



# DANOFORCE<sup>®</sup> FLEX HP

INSTALLATION INSTRUCTIONS  
ISSUE 3 | JULY 2021





Liquids are the fastest growing sector of the UK flat roofing market. Over the past five years, installations have increased by nearly 70%, highlighting the crucial role of these membranes in construction.

**DANOFORCE® FLEX HP** is a flexible hybrid polymer, drawing from the key benefits of different liquid technologies and combining them into a fast, robust, highly flexible and cost-effective solution.

Our liquids use a chemical catalyst and cold weather accelerators, ensuring quick installation year-round.

## SYSTEM WARRANTIES AVAILABLE

WARRANTY TERM (MAXIMUM)	DANOSA UK SYSTEM MATERIAL REQUIREMENTS	ADDITIONAL REQUIREMENTS & SPECIFICATION NOTES
25 YEARS	<ul style="list-style-type: none"> <li>✓ DANOFORCE® FLEX HP</li> <li>✓ 2nd coat applied at a minimum of 0.75 litres per m²</li> </ul>	<ul style="list-style-type: none"> <li>✓ Full system specification supplied by DANOSA UK.</li> <li>✓ Stainless steel mechanical fasteners.</li> <li>✓ Approval from your Area Sales Manager.</li> <li>✓ Full list of all DANOFORCE® liquid batch numbers.</li> </ul>
20 YEARS	<ul style="list-style-type: none"> <li>✓ DANOFORCE® FLEX HP</li> <li>✓ 2nd coat applied at a minimum of 0.50 litres per m²</li> </ul>	<ul style="list-style-type: none"> <li>✓ Full list of all DANOFORCE® liquid batch numbers.</li> </ul>

**DANOFORCE® FLEX HP tin batch numbers must be recorded and provided to DANOSA with each warranty or guarantee application.** A batch typically covers around 700m2. Batch numbers can be provided as photographs, on a spreadsheet or word document, or typed in manually.

**All 25-Year DANOFORCE® system warranties must be pre-authorised by our technical department.** Please speak with your area sales manager who will confirm approval in writing. A copy of this approval will need to be provided with your warranty application.

## CONSIDERING YOUR OPTIONS

### YOUR STANDARD DANOSA UK WARRANTY INCLUDES

A comprehensive single-point system warranty with company insurance protection covering the waterproofing products supplied by DANOSA UK. The warranty protects against failure of our products up to **€3,000,000** and any directly resultant consequential damage up to **€500,000**.

### ADD: WORKMANSHIP GUARANTEE

A project-specific guarantee, signed by the Premier Contractor, promising that the workmanship has been completed correctly.

Workmanship guarantees are linked to your DANOSA UK warranty with a unique ID number.

### UPGRADE: INSURANCE BACKED GUARANTEE

An insurance policy that backs the workmanship guarantee (and if required, DANOSA UK product warranty) if either the Premier Contractor or DANOSA UK becomes insolvent.

#### IN THE EVENT OF PRODUCT FAILURE

- Repair or replacement of failed waterproofing system products.
- Workmanship costs to rectify product failures.
- Directly resultant consequential damage.
- DANOSA UK insolvency.

#### WHAT IT DOES NOT COVER

- Failure of the workmanship.
- Premier Contractor insolvency.

#### IN THE EVENT OF WORKMANSHIP FAILURE

- Repair or renewal of the workmanship defects.

#### WHAT IT DOES NOT COVER


- Premier Contractor insolvency.


#### WHAT IT COVERS

- Workmanship: Premier Contractor insolvency.
- Materials (optional): DANOSA UK insolvency.

#### IMPORTANT NOTE

- Brokered by BuildSafe: A specialist insurance broker registered with the financial conduct authority.





