



# 01

## TECHNICAL DATA SHEET (TDS)

TÀI LIỆU KỸ THUẬT SẢN PHẨM



**Keshun AQUAFLEX KS-988A –  
Acrylic Polymer  
Cementitious Waterproof Coating**



### Included documents / Tài liệu gồm:

- English TDS – Rev.2024
- Vietnamese TDS – Phiên bản 2024
- Product specification and application information



**This section contains the product data sheets used for material approval.**  
Phần này bao gồm TDS phục vụ trình duyệt vật tư.

# Aquaflex KS-988A

## Acrylic Polymer Cementitious Waterproof Coating



### Product Description

KS-988A Acrylic polymer cementitious two-component waterproof coating is composed of acrylate emulsion, cement and various inorganic powders, the product is categorized as type I, type II and type III according to different functions.

### Packaging

I Type: Liquid 20kg/bucket+ Powder 24kg/bag

Mix ratio: Liquid: Powder=1:1.2

II Type: Liquid 20kg/bucket+ Powder 30kg/bag

Mix ratio: Liquid: Powder=1:1.5

III Type: Liquid 10kg/bucket+ Powder 25kg/bag

Mix ratio: Liquid: Powder=1:2.5

### Technical Data Based For Reference

### Product Features

- Good waterproofing performance with lower cost.
- Environmentally friendly, it is water-based material.
- High film strength and good ductility.
- Good adhesion to the base, it can be applied on wet substrate (no floating water) directly.
- Type I products have excellent flexibility and good low temperature resistance, and Type II and Type III products have excellent bonding strength and impermeability.

### Where To Use

Type I: The coating film has good flexibility and is suitable for parts with a large amount of activity, such as the waterproof and moisture-proof of floors and non-exposed roofs.

Type II: suitable for toilets, balconies, bay windows, etc.

Type III: Good bonding performance, suitable for waterproofing and anti-seepage of kitchen and bathroom walls, pools, etc.

Implemented standard: GB/T 23445-2009

| No. | Item                                               | Index          |     |     |
|-----|----------------------------------------------------|----------------|-----|-----|
|     |                                                    | I              | II  | III |
| 1   | Solids content% $\geq$                             | 70             |     |     |
| 2   | Tensile strength/Mpa $\geq$                        | 1.2            | 1.8 | 1.8 |
| 3   | Elongation at break,% $\geq$                       | 200            | 80  | 30  |
| 4   | Bending resistance at low temperature              | -10°C, no gash | -   | -   |
| 5   | Impermeability 0.3Mpa, 30min                       | Impermeable    |     |     |
| 6   | Adhesive strength on moist base surface/Mpa $\geq$ | 0.5            | 0.7 | 1.0 |
| 7   | Impermeability (Mortar dorsal surface)/Mpa $\geq$  | -              | 0.6 | 0.8 |

## Construction Procedures

### Surface Preparation

The smooth(light steel trowel to be used)substrate to be treated must be fully cured and sound;which shall be mean that it is free of oil,excess mortar,grease,lean and other contaminants.Any defects such as cracks &honeycomb shall be repaired with suitable repair method.Pre-wetting or dampening the substrate with clean water prior to application isa pre-requisite.

### Mixing

Mix in a clean container with the recommended ratio of water into Part A(Liquid)and stir by with an electrical mixer slowly while adding Part B(Powder)until a creamy consistency is achieved.Use within 2 hours.

### Application

1"Coat Apply the well mixed slurry of AquaflexKS-988A at 1.0kg/m<sup>2</sup> in one direction.(allow to cure approximately 4-8 hours)

2" Coat Apply the second coat of Aquaflex KS-988A at 1.0kg/m<sup>2</sup>in a crosswise direction to the first application. (allow for fully cure 24-48hours)

## Recommend Usage

The usage for 1.0mm thickness coating about:

Type I: 1.8 kg/square meter ; Type II:1.9 kg/square meter ; Type II: 2.0 kg/square meter

( Note: The data belongs to the calculation of standard experimental environment and is for reference only. The actual amount should be calculated according to the site base surface. )

## Storage And Transportation

- Products of different categories should be separated from each other during storage and transportation.
- The storage temperature should be maintained between 5°C~ 40°C.Do not approach the fire,avoiding exposure to direct sunlight and rain,preventing collision.Adequate ventilation should be ensured during storage.
- Shelf life is 6 months from the date of production under appropriate storage conditions.



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## Aquaflex KS-988A

Lớp phủ chống thấm gốc xi măng - polyme acrylic



### Mô tả sản phẩm

KS-988A là lớp phủ chống thấm hai thành phần gốc xi măng - polyme acrylic, gồm nhũ tương acrylate, xi măng và các loại bột vô cơ. Sản phẩm được phân thành loại I, loại II và loại III theo công năng sử dụng.

### Đóng gói

**Loại I:** phần lỏng 20 kg/thùng + phần bột 24 kg/bao; tỷ lệ trộn Lỏng : Bột = 1 : 1,2

**Loại II:** phần lỏng 20 kg/thùng + phần bột 30 kg/bao; tỷ lệ trộn Lỏng : Bột = 1 : 1,5

**Loại III:** phần lỏng 10 kg/thùng + phần bột 25 kg/bao; tỷ lệ trộn Lỏng : Bột = 1 : 2,5

### Đặc tính sản phẩm

- Hiệu quả chống thấm tốt với chi phí thấp.
- Thân thiện với môi trường, là vật liệu gốc nước.
- Màng phủ có cường độ cao, độ dẻo dai tốt.
- Bám dính tốt với lớp nền, có thể thi công trực tiếp trên nền ẩm (không đọng nước).
- Sản phẩm loại I có độ mềm dẻo và khả năng chịu nhiệt độ thấp tốt; sản phẩm loại II và loại III có cường độ bám dính và khả năng chống thấm tốt.

### Phạm vi ứng dụng

**Loại I:** màng phủ mềm dẻo, phù hợp cho các vị trí có biến dạng lớn như chống thấm, chống ẩm sàn và mái không lộ thiên.

**Loại II:** phù hợp cho nhà vệ sinh, ban công, ô cửa sổ lõi...

**Loại III:** bám dính tốt, phù hợp chống thấm, chống rò rỉ cho tường nhà bếp, nhà tắm, bể bơi, bể nước...

### Thông số kỹ thuật tham khảo

Tiêu chuẩn áp dụng: GB/T 23445-2009

| STT | Chỉ tiêu                                            | Yêu cầu kỹ thuật  |     |     |
|-----|-----------------------------------------------------|-------------------|-----|-----|
|     |                                                     | I                 | II  | III |
| 1   | Hàm lượng chất rắn/% $\geq$                         | 70                |     |     |
| 2   | Cường độ chịu kéo/MPa $\geq$                        | 1,2               | 1,8 | 1,8 |
| 3   | Độ giãn dài khi đứt/% $\geq$                        | 200               | 80  | 30  |
| 4   | Độ uốn dẻo ở nhiệt độ thấp                          | -10 °C, không nứt | -   | -   |
| 5   | Khả năng chống thấm 0,3 MPa, 30 phút                | Không thấm nước   |     |     |
| 6   | Cường độ bám dính trên nền ẩm/MPa $\geq$            | 0,5               | 0,7 | 1,0 |
| 7   | Khả năng chống thấm (mặt nghịch của vữa)/MPa $\geq$ | -                 | 0,6 | 0,8 |

## Hướng dẫn thi công

### Chuẩn bị bề mặt

Bề mặt cần thi công (xoa nhẵn bằng bàn xoa thép nhẹ) phải được bảo dưỡng đủ và chắc chắn, nghĩa là sạch, không dính dầu mỡ, vữa thừa và các tạp chất khác. Các khuyết tật như vết nứt, rỗ tổ ong phải được sửa chữa bằng phương pháp phù hợp. Bắt buộc làm ướt hoặc làm ẩm bề mặt bằng nước sạch trước khi thi công.

### Pha trộn

Trong thùng sạch, cho nước theo tỷ lệ khuyến nghị vào thành phần A (lỏng), khuấy chậm bằng máy khuấy điện đồng thời cho từ từ thành phần B (bột) vào cho đến khi hỗn hợp sệt mịn đồng nhất. Sử dụng hết trong vòng 2 giờ.

