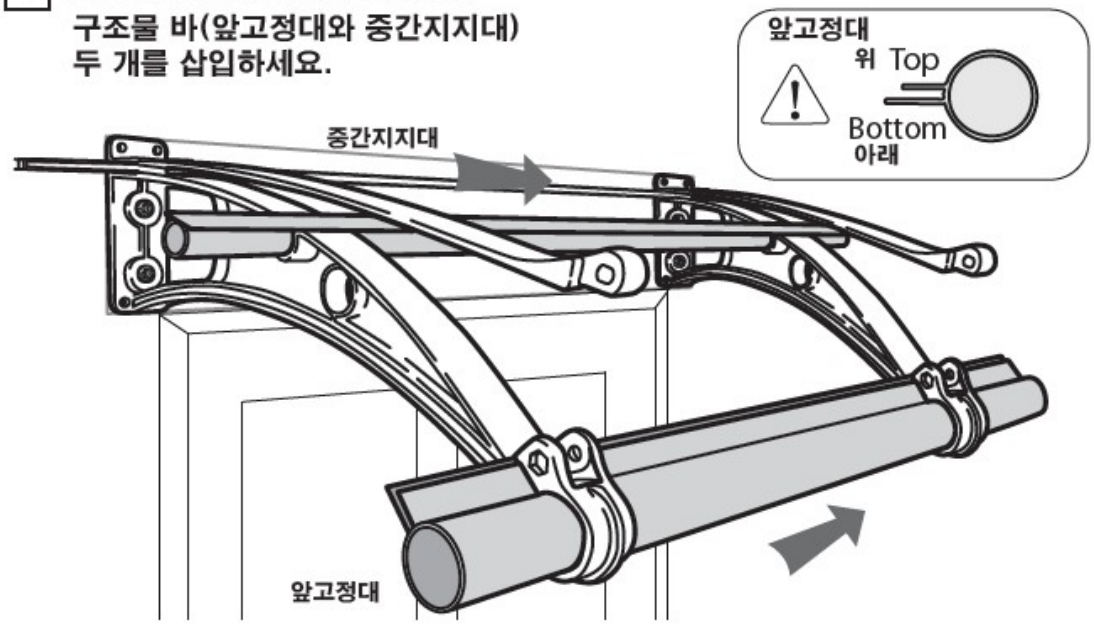
Use the following
사용하실 부속

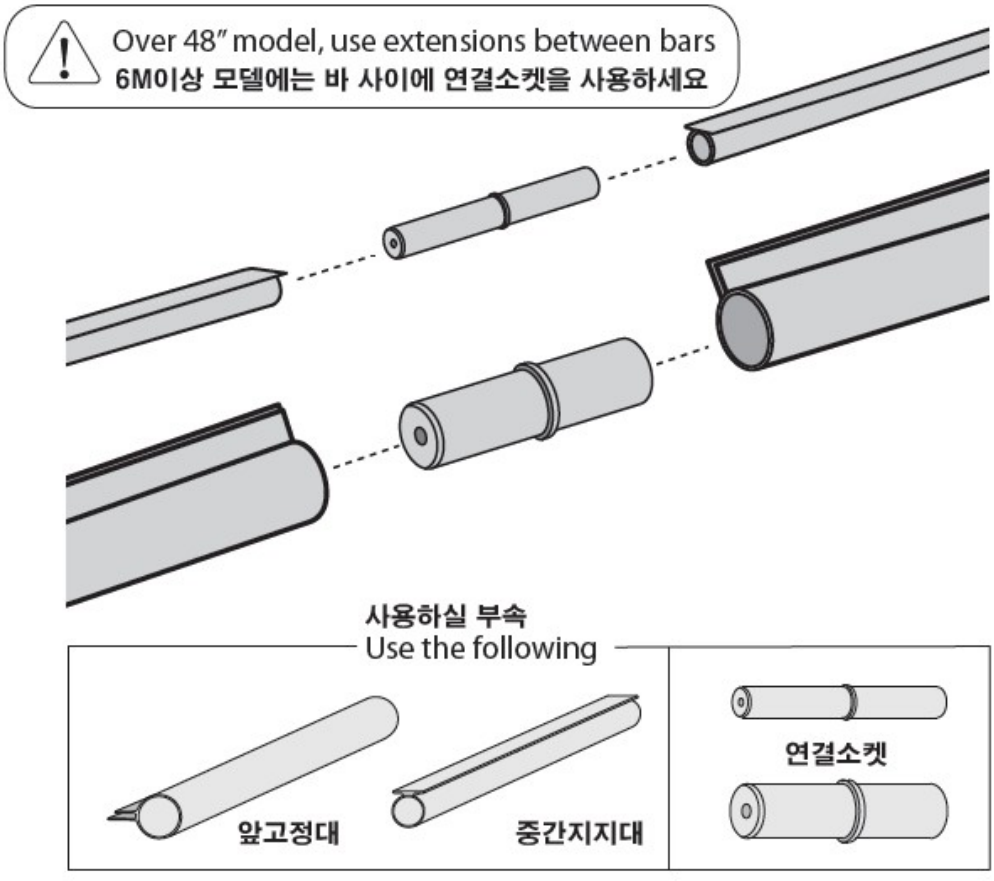