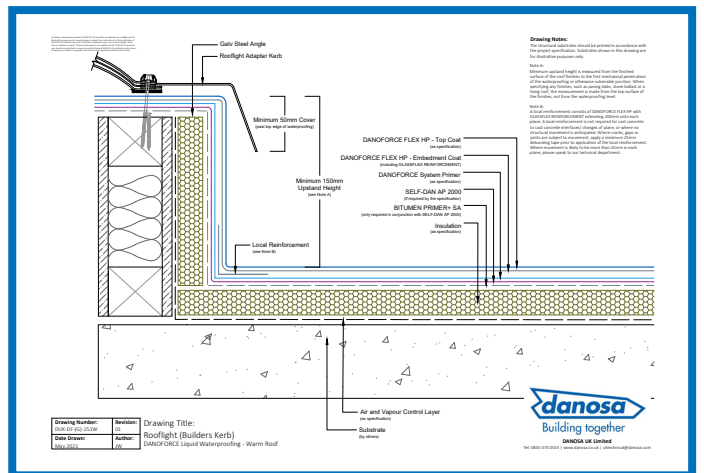
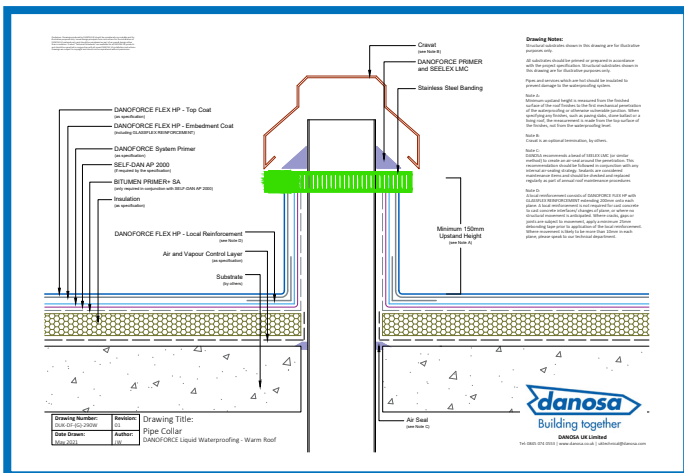
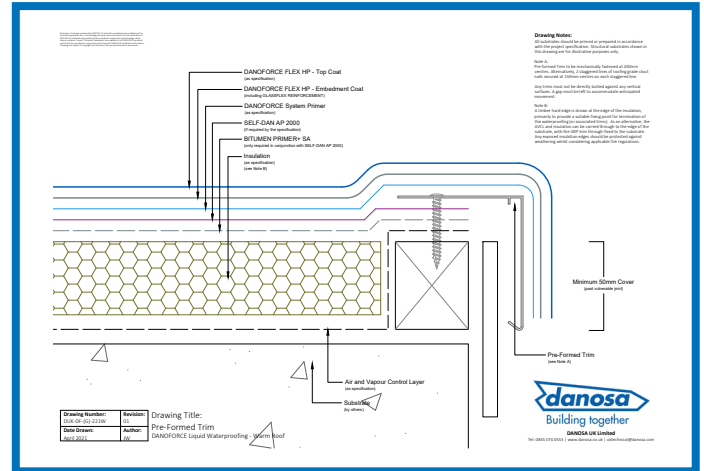
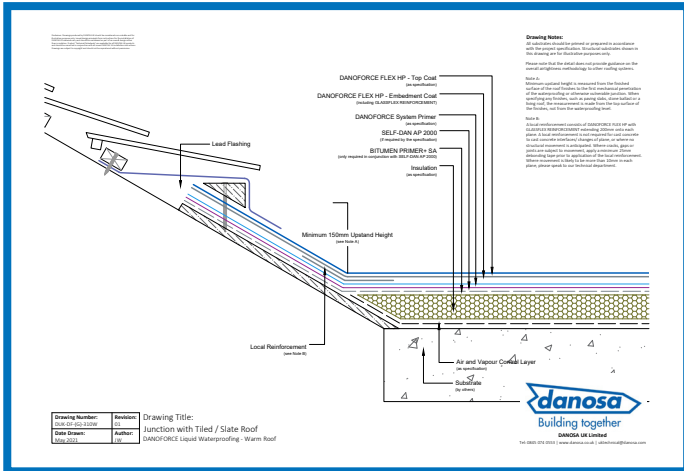
All applications for warranties can be made online using our new online application. You can apply for your warranty once your project has been completed.

[www.danosa.co.uk/warranty](http://www.danosa.co.uk/warranty)

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# DESIGN DETAILS

Over 60 standard details are available in both CAD and PDF.



Please contact your Area Sales Manager to request access to the Premier Contractor, or Architects Portal.

# TECHNICAL SUPPORT

Contact our dedicated technical support team by email at [uktechnical@danosa.com](mailto:uktechnical@danosa.com) or direct by telephone 02394 311 091

# TRAINING PROGRAMMES

A one-day DANKOFLEX® product orientation programme is available at £150.00 per person (exc. VAT). Please contact our team at [uktraining@danosa.com](mailto:uktraining@danosa.com) for the latest availability.