### Thi công

**Lớp thứ 1:** quét hỗn hợp Aquaflex KS-988A đã trộn đều với định mức 1,0 kg/m<sup>2</sup> theo một hướng (để khô khoảng 4-8 giờ).

**Lớp thứ 2:** quét lớp thứ hai Aquaflex KS-988A với định mức 1,0 kg/m<sup>2</sup> theo hướng vuông góc với lớp thứ nhất (để khô hoàn toàn 24-48 giờ).

### Định mức sử dụng

Định mức cho lớp phủ dày 1,0 mm khoảng:

Loại I: 1,8 kg/m<sup>2</sup>; Loại II: 1,9 kg/m<sup>2</sup>; Loại III: 2,0 kg/m<sup>2</sup>

(Lưu ý: Số liệu được tính trong điều kiện thí nghiệm tiêu chuẩn và chỉ mang tính tham khảo. Lượng dùng thực tế cần tính theo bề mặt nền tại công trường.)

### Bảo quản và vận chuyển

- Các loại sản phẩm khác nhau phải được để riêng trong quá trình bảo quản và vận chuyển.
- Nhiệt độ bảo quản duy trì trong khoảng 5 °C ~ 40 °C. Tránh xa nguồn lửa, tránh ánh nắng trực tiếp và mưa, tránh va đập. Kho bảo quản phải thông thoáng.
- Hạn sử dụng 6 tháng kể từ ngày sản xuất trong điều kiện bảo quản phù hợp.

## Test Report

## Determination of Tensile Strength of Vulcanized Rubber and Thermoplastic Elastomers

[ASTM D 412 - 16 (Method A) ]

Date of issue : 30-04-2022

Page 1 of 1 page(s)

Castco LRN : 211130-2004-1

Details as supplied by customer

Customer : Keshun International Limited

Customer's Ref. No. : --

Address : Unit 509A, 5/F, Harbour Crystal Centre, No.100 Granville Road, Tsim Sha Tsui, Kowloon, Hong Kong

Job title : Material Testing

Contract No : --

Sample Description : Aquaflex KS-988A II JS High Polymer Modified Cement Elastic Waterproof Coating

Manufacturer : Keshun Waterproof Technology Co., Ltd

Type : --

Supplier : Keshun Waterproof Technology Co., Ltd

Brand name : CKS KESHUN

Mix proportion : 1.0 (liquid) : 1.5 (powder) by weight

Batch no. : --

Laboratory test results

Date of sample received : 06-11-2021

Date of test started : 22-01-2022

Date of test completed : 29-01-2022

A. Preparation of sheet specimen (By Castco)

Date of applying 1st and 2nd coat : (1st) 22-01-2022, (2nd) 23-01-2022

Method of application : By brushing

Dimensions / thickness : 250 x 250 mm / 2 mm

Type of specimen : Die C

B. Determination of Tensile strength

Date of test : 29-01-2022

Speed of testing : 500 mm / min

Ambient Temperature : 23.3 °C

| Specimen I.D.                     | 1    | 2    | 3    |  |  |
|-----------------------------------|------|------|------|--|--|
| Thickness of reduced section (mm) | 1.80 | 2.12 | 2.51 |  |  |
| Width of restricted section (mm)  | 6.01 | 5.99 | 6.01 |  |  |
| Maximum force at rupture (N)      | 24.8 | 30.0 | 31.0 |  |  |
| Tensile strength (MPa)            | 2.3  | 2.4  | 2.1  |  |  |
| Median                            | 2.3  |      |      |  |  |

Remark(s) :

1. Test results relate only to the sample tested.

Checked by :

WONG CHUN KIT  
Laboratory Supervisor

Certified by :

WONG KA MAN  
Senior Manager

End of Report

Form No. : R&amp;D\_TS\_ASTMD412(06)\_T dd 22/10/2019

### Test Report

## Determination of Elongation at Break of Vulcanized Rubber and Thermoplastic Elastomers [ASTM D 412 - 16 (Method A) ]

Date of issue : 30-04-2022

Page 1 of 1 page(s)

Castco LRN : 211130-2004-2

#### Details as supplied by customer

Customer : Keshun International Limited

Customer's Ref. No. : --

Address : Unit 509A, 5/F, Harbour Crystal Centre, No.100 Granville Road, Tsim Sha Tsui, Kowloon, Hong Kong

Job title : Material Testing

Contract No : --

Sample Description : Aquaflex KS-988A II JS High Polymer Modified Cement Elastic Waterproof Coating

Manufacturer : Keshun Waterproof Technology Co., Ltd

Type : --

Supplier : Keshun Waterproof Technology Co., Ltd

Brand name : CKS KESHUN

Mix proportion : 1.0 (liquid) : 1.5 (powder) by weight

Batch no. : --

#### Laboratory test results

Date of sample received : 06-11-2021

Date of test started : 22-01-2022

Date of test completed : 26-02-2022

#### A. Preparation of sheet specimen (By Castco)

Date of applying 1st and 2nd coat : (1st) 22-01-2022, (2nd) 23-01-2022

Method of application : By brushing

Dimensions / thickness : 250 x 250 mm / 2 mm

Type of specimen : Die C

#### B. Determination of elongation at break

Date of test : 26-02-2022

Speed of testing : 500 mm / min

Ambient Temperature : 23.5 °C

| Specimen I.D.                              | 1    | 2    | 3    |  |  |
|--------------------------------------------|------|------|------|--|--|
| Thickness of reduced section (mm)          | 1.91 | 1.91 | 1.64 |  |  |
| Width of restricted section (mm)           | 6.02 | 5.99 | 6.02 |  |  |
| Original distance between bench marks (mm) | 25.0 | 25.0 | 25.0 |  |  |
| Distance between bench marks at break (mm) | 80.0 | 81.2 | 84.8 |  |  |
| Elongation at break (%)                    | 220  | 225  | 239  |  |  |
| Median                                     | 225  |      |      |  |  |

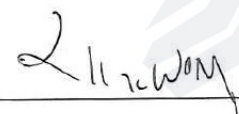
Remark(s) :

1. Test results relate only to the sample tested.

Checked by :

  
WONG CHUN KIT  
Laboratory Supervisor

Certified by :

  
WONG KA MAN  
Senior Manager

End of Report

## Test Report

Rubber, Vulcanized or Thermoplastic - Hardness  
[BS 903 : Part A26 : 1995 / ISO 48 : 1994 (Method N)]Date of issue : 30-04-2022  
Page 1 of 1 page(s)

Castco LRN : 211130-2004-3

Details as supplied by customer

Customer : Keshun International Limited

Customer's Ref. No. : --

Address : Unit 509A, 5/F, Harbour Crystal Centre, No.100 Granville Road, Tsim Sha Tsui, Kowloon, Hong Kong

Job Title : Material Testing

Contract No : --

Sample Description : Aquaflex KS-988A II JS High Polymer Modified Cement Elastic Waterproof Coating

Brand name : CKS KESHUN

Date of manufacture : --

Manufacturer : Keshun Waterproof Technology Co., Ltd

Date of receipt by the purchaser : --

Normal size : --

Type : --

No. of layer : --

Laboratory test results

Date of sample received : 06-11-2021

Date of test started : 22-01-2022

Date of test completed : 05-02-2022

A. Vulcanization and Conditioning of specimen

Time between vulcanization and testing : 13 days

Conditioning of specimens before test : Condition at  $27 \pm 2$  °C for 4 hours.B. Determination of hardness

Form of test piece : Standard test piece

Test method : Method N

Checking of test piece surface (See Legend) : S, F, P

Type of surface tested : moulded

Thickness of different layer of test piece : 1 layer only : 8 mm

Method of mounting : Unclamp

Dimension of the thinnest layer : 95 x 65 mm

Method of applying the test force: Manual

Ambient temperature at test: 26.9 / 26.4 °C (Max/min)

|               |                |         |         |
|---------------|----------------|---------|---------|
| Specimen I.D. | 1              |         |         |
| Hardness      | 68°, SN        | 67°, SN | 69°, SN |
|               | Median 68°, SN |         |         |

Legend: S : Smooth

R: rough

F: Flat

UF: Unflat

P: parallel to one another

UP: unparallel to one another

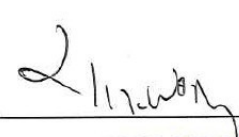
Remark(s) :

1. Test results relate only to the sample tested.
2. Test specimens were prepared by Castco.
3. Mix proportion : 1.0 (liquid) : 1.5 (powder) by weight.