6

## 7 Insert two structure bars

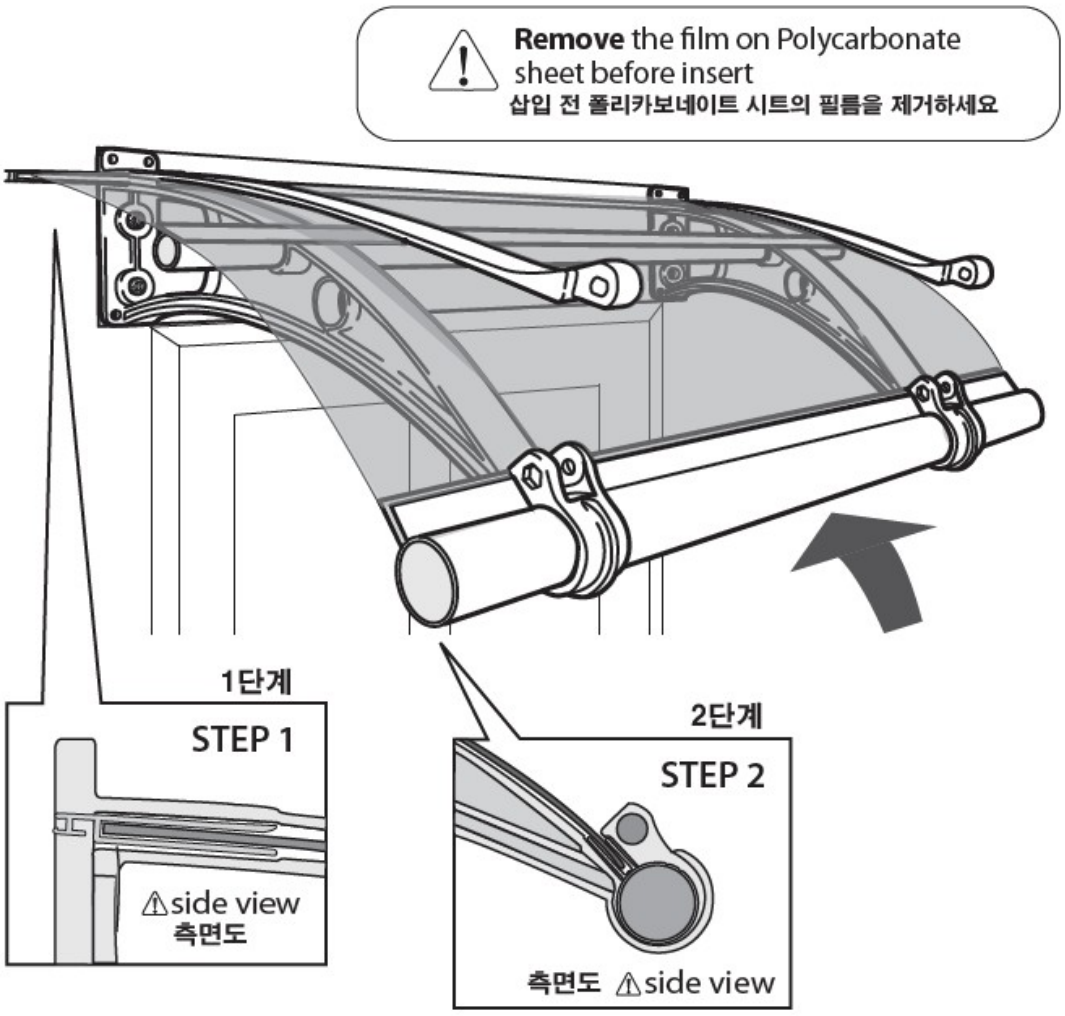
구조물 바(앞고정대와 중간지지대)
두 개를 삽입하세요.