# FULL DANOFORCE® FLEX HP WATERPROOFING SYSTEM

## DANOFORCE® TYPICAL WARM ROOF

With a typical non-liquid receivable insulation board.

1. Structural Deck
2. Air and Vapour Control Layer (AVCL) & PRIMER
3. Thermal Insulation & ADHESIVE
4. Carrier Layer & PRIMER
5. DANOFORCE® System Primer
6. Embedment Coat: DANOFORCE® FLEX HP (minimum 1.50 l/m²)
7. GLASSFLEX REINFORCEMENT
8. Top Coat: DANOFORCE® FLEX HP (minimum 0.50 l/m²)

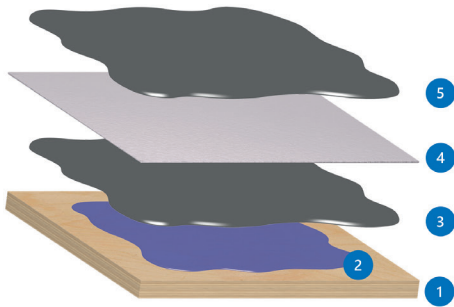


1. Install TISSUE PIR insulation following DANOSA UK application guidelines (adhered or mechanically fastened).
2. Prime TISSUE PIR insulation with **BITUMEN PRIMER+ SA** or **BITUMEN PRIMER+ (canister)**.
3. Apply **SELF-DAN AP 2000** self-adhesive membrane to primed insulation, ensuring 80mm side overlaps and 150mm head overlaps.
4. Where applicable, apply a debonding tape to bridge any gaps between substrates.
5. Prime area with catalysed **DANOFORCE® PRIMER+ LT** to reduce the risk of bitumen discolouring the waterproofing system.
6. Apply local reinforcements to any details as required using **GLASSFLEX REINFORCEMENT**, ensuring 50mm overlaps and catalysed **DANOFORCE® FLEX HP** liquid resin (1.30 to 1.50 litres per m2).
7. Apply 1st coat of catalysed **DANOFORCE® FLEX HP** to the whole area (1.30 to 1.50 litres per m2) and fully reinforce with GLASSFLEX REINFORCEMENT ensuring 50mm overlaps Allow to cure.
8. Apply 2nd coat of catalysed **DANOFORCE® FLEX HP** to the whole area using catalysed **DANOFORCE® FLEX HP** (minimum 0.50 litres per m2).
9. Allow to cure.

# FULL DANOFORCE® FLEX HP WATERPROOFING SYSTEM

## DANOFORCE® TYPICAL COLD ROOF

1. Structural Deck
2. DANOFORCE® System Primer
3. Embedment Coat: DANOFORCE® FLEX HP (minimum 1.50 l/m<sup>2</sup>)
4. GLASSFLEX REINFORCEMENT
5. Top Coat: DANOFORCE® FLEX HP (minimum 0.50 l/m<sup>2</sup>)

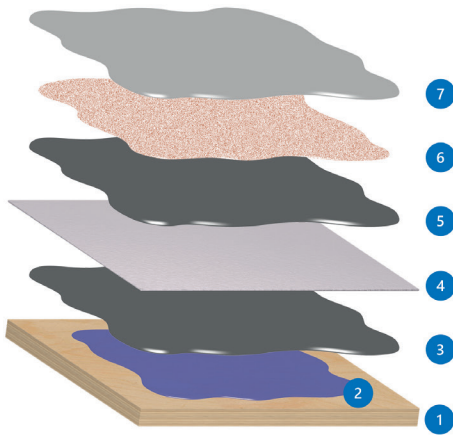


1. Make good and prepare existing roof surface and substrate as required.
2. Where applicable, apply a debonding tape to bridge any gaps between substrates.
3. Prime the substrate with catalysed **DANOFORCE® PRIMER+ LT**.
4. Apply local reinforcements to any details as required using **GLASSFLEX REINFORCEMENT**, ensuring 50mm overlaps and catalysed **DANOFORCE® FLEX HP** liquid resin (1.30 to 1.50 litres per m<sup>2</sup>).
5. Apply 1st coat of catalysed **DANOFORCE® FLEX HP** to the whole area (1.30 to 2.00 litres per m<sup>2</sup>) and fully reinforce with GLASSFLEX REINFORCEMENT ensuring 50mm overlaps. Allow to cure.
6. Apply 2nd coat of catalysed **DANOFORCE® FLEX HP** to the whole area using catalysed **DANOFORCE® FLEX HP** (minimum 0.50 litres per m<sup>2</sup>).
7. Allow to cure.