Checked by :

  
**WONG CHUN KIT**  
 Laboratory Supervisor

Approved Signatory :

  
**WONG KA MAN**  
 Senior Manager

End of Report

Form No. : R&amp;D\_RUB\_HARD(BS903ISO48)\_ T dd 29/10/2021

## Test Report

## Determination of Crack Bridging Ability of Liquid-Applied Waterproofing Membrane

Date of issue : 30-04-2022

Page 1 of 1 page(s)

Castco LRN : 211130-2004-4

Details as supplied by customer

Customer : Keshun International Limited

Customer's Ref. No. : --

Address : Unit 509A, 5/F, Harbour Crystal Centre, No.100 Granville Road, Tsim Sha Tsui, Kowloon, Hong Kong

Job Title : Material Testing

Contract No. : --

Sample Description : Aquaflex KS-988A II JS High Polymer Modified Cement Elastic Waterproof Coating

Manufacturer : Keshun Waterproof Technology Co., Ltd

Type : --

Supplier : Keshun Waterproof Technology Co., Ltd

Brand name : CKS KESHUN

Mix proportion : 1.0 (liquid) : 1.5 (powder) by weight

Batch no. : --

Laboratory Information

Date sample received : 06-11-2021

Date of test started : 21-02-2022

Date of test completed : 20-03-2022

Test method : ASTM C 1305 - 06 with modification

- Test modified :
1. Pre-condition temperature of specimens changed to -20 °C.
  2. Test temperature had changed to ambient temperature.
  3. Test rate of each cycles changed to 0.16 mm / min.

Preparation of specimen

Conditioning of specimens before test : In Laboratory : Cure at room temperature for 14 days followed by 7 days at 70 ± 2 °C.

Test result

- Test process of each cycle :
1. Pulling the blocks apart at the rate of 0.16 mm / min until the space between them is 3.2 mm.
  2. Closing the space of the block at the the rate of 0.16 mm / min.

Ambient Temperature : 20.9 °C

| Specimen I.D.                                               | 1                                                                                                 | 2                                     | 3                                     | 4                                     | 5                                     |
|-------------------------------------------------------------|---------------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
|                                                             | Examine the membrane for cracking, splitting, pinholes in the area of the joint in the substrates |                                       |                                       |                                       |                                       |
| Cycles 1                                                    | Cracked.<br>when extend to<br>2.52 mm                                                             | Cracked.<br>when extend to<br>2.45 mm | Cracked.<br>when extend to<br>2.48 mm | Cracked.<br>when extend to<br>2.59 mm | Cracked.<br>when extend to<br>2.42 mm |
| Cycles 2                                                    | --                                                                                                | --                                    | --                                    | --                                    | --                                    |
| Cycles 3                                                    | --                                                                                                | --                                    | --                                    | --                                    | --                                    |
| Cycles 4                                                    | --                                                                                                | --                                    | --                                    | --                                    | --                                    |
| Cycles 5                                                    | --                                                                                                | --                                    | --                                    | --                                    | --                                    |
| Cycles 6                                                    | --                                                                                                | --                                    | --                                    | --                                    | --                                    |
| Cycles 7                                                    | --                                                                                                | --                                    | --                                    | --                                    | --                                    |
| Cycles 8                                                    | --                                                                                                | --                                    | --                                    | --                                    | --                                    |
| Cycles 9                                                    | --                                                                                                | --                                    | --                                    | --                                    | --                                    |
| Cycles 10                                                   | --                                                                                                | --                                    | --                                    | --                                    | --                                    |
| Extend the membrane to 3.2 mm after<br>completion 10 cycles | --                                                                                                | --                                    | --                                    | --                                    | --                                    |

Remark(s) :

1. Test results relate only to the sample tested.

Checked by :

WONG CHUN KIT  
Laboratory Supervisor

Certified by :

WONG KA MAN  
Senior Manager

End of Report

Form No. : R&amp;D\_CBA(ASTM C1305mod) T dd 02/03/2021

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 香港粉嶺安居街30號新寧中心1樓 • 1/F, Sun Ling Plaza, 30, On Kui Street, Fanling, Hong Kong.  
 香港粉嶺安全街29A號 • 29A, On Chuen Street, Fanling, Hong Kong.  
 Tel: 2597 8333 Fax: 2597 8399 E-mail: info@castco.com.hk Website: www.castco.com.hk

## Test Report

## Determination of Crack Bridging Ability Under Standard Conditions of Water Impermeable Products

[BS EN 14891:2012 (Annex A) A.8.2]

Date of issue : 30-04-2022

Page 1 of 1 page(s)

Castco LRN : 211130-2004-5

Details as supplied by customer

Customer : Keshun International Limited

Customer's Ref. No. : --

Address : Unit 509A, 5/F, Harbour Crystal Centre, No.100 Granville Road, Tsim Sha Tsui, Kowloon, Hong Kong

Job title : Material Testing

Contract No : --

Sample Description : Aquaflex KS-988A II JS High Polymer Modified Cement Elastic Waterproof Coating

Manufacturer : Keshun Waterproof Technology Co., Ltd

Type : --

Supplier : Keshun Waterproof Technology Co., Ltd

Brand name : CKS KESHUN

Mix proportion : 1.0 (liquid) : 1.5 (powder) by weight

Laboratory test results

Date of sample received : 06-11-2021

Date of test started : 21-02-2022

Date of test completed : 22-03-2022

A. Preparation and curing of specimen (By Castco)

Date of applying 1st and 2nd coat : (1st) 21-02-2022, (2nd) 22-02-2022

Method of application : By brushing

Thickness of coating : 2 mm

Conditioning of specimens before test: 1. Cure at  $23 \pm 2^{\circ}\text{C}$ ,  $50 \pm 5\%$  relative humidity for 28 days.B. Determination of crack bridging ability

Date of test : 22-03-2022

Speed of testing : 0.15 mm / min

Ambient Temperature : 22.9 °C

| Specimen I.D.                                                     | S1   | S2   | S3   |
|-------------------------------------------------------------------|------|------|------|
|                                                                   | 2.37 | 2.08 | 2.29 |
| Occurs first failure on the surface of the product (mm)<br>(mean) | 2.25 |      |      |

Remark(s) :

1. Test results relate only to the sample tested.

Checked by :

WONG CHUN KIT  
Laboratory Supervisor

Certified by :

WONG KA MAN  
Senior Manager

End of Report

Form No. : R&amp;D\_SC Crack(EN14891)\_T dd 22/10/2021

## Test Report

## Determination of Crack Bridging Ability at Low Temperature of Water Impermeable Products

[BS EN 14891:2012 (Annex A) A.8.3]

Date of issue : 30-04-2022

Page 1 of 1 page(s)

Castco LRN : 211130-2004-6

Details as supplied by customer

Customer : Keshun International Limited

Customer's Ref. No. : --

Address : Unit 509A, 5/F, Harbour Crystal Centre, No.100 Granville Road, Tsim Sha Tsui, Kowloon, Hong Kong

Job title : Material Testing

Contract No : --

Sample Description : Aquaflex KS-988A II JS High Polymer Modified Cement Elastic Waterproof Coating