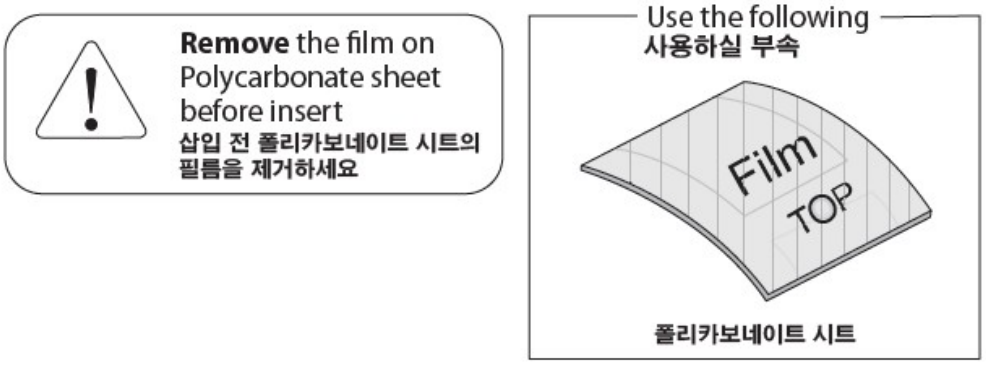



7

## 8 Insert the Polycarbonate sheet
폴리카보네이트 시트를 삽입하세요.




8

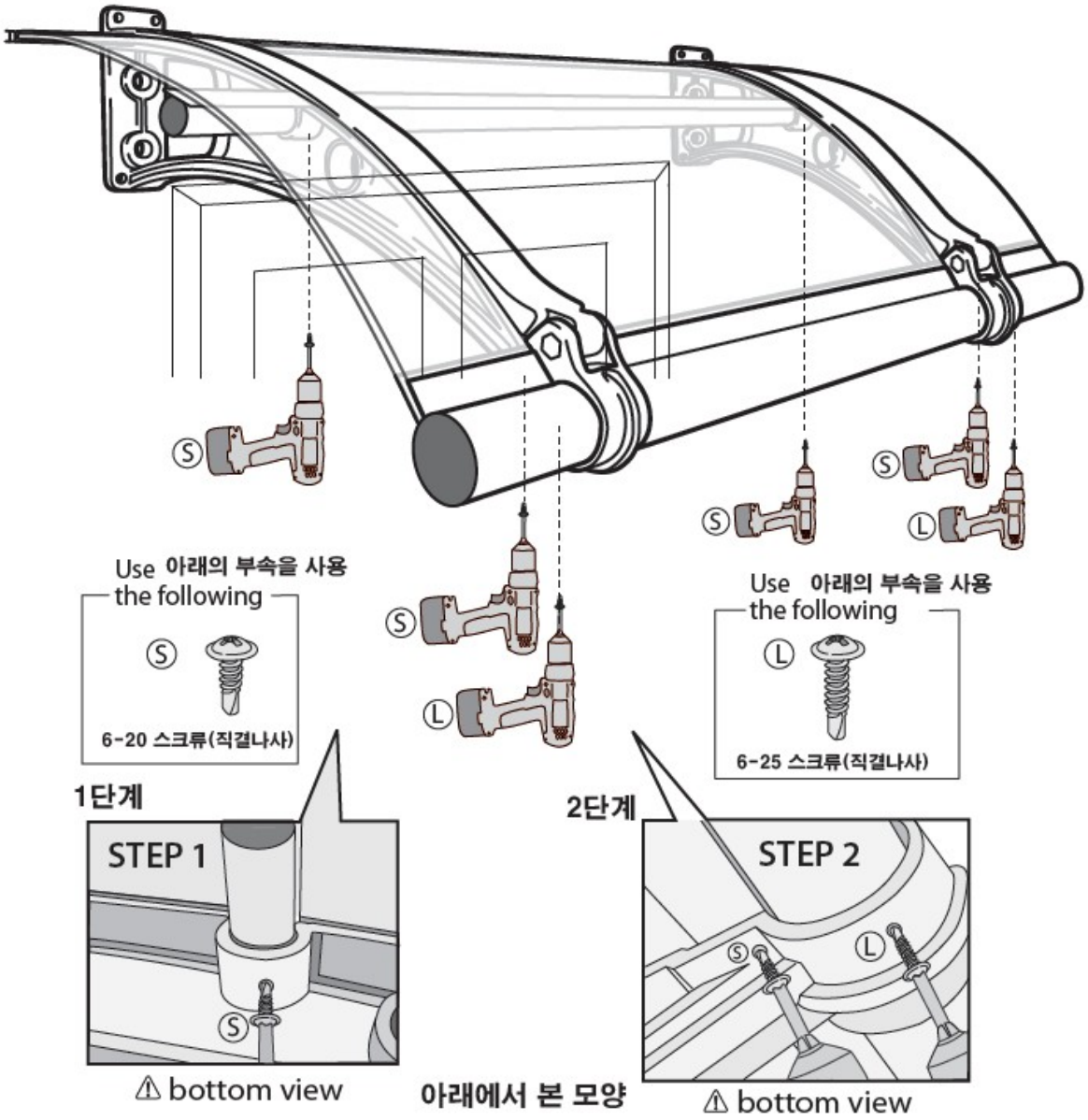
## 10 Bolt on Bracket to hold bars and Polycarbonate Sheet