Manufacturer : Keshun Waterproof Technology Co., Ltd

Type : --

Supplier : Keshun Waterproof Technology Co., Ltd

Brand name : CKS KESHUN

Mix proportion : 1.0 (liquid) : 1.5 (powder) by weight

Laboratory test results

Date of sample received : 06-11-2021

Date of test started : 21-02-2022

Date of test completed : 22-03-2022

A. Preparation and curing of specimen (By Castco)

Date of applying 1st and 2nd coat : (1st) 21-02-2022, (2nd) 22-02-2022

Method of application : By brushing

Thickness of coating : 2 mm

Conditioning of specimens before test 1. Cure at  $23 \pm 2^{\circ}\text{C}$ ,  $50 \pm 5\%$  relative humidity for 28 days.2. Conditioned at  $-20 \pm 2^{\circ}\text{C}$  for 2 hrs.B. Determination of crack bridging ability

Date of test : 22-03-2022

Speed of testing : 0.15 mm / min

Ambient Temperature :  $22.5^{\circ}\text{C}$ 

| Specimen I.D.                                           | L1   | L2   | L3   |
|---------------------------------------------------------|------|------|------|
| Occurs first failure on the surface of the product (mm) | 2.27 | 2.24 | 2.69 |
| (mean)                                                  | 2.40 |      |      |

Remark(s) :

1. Test results relate only to the sample tested.

Checked by : \_\_\_\_\_

WONG CHUN KIT  
Laboratory Supervisor

Certified by : \_\_\_\_\_

WONG KA MAN  
Senior Manager

End of Report

Form No. : R&amp;D\_LT Crack(EN14891)\_T dd 22/10/2021

## Test Report

## Determination of Low Temperature Bendability for Waterproofing Coating

(GB/T 16777 - 2008 Clause 14 in conjunction with the following specification(s): GB/T 19250 - 2013 Clause 6.11)

Date of issue : 30-04-2022

Page 1 of 1 page(s)

Castco LRN : 211130-2004-7

Details as supplied by customer

Customer : Keshun International Limited

Customer's Ref. No. : --

Address : Unit 509A, 5/F, Harbour Crystal Centre, No.100 Granville Road, Tsim Sha Tsui, Kowloon, Hong Kong

Job Title : Material Testing

Contract No : --

Sample Description : Aquaflex KS-988A II JS High Polymer Modified Cement Elastic Waterproof Coating

Manufacturer : Keshun Waterproof Technology Co., Ltd

Type : --

Supplier : Keshun Waterproof Technology Co., Ltd

Brand name : CKS KESHUN

Mix proportion : 1.0 (liquid) : 1.5 (powder) by weight

Batch no. : --

Laboratory test results

Date of sample received : 06-11-2021

Date of test started : 21-02-2022

Date of test completed : 01-03-2022

| Specimen I.D.                                               | 1                       | 2                       | 3                       |
|-------------------------------------------------------------|-------------------------|-------------------------|-------------------------|
| Length of waterproofing coating (mm)                        | 100                     | 100                     | 100                     |
| Width of waterproofing coating (mm)                         | 24.9                    | 25.1                    | 25.0                    |
| Thickness of waterproofing coating (mm)                     | 2.0                     | 2.0                     | 2.0                     |
| Testing temperature (C°)                                    | -10                     | -10                     | -10                     |
| Testing period (hr)                                         | 1.0                     | 1.0                     | 1.0                     |
| Observed any crack or fracture of the waterproofing coating | Cracked in bending area | Cracked in bending area | Cracked in bending area |

Remark(s) :

1. Test results relate only to the sample tested.

Checked by :

WONG CHUN KIT  
Laboratory Supervisor

Certified by :

WONG KA MAN  
Senior Manager

End of Report

Form No.R&amp;D\_WF(16777)\_LTbend\_T dd 17/02/2017

**Test Report**  
**Coating - Pull-off Test of Coating**  
(ASTM D 4541-02 Test Method E)

Date of issue : 30-04-2022

Page 1 of 2 page(s)

Castco LRN : 211130-2004-8

**Details as supplied by customer**

Customer : Keshun International Limited

Customer's ref. no. : --

Address : Unit 509A, 5/F, Harbour Crystal Centre, No.100 Granville Road, Tsim Sha Tsui, Kowloon, Hong Kong

Title : Material Testing

Contract no. : --

Test type : Laboratory

Substrate type : Concrete panel

Sample description : Aquaflex KS-988A II JS High Polymer Modified Cement Elastic Waterproof Coating

Type of coating : --

Substrate thickness : 50 mm

Age of Coating at the time of testing : 28 days

Thickness of coating layer : 2 mm

Brand name : CKS KESHUN

Manufacturer : Keshun Waterproof Technology Co., Ltd

Required adhesion strength of coating : --

Batch no. : --

**Equipment used for test**

1. Test method : E

2. Model : Pos:Test AT-A

Working range : 1 to 20 MPa; Castco I.D. No. : BUDG-PAT-001

3. Metallic dolly, 20 mm diameter, Castco I.D. No. : BUDG-PDL-004, 005, 006

4. Adhesive, two-component epoxy; Brand name : Araldite

5. Stopwatch, Castco I.D. No. : RNDT-STW-01

**Laboratory test / site test results :-**

Date of applying the dolly : 27-03-2022

Date of pull-off test : 28-03-2022

Temperature : 23.2 °C

Relative humidity : 55 %

1. Test area / Test location : Laboratory

Scoring of test sample : No

### Test Report

#### Coating - Pull-off Test of Coating (ASTM D 4541-02 Test Method E)

Date of issue : 30-04-2022  
Page 2 of 2 page(s)

Castco LRN : 211130-2004-8

#### Laboratory test / site test results :- (Cont'd)

#### 2. Pull-off strength test result

| Test Area / Test Location | Sample no. | Pull-off strength (MPa) | The testing period (nearest to 0.1 sec) | Mode of failure and estimate percentage of failure | PW : Pass with pull-off strength > value obtained<br>P : Pass<br>F : Fail | Loading rate < 1 MPa/s<br>Yes / No |
|---------------------------|------------|-------------------------|-----------------------------------------|----------------------------------------------------|---------------------------------------------------------------------------|------------------------------------|
| Laboratory                | 1-1        | 1.59                    | 2.4                                     | (4) 40%, (5) 60%                                   | --                                                                        | Yes                                |
|                           | 1-2        | 1.68                    | 2.6                                     | (4) 95%, (5) 5%                                    | --                                                                        | Yes                                |
|                           | 1-3        | 1.55                    | 2.4                                     | (4) 75%, (5) 25%                                   | --                                                                        | Yes                                |
|                           |            |                         |                                         |                                                    |                                                                           |                                    |
|                           |            |                         |                                         |                                                    |                                                                           |                                    |
|                           |            |                         |                                         |                                                    |                                                                           |                                    |
|                           |            |                         |                                         |                                                    |                                                                           |                                    |

Legend :

|           |   |   |                                        |
|-----------|---|---|----------------------------------------|
| Dolly     | Z | ← | (1) Adhesive failure at inter face Y/Z |
| Glue      | Y | ← | (2) Cohesive failure at Y              |
| Coating   | B | ← | (3) Adhesive failure at inter face B/Y |
|           |   | ← | (4) Cohesive failure at B              |
|           |   | ← | (5) Adhesive failure at inter face B/A |
| Substrate | A | ← | (6) Cohesive failure at A              |

- Remark(s) 1. If there is a mix of the above modes of failure, make a visual assessment of the rupture face to estimate the surface area percentage per type of failure.  
 2. The test results relate only to the specimen tested.  
 3. Disregard any test where glue failure represents more than 50% of the area.  
 4. Mix proportion : 1.0 (liquid) : 1.5 (powder) by weight.  
 5. Conditioning of specimens before test : In Laboratory : Cure at 23 °C, 50 % R.H. for 28 days.

Checked by :



KONG KA LAI  
Technical Officer

Approved Signatory :



FONG SAI KIT  
Technical Manager

End of Report

Form No. BD PULL\_ST\_COAT(ASTM4541)\_Ta dd 18/12/2019

**Test Report**  
**Coating - Pull-off Test of Coating**  
(ASTM D 4541-02 Test Method E)

Date of issue : 30-04-2022

Page 1 of 2 page(s)

Castco LRN : 211130-2004-9

**Details as supplied by customer**

Customer : Keshun International Limited

Customer's ref. no. : --

Address : Unit 509A, 5/F, Harbour Crystal Centre, No.100 Granville Road, Tsim Sha Tsui, Kowloon, Hong Kong

Title : Material Testing

Contract no. : --

Test type : Laboratory

Substrate type : Concrete panel

Sample description : Aquaflex KS-988A II JS High Polymer Modified Cement Elastic Waterproof Coating

Type of coating : --

Substrate thickness : 50 mm

Age of Coating at the time of testing : -- days

Thickness of coating layer : 2 mm

Brand name : CKS KESHUN

Manufacturer : Keshun Waterproof Technology Co., Ltd

Required adhesion strength of coating : --

Batch no. : --

**Equipment used for test**

1. Test method : E

2. Model : Pos:Test AT-A

Working range : 1 to 20 MPa; Castco I.D. No. : BUDG-PAT-001

3. Metallic dolly, 20 mm diameter, Castco I.D. No. : BUDG-PDL-001, 002, 003

4. Adhesive, two-component epoxy; Brand name : Araldite

5. Stopwatch, Castco I.D. No. : RNDT-STW-01

**Laboratory test / site test results :-**

Date of applying the dolly : 08-03-2022

Date of pull-off test : 09-03-2022

Temperature : 23.6 °C

Relative humidity : 53 %

1. Test area / Test location : Laboratory

Scoring of test sample : No

### Test Report

#### Coating - Pull-off Test of Coating (ASTM D 4541-02 Test Method E)

Date of issue : 30-04-2022  
Page 2 of 2 page(s)

Castco LRN : 211130-2004-9

**Laboratory test / site test results :- (Cont'd)****2. Pull-off strength test result**

| Test Area / Test Location | Sample no. | Pull-off strength (MPa) | The testing period (nearest to 0.1 sec) | Mode of failure and estimate percentage of failure | PW : Pass with pull-off strength > value obtained<br>P : Pass<br>F : Fail | Loading rate < 1 MPa/s<br>Yes / No |
|---------------------------|------------|-------------------------|-----------------------------------------|----------------------------------------------------|---------------------------------------------------------------------------|------------------------------------|
| Laboratory                | W-1        | 1.33                    | 2.1                                     | (4) 45%, (5) 55%                                   | --                                                                        | Yes                                |
|                           | W-2        | 1.24                    | 1.9                                     | (4) 25%, (5) 75%                                   | --                                                                        | Yes                                |
|                           | W-3        | 1.39                    | 2.1                                     | (4) 8%, (5) 92%                                    | --                                                                        | Yes                                |
|                           |            |                         |                                         |                                                    |                                                                           |                                    |
|                           |            |                         |                                         |                                                    |                                                                           |                                    |
|                           |            |                         |                                         |                                                    |                                                                           |                                    |
|                           |            |                         |                                         |                                                    |                                                                           |                                    |

Legend :

|           |   |   |                                        |
|-----------|---|---|----------------------------------------|
| Dolly     | Z | ← | (1) Adhesive failure at inter face Y/Z |
| Glue      | Y | ← | (2) Cohesive failure at Y              |
| Coating   | B | ← | (3) Adhesive failure at inter face B/Y |
|           |   | ← | (4) Cohesive failure at B              |
|           |   | ← | (5) Adhesive failure at inter face B/A |
| Substrate | A | ← | (6) Cohesive failure at A              |

- Remark(s) 1. If there is a mix of the above modes of failure, make a visual assessment of the rupture face to estimate the surface area percentage per type of failure.  
 2. The test results relate only to the specimen tested.  
 3. Disregard any test where glue failure represents more than 50% of the area.  
 4. Mix proportion : 1.0 (liquid) : 1.5 (powder) by weight.  
 5. Conditioning of specimens before test : In Laboratory : immersion in water for 7 days, than curing in 60°C for 18 hrs.

Checked by :

  
**KONG KA LAI**  
 Technical Officer

Approved Signatory :

  
**FONG SAI KIT**  
 Technical Manager
**End of Report**

Form No. BD PULL\_ST\_COAT(ASTM4541)\_Ta dd 18/12/2019

## Test Report

## Determination of Water Impermeability of Water Impermeable Products

[BS EN 14891:2012 (Annex A) A.7]

Date of issue : 30-04-2022

Page 1 of 1 page(s)

Castco LRN : 211130-2004-10

Details as supplied by customer

Customer : Keshun International Limited

Customer's Ref. No. : --

Address : Unit 509A, 5/F, Harbour Crystal Centre, No.100 Granville Road, Tsim Sha Tsui, Kowloon, Hong Kong

Job title : Material Testing

Contract No : --

Sample Description : Aquaflex KS-988A II JS High Polymer Modified Cement Elastic Waterproof Coating

Manufacturer : Keshun Waterproof Technology Co., Ltd

Type : --

Supplier : Keshun Waterproof Technology Co., Ltd

Brand name : CKS KESHUN

Mix proportion : 1.0 (liquid) : 1.5 (powder) by weight

Laboratory test results

Date of sample received : 06-11-2021

Date of test started : 21-02-2022

Date of test completed : 09-03-2022

A. Preparation and curing of specimen (By Castco)

Date of applying 1st and 2nd coat : (1st) 21-02-2022, (2nd) 22-02-2022

Method of application : By brushing

Thickness of coating : 2 mm

Conditioning of specimens before test : 1. Cure at  $23 \pm 2^{\circ}\text{C}$ ,  $50 \pm 5\%$  relative humidity for 24 hrs.B. Determination of water impermeability

Date of test : 02-03-2022

| Specimen I.D.                                                             | 1      | 2      | 3      |
|---------------------------------------------------------------------------|--------|--------|--------|
| Initial weigh of specimen (g)                                             | 3023.7 | 3122.2 | 3105.8 |
| Diameter of area under water pressure (mm)                                | 100    | 100    | 100    |
| Water pressure applied (kPa)                                              | 150    | 150    | 150    |
| Test duration (days)                                                      | 7      | 7      | 7      |
| Observed appearance of surfaces not exposed to water pressure and leakage | Yes    | Yes    | Yes    |
| Weighed gain after test (g)                                               | 0.8    | 1.0    | 1.2    |
| Maximum depth of penetration of water under pressure (mm)                 | 0      | 0      | 0      |

Remark(s) :

1. Test results relate only to the sample tested.

Checked by : \_\_\_\_\_

WONG CHUN KIT  
Laboratory Supervisor

Certified by : \_\_\_\_\_

WONG KA MAN  
Senior Manager

End of Report

Form No. : R&amp;D\_WIP(EN14891)\_T dd 22/10/2021

## Test Report

## Determination of Liquid Water Permeability of Coating Materials and Coating Systems

[BS EN 1062-3 : 2008]

Date of issue : 30-04-2022

Page 1 of 1 page(s)

Castco LRN : 211130-2004-11

Details as supplied by customer

Customer : Keshun International Limited

Customer's Ref. No. : --

Address : Unit 509A, 5/F, Harbour Crystal Centre, No.100 Granville Road, Tsim Sha Tsui, Kowloon, Hong Kong

Job title : Material Testing

Contract No : --

Sample Description : Aquaflex KS-988A II JS High Polymer Modified Cement Elastic Waterproof Coating

Manufacturer : Keshun Waterproof Technology Co., Ltd

Type : --

Supplier : Keshun Waterproof Technology Co., Ltd

Brand name : CKS KESHUN

Mix proportion : 1.0 (liquid) : 1.5 (powder) by weight

Laboratory test results

Date of sample received : 06-11-2021

Date of test started : 21-02-2022

Date of test completed : 16-03-2022

A. Preparation and curing of specimen (By Castco)

Date of applying 1st and 2nd coat : (1st) 21-02-2022, (2nd) 22-02-2022

Method of application : By brushing

Thickness of coating : 2 mm

Drying and conditioning of specimens :

1. Cure at  $23 \pm 2^{\circ}\text{C}$ ,  $50 \pm 5\%$  relative humidity for 7 days.
2. Subject the test specimens to three cycles comprising the following conditions :  
24 hrs storage in water at  $23 \pm 2^{\circ}\text{C}$ , 24 hrs drying at  $50 \pm 2^{\circ}\text{C}$ .
3. Store the specimen at  $50 \pm 2^{\circ}\text{C}$  for 24 hrs.
4. Cure at  $23 \pm 2^{\circ}\text{C}$ ,  $50 \pm 5\%$  relative humidity for at least 24 hrs.