바와 폴리카보네이트 시트를 고정하기 위해 브라켓에 피스볼트(나사)로 조여 고정하세요!)

⚠ Align the Polycarbonate sheet and bars **before** bolting on brackets
브라켓을 볼트로 조이기 전에 폴리카보네이트와 바가 제대로 조립되었는지 확인하세요

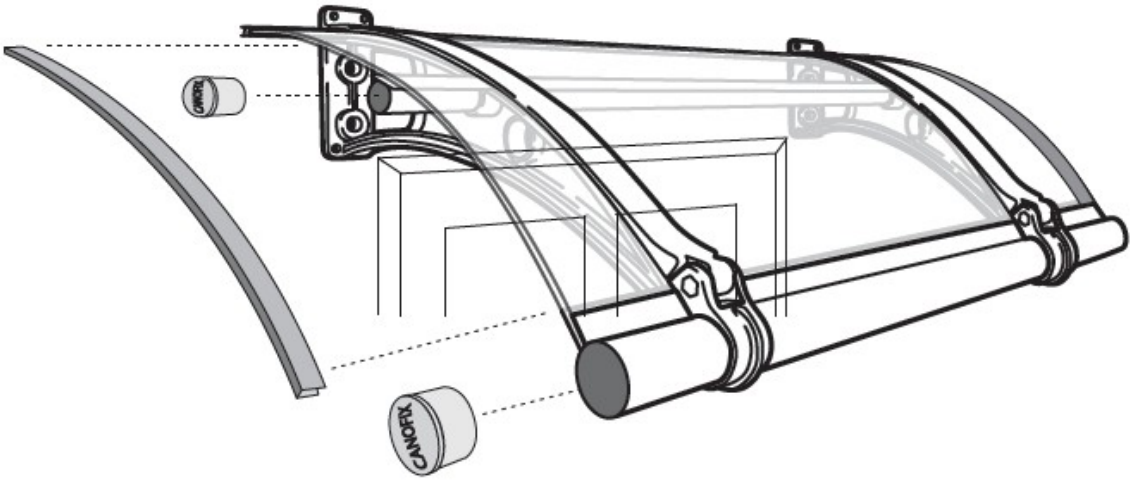
**Tip**

By using drill, use the screw directly on to the bracket to bolt.
드릴을 사용하여 피스볼트(나사)를 브라켓에 직접 조여 고정하세요




10

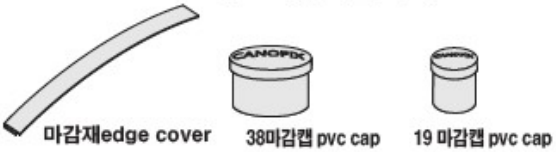
## 11 Insert edge covers to complete installation
**설치를 완료하기 위해서 마감재 (엣지 커버)를 끼워주세요**



Finalize with GP Silicon Gun.
Please use only Bath tub silicon
to prevent water leakage

**홈픽스 실리콘 건으로 마무리하세요**
**누수 방지를 위해 욕실 전용 실리콘을 사용하세요.**


Use the following 사용하실 부속




11

Remark : The test was performed by an approved third party subcontractor laboratory.

# # END OF THE TEST REPORT # #