B. Determination of liquid water permeability

Date of test : 16-03-2022

Ambient Temperature :  $23.5^{\circ}\text{C}$ 

| Specimen I.D.                                     | 1           | 2       | 3       |
|---------------------------------------------------|-------------|---------|---------|
| Initial weigh of specimen (g)                     | 346.20      | 336.20  | 387.50  |
| Testing area (m <sup>2</sup> )                    | 0.00344     | 0.00331 | 0.00354 |
| Test duration (hrs)                               | 24          | 24      | 24      |
| Weighed gain after test (g)                       | 1.4         | 1.5     | 1.4     |
| Water transmissibility (kg/m <sup>2</sup> . h0.5) | 0.08        | 0.09    | 0.08    |
|                                                   | (mean) 0.08 |         |         |

Remark(s) :

1. Test results relate only to the sample tested.

Checked by :

WONG CHUN KIT  
Laboratory Supervisor

Certified by :

WONG KA MAN  
Senior Manager

End of Report

Form No. : R&amp;D\_LWP(EN1062-3)\_T dd 22/10/2021

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 Tel: 2597 8333 Fax: 2597 8399 E-mail: info@castco.com.hk Website: www.castco.com.hk

## Test Report

## Determination of Initial Tensile Adhesion Strength of Water Impermeable Products

[BS EN 14891:2012 (Annex A) A.6.2]

Date of issue : 30-04-2022

Page 1 of 1 page(s)

Castco LRN : 211130-2004-12

Details as supplied by customer

Customer : Keshun International Limited

Customer's ref. no. : --

Address : Unit 509A, 5/F, Harbour Crystal Centre, No.100 Granville Road, Tsim Sha Tsui, Kowloon, Hong Kong

Job title : Material Testing

Contract no.: --

Sample Description : Aquaflex KS-988A II JS High Polymer Modified Cement Elastic Waterproof Coating

Manufacturer : Keshun Waterproof Technology Co., Ltd

Type : --

Supplier : Keshun Waterproof Technology Co., Ltd

Brand name : CKS KESHUN

Mix proportion : 1.0 (liquid) : 1.5 (powder) by weight

Brand of tile adhesive : Keshun C300 Tile adhesive

Laboratory test result

Date sample received : 06-11-2021

Date test started : 08-03-2022

Date test completed : 13-04-2022

Specimen no. : I - 1 to 10

Ambient temperature: 23.6 °C, 52 % R.H

Speed of air : 0.06 m/s

Storage and curing condition :-

|                  | 1. Apply the liquid water impermeable product to the surface of the substrate | 2. After completion of the prepared test unit | 3. After bonding the pull-head plates |
|------------------|-------------------------------------------------------------------------------|-----------------------------------------------|---------------------------------------|
| Curing condition | 23±2°C, 50±5% RH                                                              | 40°C                                          | 23±2°C, 50±5% RH                      |
| Duration         | 4 days                                                                        | 2 days                                        | 27 days                               |
|                  |                                                                               |                                               | 24 hours                              |

Tensile adhesion testing :-

Date of test : 13-04-2022

Rate : (250 ± 50) N/s

| Specimen no.      | Test area, A (mm <sup>2</sup> ) | Tensile load, L (N) | Tensile adhesion strength, A <sub>S</sub> (N/mm <sup>2</sup> ) | Deviation from the average value (%) | Remark  | Failure mode    | Predominant failure mode |
|-------------------|---------------------------------|---------------------|----------------------------------------------------------------|--------------------------------------|---------|-----------------|--------------------------|
| I - 1             | 2500                            | 1110                | 0.4                                                            | 0                                    | --      | C (100%)        | C                        |
| I - 2             |                                 | 970                 | 0.4                                                            | 0                                    | --      | C (100%)        | C                        |
| I - 3             |                                 | 1080                | 0.4                                                            | 0                                    | --      | C (97%), D (3%) | C                        |
| I - 4             |                                 | 1110                | 0.4                                                            | 0                                    | --      | C (99%), D (1%) | C                        |
| I - 5             |                                 | 1130                | 0.5                                                            | +25                                  | Discard | C (99%), D (1%) | C                        |
| I - 6             |                                 | 1050                | 0.4                                                            | 0                                    | --      | C (100%)        | C                        |
| I - 7             |                                 | 1110                | 0.4                                                            | 0                                    | --      | C (100%)        | C                        |
| I - 8             |                                 | 1100                | 0.4                                                            | 0                                    | --      | C (100%)        | C                        |
| I - 9             |                                 | 1100                | 0.4                                                            | 0                                    | --      | C (100%)        | C                        |
| I - 10            |                                 | 1070                | 0.4                                                            | 0                                    | --      | C (100%)        | C                        |
| Average           |                                 |                     | 0.4                                                            |                                      |         |                 |                          |
| Corrected average |                                 |                     | 0.4                                                            |                                      |         |                 |                          |

Abbreviation for failure modes :

1. A - Adhesive failure between coating and substrate
2. B - Adhesive failure between tile and adhesive
3. C - Adhesive failure between coating and adhesive

4. D - Cohesive failure within the adhesive
5. E - Cohesive failure within the substrate
6. F - Cohesive failure within the coating

Remark(s) :

1. Test results relate only to the specimens tested.

Checked by :

WONG CHUN KIT  
Laboratory Supervisor

Certified by :

WONG KA MAN  
Senior Manager

End of Report

Form No. R&amp;D\_TA(N)\_14891 T 22/10/2021

香港粉嶺安居街33號得利中心6樓 • 6/F, Techno Centre, 33, On Kui Street, Fanling, Hong Kong.

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香港粉嶺安全街29A號 • 29A, On Chuen Street, Fanling, Hong Kong.

Tel: 2597 8333 Fax: 2597 8399 E-mail: info@castco.com.hk Website: www.castco.com.hk

## Test Report

## Determination of Tensile Adhesion Strength after Water Contact of Water Impermeable Products

[BS EN 14891:2012 (Annex A) A.6.3]

Date of issue : 30-04-2022

Page 1 of 1 page(s)

Castco LRN : 211130-2004-13

Details as supplied by customer

Customer : Keshun International Limited

Customer's ref. no. : --

Address : Unit 509A, 5/F, Harbour Crystal Centre, No.100 Granville Road, Tsim Sha Tsui, Kowloon, Hong Kong

Job title : Material Testing

Contract no.: --

Sample Description : AquaFlex KS-988A II JS High Polymer Modified Cement Elastic Waterproof Coating

Manufacturer : Keshun Waterproof Technology Co., Ltd

Type : --

Supplier : Keshun Waterproof Technology Co., Ltd

Brand name : CKS KESHUN

Mix proportion : 1.0 (liquid) : 1.5 (powder) by weight

Brand of tile adhesive : Keshun C300 Tile adhesive

Laboratory test result

Date sample received : 06-11-2021

Date test started : 08-03-2022

Date test completed : 13-04-2022

Specimen no. : W - 1 to 10

Ambient temperature: 23.9 °C, 53 % R.H

Speed of air : 0.05 m/s

Storage and curing condition :-

|                  | 1. Apply the liquid water impermeable product to the surface of the substrate | 2. After completion of the prepared test unit | 3. Immerse in water | 4. After bonding the pull-head plates | 5. Immerse in water |
|------------------|-------------------------------------------------------------------------------|-----------------------------------------------|---------------------|---------------------------------------|---------------------|
| Curing condition | 23±2°C, 50±5% RH                                                              | 40°C                                          | 23±2°C, 50±5% RH    | 23±2°C                                | 23±2°C, 50±5% RH    |
| Duration         | 4 days                                                                        | 2 days                                        | 7 days              | 20 days                               | 7 hours             |
|                  |                                                                               |                                               |                     |                                       | 24 hours            |

Tensile adhesion testing :-

Date of test : 13-04-2022

Rate : (250 ± 50) N/s

| Specimen no.      | Test area, A (mm <sup>2</sup> ) | Tensile load, L (N) | Tensile adhesion strength, A <sub>s</sub> (N/mm <sup>2</sup> ) | Deviation from the average value (%) | Remark  | Failure mode    | Predominant failure mode |
|-------------------|---------------------------------|---------------------|----------------------------------------------------------------|--------------------------------------|---------|-----------------|--------------------------|
| W - 1             | 2500                            | 990                 | 0.4                                                            | 0                                    | --      | C (100%)        | C                        |
| W - 2             |                                 | 900                 | 0.4                                                            | 0                                    | --      | C (100%)        | C                        |
| W - 3             |                                 | 770                 | 0.3                                                            | -25                                  | Discard | B (94%), C (6%) | B                        |
| W - 4             |                                 | 890                 | 0.4                                                            | 0                                    | --      | C (100%)        | C                        |
| W - 5             |                                 | 960                 | 0.4                                                            | 0                                    | --      | B (2%), C (98%) | C                        |
| W - 6             |                                 | 930                 | 0.4                                                            | 0                                    | --      | C (100%)        | C                        |
| W - 7             |                                 | 790                 | 0.3                                                            | -25                                  | Discard | C (100%)        | C                        |
| W - 8             |                                 | 980                 | 0.4                                                            | 0                                    | --      | C (100%)        | C                        |
| W - 9             |                                 | 970                 | 0.4                                                            | 0                                    | --      | C (100%)        | C                        |
| W - 10            |                                 | 790                 | 0.3                                                            | -25                                  | Discard | C (100%)        | C                        |
| Average           |                                 |                     | 0.4                                                            |                                      |         |                 |                          |
| Corrected average |                                 |                     | 0.4                                                            |                                      |         |                 |                          |

Abbreviation for failure modes :

1. A - Adhesive failure between coating and substrate
2. B - Adhesive failure between tile and adhesive
3. C - Adhesive failure between coating and adhesive

4. D - Cohesive failure within the adhesive
5. E - Cohesive failure within the substrate
6. F - Cohesive failure within the coating

Remark(s) :

1. Test results relate only to the specimens tested.

Checked by :

WONG CHUN KIT  
Laboratory Supervisor

Certified by :

WONG KA MAN  
Senior Manager

End of Report

Form No. R&amp;D\_TA(W)\_14891 T 22/10/2021

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## Test Report

## Determination of Tensile Adhesion Strength after Heat Ageing of Water Impermeable Products

[BS EN 14891:2012 (Annex A) A.6.3]

Date of issue : 30-04-2022

Page 1 of 1 page(s)

Castco LRN : 211130-2004-14

Details as supplied by customer

Customer : Keshun International Limited

Customer's ref. no. : --

Address : Unit 509A, 5/F, Harbour Crystal Centre, No.100 Granville Road, Tsim Sha Tsui, Kowloon, Hong Kong

Job title : Material Testing

Contract no.: --

Sample Description : Aquaflex KS-988A II JS High Polymer Modified Cement Elastic Waterproof Coating

Manufacturer : Keshun Waterproof Technology Co., Ltd

Type : --

Supplier : Keshun Waterproof Technology Co., Ltd

Brand name : CKS KESHUN

Mix proportion : 1.0 (liquid) : 1.5 (powder) by weight

Brand of tile adhesive : Keshun C300 Tile adhesive

Laboratory test result

Date sample received : 06-11-2021

Date test started : 08-03-2022

Date test completed : 14-04-2022

Specimen no. : H - 1 to 10

Ambient temperature: 23.1 °C, 49 % R.H

Speed of air : 0.08 m/s

Storage and curing condition :-

|                  | 1. Apply the liquid water impermeable product to the surface of the substrate | 2. After completion of the prepared test unit | 3. Oven drying   | 4. After bonding the pull-head plates |
|------------------|-------------------------------------------------------------------------------|-----------------------------------------------|------------------|---------------------------------------|
| Curing condition | 23±2°C, 50±5% RH                                                              | 40°C                                          | 23±2°C, 50±5% RH | 70±3°C                                |
| Duration         | 4 days                                                                        | 2 days                                        | 14 days          | 24 hours                              |

Tensile adhesion testing :-

Date of test : 14-04-2022

Rate : (250 ± 50) N/s

| Specimen no.      | Test area, A (mm <sup>2</sup> ) | Tensile load, L (N) | Tensile adhesion strength, A <sub>S</sub> (N/mm <sup>2</sup> ) | Deviation from the average value (%) | Remark  | Failure mode    | Predominant failure mode |
|-------------------|---------------------------------|---------------------|----------------------------------------------------------------|--------------------------------------|---------|-----------------|--------------------------|
| H - 1             | 2500                            | 1120                | 0.4                                                            | 0                                    | --      | B (1%), C (99%) | C                        |
| H - 2             |                                 | 1250                | 0.5                                                            | +25                                  | Discard | C (100%)        | C                        |
| H - 3             |                                 | 1100                | 0.4                                                            | 0                                    | --      | C (100%)        | C                        |
| H - 4             |                                 | 1000                | 0.4                                                            | 0                                    | --      | C (100%)        | C                        |
| H - 5             |                                 | 1100                | 0.4                                                            | 0                                    | --      | C (100%)        | C                        |
| H - 6             |                                 | 1080                | 0.4                                                            | 0                                    | --      | B (1%), C (99%) | C                        |
| H - 7             |                                 | 860                 | 0.3                                                            | -25                                  | Discard | C (100%)        | C                        |
| H - 8             |                                 | 900                 | 0.4                                                            | 0                                    | --      | C (100%)        | C                        |
| H - 9             |                                 | 1150                | 0.5                                                            | +25                                  | Discard | C (100%)        | C                        |
| H - 10            |                                 | 1100                | 0.4                                                            | 0                                    | --      | C (100%)        | C                        |
| Average           |                                 |                     | 0.4                                                            |                                      |         |                 |                          |
| Corrected average |                                 |                     | 0.4                                                            |                                      |         |                 |                          |

Abbreviation for failure modes :

1. A - Adhesive failure between coating and substrate
2. B - Adhesive failure between tile and adhesive
3. C - Adhesive failure between coating and adhesive

4. D - Cohesive failure within the adhesive
5. E - Cohesive failure within the substrate
6. F - Cohesive failure within the coating

Remark(s) :

1. Test results relate only to the specimens tested.

Checked by :

WONG CHUN KIT  
Laboratory Supervisor

Certified by :

WONG KA MAN  
Senior Manager

End of Report

Form No. R&amp;D\_TA(H)\_14891 T 22/10/2021

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03

## DỰ ÁN THAM KHẢO

### PROJECT REFERENCES – KS-988A (1/2)

#### Keshun AQUAFLEX KS-988A – Acrylic Polymer Cementitious Waterproof Coating

| STT<br>No. | Dự án<br>Project                                                                                             | Địa điểm<br>Location          | Chủ đầu tư /<br>Nhà thầu<br>Owner /<br>Contractor | Hạng mục<br>Application area                                             | Vật liệu Keshun đã cung cấp<br>Keshun materials supplied                          | Năm<br>Year | Quy mô<br>Qty |
|------------|--------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------|---------------|
| 1          | <b>Khách sạn Dân Tộc</b><br>Dan Toc Hotel                                                                    | Hà Nội, Việt Nam              | -                                                 | Tầng hầm, logia, nhà vệ sinh, sàn mái<br>Basement, loggia, toilets, roof | APF-C, <b>KS-988AII</b> , KS-929                                                  | -           | -             |
| 2          | <b>Nhà máy Meiko Thạch Thất</b><br>Meiko Factory – Thạch Thất                                                | Hà Nội, Việt Nam              | -                                                 | Toàn bộ công trình<br>All works                                          | <b>KS-988AII</b> , KS-929                                                         | -           | -             |
| 3          | <b>Bệnh viện K</b><br>K Hospital                                                                             | Hà Nội, Việt Nam              | -                                                 | Toàn bộ công trình<br>All works                                          | APF-C, <b>KS-988AII</b> , KS-929, KS-580                                          | -           | -             |
| 4          | <b>SeaHorse Cam Ranh</b><br>SeaHorse Cam Ranh                                                                | Cam Ranh, Việt Nam            | -                                                 | Toàn bộ công trình<br>All works                                          | APF-C, <b>KS-988AII</b> , KS-929, KS-580                                          | -           | -             |
| 5          | <b>The Jade Orchid</b><br>The Jade Orchid                                                                    | Hà Nội, Việt Nam              | -                                                 | Toàn bộ công trình<br>All works                                          | APF-C, <b>KS-988AII</b> , KS-929, KS-580                                          | -           | -             |
| 6          | <b>Europe Shophouse Hạ Long</b><br>Europe Shophouse – Hạ Long                                                | Hạ Long, Việt Nam             | -                                                 | -                                                                        | <b>KS-988AII</b>                                                                  | -           | -             |
| 7          | <b>Nhà máy thức ăn chăn nuôi Hải Long Bình Định</b><br>Hai Long Animal Feed Factory – Bình Định              | Bình Định, Việt Nam           | -                                                 | Toàn bộ công trình<br>All works                                          | <b>KS-988AII</b> , APF-2000W                                                      | -           | -             |
| 8          | <b>Nhà xưởng kết hợp nhà kho lô VA.04A – KCX Tân Thuận</b><br>Factory & warehouse lot VA.04A – Tan Thuan EPZ | TP. Hồ Chí Minh, Việt Nam     | -                                                 | Toàn bộ công trình<br>All works                                          | <b>KS-988AII</b> , APF-3000                                                       | -           | -             |
| 9          | <b>Nhà máy thức ăn chăn nuôi Hải Long Bình Phước</b><br>Hai Long Animal Feed Factory – Binh Phuoc            | Bình Phước, Việt Nam          | -                                                 | Toàn bộ công trình<br>All works                                          | <b>KS-988AII</b> , APF-2000W                                                      | -           | -             |
| 10         | <b>Nhà máy sản xuất pin VinES</b><br>VinES Battery Manufacturing Factory                                     | Hà Tĩnh, Việt Nam             | -                                                 | Toàn bộ công trình<br>All works                                          | <b>KS-988A</b> , màng bitum SBS khô & tự dính (4 mm), màng APF-500 tự dính (4 mm) | -           | -             |
| 11         | <b>Nhà máy thức ăn thủy hải sản Thăng Long</b><br>Thang Long Aquafeed Factory                                | Chí Linh, Hải Dương, Việt Nam | -                                                 | Toàn bộ công trình<br>All works                                          | <b>KS-988AII</b> , màng bitum SBS khô & tự dính (3 mm)                            | -           | -             |





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## DỰ ÁN THAM KHẢO

### PROJECT REFERENCES – KS-988A (2/2)

#### Keshun AQUAFLEX KS-988A – Acrylic Polymer Cementitious Waterproof Coating

| STT No. | Dự án Project                                                          | Địa điểm Location    | Chủ đầu tư / Nhà thầu Owner / Contractor       | Hạng mục Application area                                                                                                       | Vật liệu Keshun đã cung cấp Keshun materials supplied                             | Năm Year | Quy mô Qty             |
|---------|------------------------------------------------------------------------|----------------------|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------|------------------------|
| 12      | <b>Nhà máy Loa Tonly – KCN Đông Mai</b><br>Tonly Factory – Dong Mai IP | Quảng Ninh, Việt Nam | –                                              | Toàn bộ công trình<br>All works                                                                                                 | <b>KS-988A</b> , màng bitum APF-3000 tự dính (1,5 mm)                             | –        | –                      |
| 13      | <b>Tòa nhà 136 Hồ Tùng Mậu</b><br>Building 136 Ho Tung Mau             | Hà Nội, Việt Nam     | –                                              | Toàn bộ công trình<br>All works                                                                                                 | <b>KS-988AII</b> , KS-929, KS-50, KS-101, CKS PZ400                               | –        | –                      |
| 14      | <b>Trường mầm non Nghĩa Đô</b><br>Nghĩa Do Kindergarten                | Hà Nội, Việt Nam     | –                                              | Toàn bộ công trình<br>All works                                                                                                 | HDPE APF-C, <b>KS-988A</b> , KS-929                                               | –        | –                      |
| 15      | <b>Dự án Yih Quan</b><br>Yih Quan Project                              | Indonesia            | Yih Quan / Takenaka, CSCEC Overseas (Shanghai) | Mái, tầng hầm, vệ sinh, bể nước<br>Roof, basement, toilet, tank                                                                 | <b>KS-988A</b> , APF-3000, KS-520, KS-101, APF-C, KS-525, PVC waterstop           | 2023     | 50,000 m <sup>2</sup>  |
| 16      | <b>Dự án Polygroup</b><br>Polygroup Project                            | Indonesia            | Polygroup / CSCEC Overseas (Shanghai)          | Mái, tầng hầm, vệ sinh, bể nước<br>Roof, basement, toilet, tank                                                                 | <b>KS-988A</b> , APF-3000, KS-520, KS-101, APF-C, KS-525, PVC waterstop           | 2023     | 80,000 m <sup>2</sup>  |
| 17      | <b>Dự án HCI</b><br>HCI Project                                        | Indonesia            | HCI / CSCEC Overseas (Shanghai)                | Mái, tầng hầm, vệ sinh, bể nước<br>Roof, basement, toilet, tank                                                                 | <b>KS-988A</b> , APF-3000W, KS-520, KS-101, APF-C, KS-525, PVC waterstop          | 2024     | 15,000 m <sup>2</sup>  |
| 18      | <b>Dự án Zhongbu</b><br>Zhongbu Project                                | Indonesia            | Zhongbu / Shixing Construction                 | Mái, tầng hầm, vệ sinh, bể nước<br>Roof, basement, toilet, tank                                                                 | <b>KS-988A</b> , APF-3000W, KS-520, KS-101, APF-C, KS-525, PVC waterstop, KS-100X | 2024     | 10,000 m <sup>2</sup>  |
| 19      | <b>Dự án Homewell</b><br>Homewell Project                              | Indonesia            | – / CSCEC Overseas (Shanghai)                  | Mái, tầng hầm, vệ sinh, bể nước<br>Roof, basement, toilet, tank                                                                 | <b>KS-988A</b> , APF-3000W, KS-520, KS-101, APF-C, KS-525                         | 2024     | 10,000 m <sup>2</sup>  |
| 20      | <b>Tianyue – Agile</b><br>Tianyue, Agile                               | Campuchia            | Agile / Shanghai Baoye                         | Sàn móng, đầu cọc, tường & trần tầng hầm, bếp & vệ sinh, mái<br>Foundation slab, pile head, basement, kitchen & bathroom, roof  | APF-3000W, APF-3000, <b>KS-988A II</b> , KS-520, SBS, KS-101, KS-302              | 2020     | 80,000 m <sup>2</sup>  |
| 21      | <b>Dự án BMT</b><br>BMT Project                                        | Indonesia            | – / CSCEC                                      | Vệ sinh, mái, tầng hầm, tường tầng hầm<br>Toilet, roof, basement, basement walls                                                | APF-D, SBS, KS-X005F, <b>KS-988A</b> , KS-100X, KS-101, APF-T                     | 2020     | 100,000 m <sup>2</sup> |
| 22      | <b>Wealth Mansion – Phnom Penh</b><br>Wealth Mansion                   | Campuchia            | Trust King Holdings / CRCC                     | Sàn móng, đầu cọc, tầng hầm, bếp & vệ sinh, mái, hồ bơi<br>Foundation slab, pile head, basement, kitchen & bathroom, roof, pool | APF-3000W, APF-3000, <b>KS-988A II</b> , KS-101, ZT-106F1                         | 2019     | 100,000 m <sup>2</sup> |

Nguồn: Hồ sơ dự án tiêu biểu tại Việt Nam và danh mục dự án quốc tế do Keshun Waterproof Technology Co., Ltd. cung cấp. / Source: Keshun Vietnam project portfolio and Keshun project case summary.


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