# FULL DANOFORCE® FLEX HP WATERPROOFING SYSTEM

## DANOFORCE® FOR TERRACES AND WALKWAYS



1. Structural Deck
2. DANOFORCE® System Primer
3. Embedment Coat: DANOFORCE® FLEX HP (minimum 1.50 l/m<sup>2</sup>)
4. GLASSFLEX REINFORCEMENT
5. Top Coat: DANOFORCE® FLEX HP (minimum 0.50 l/m<sup>2</sup>)
6. Quartz Sand Aggregate (embedded in a coat of DANOFORCE® FLEX HP)
7. DANOFORCE® SEALER (minimum 0.60 l/m<sup>2</sup>)

Note:  
A range of DANOFORCE® SEALER colours are available with bespoke colours available upon request.



1. Mask off designated area for foot traffic. (Note: you may need to remove and reapply as necessary between coats).
2. Apply 3rd coat of catalysed **DANOFORCE® FLEX HP** to the designated area and whilst wet, broadcast **QUARTZ SAND AGGREGATE** (4.00 kg per m<sup>2</sup>) into the wet **DANOFORCE® FLEX HP**. Allow to cure.
3. Once cured, remove loose sand. (Around 2.50 kg of **QUARTZ SAND AGGREGATE** will be retained per m<sup>2</sup>).
4. Apply sealing coat of catalysed **DANOFORCE® SEALER** (0.60 litres per m<sup>2</sup>). Allow to cure.



## ADDING A HARD WEARING LAYER

A DANOFORCE® system hard wearing layer achieves an average slip resistance of 'Low Slip Potential' when tested using the pendulum test method.

1. Apply embedment coat of catalysed DANOFORCE® FLEX HP to completed waterproofing system. Mask areas of application if required.
2. Cast quartz sand aggregate into curing DANOFORCE® FLEX HP, ensuring full and even coverage. Allow to cure.
3. Sweep off excess quartz sand aggregate.
4. Apply a layer of catalysed DANOFORCE® SEALER to retained quartz sand aggregate.

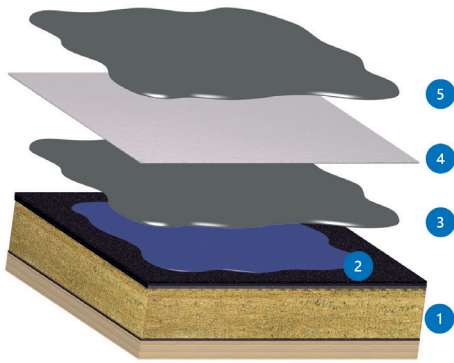


# FULL DANOFORCE® FLEX HP WATERPROOFING SYSTEM

## DANOFORCE® FOR REFURBISHMENT

1. Existing Waterproofing System
2. DANOFORCE® System Primer
3. Embedment Coat: DANOFORCE® FLEX HP
4. GLASSFLEX REINFORCEMENT
5. Top Coat: DANOFORCE® FLEX HP (minimum 0.50 l/m²)

Note:  
The DANOFORCE® system primer is determined by way of a bond test on site. In some instances, existing roofs may require additional surface preparation or treatment.



1. Make good and prepare existing roof surface and substrate as required.
2. Where applicable, apply a debonding tape to bridge any gaps between substrates.
3. Prime the substrate with catalysed **DANOFORCE® PRIMER+ LT**. (For PVC membranes, attempt bond-test with **DANOFORCE® PRIMER**).
4. Apply local reinforcements to any details as required using **GLASSFLEX REINFORCEMENT**, ensuring 50mm overlaps and catalysed **DANOFORCE® FLEX HP** liquid resin (1.30 to 1.50 litres per m²).
5. Apply 1st coat of catalysed **DANOFORCE® FLEX HP** to the whole area (1.30 to 2.00 litres per m²) and fully reinforce with **GLASSFLEX REINFORCEMENT** ensuring 50mm overlaps. Allow to cure.
6. Apply 2nd coat of catalysed **DANOFORCE® FLEX HP** to the whole area using catalysed **DANOFORCE® FLEX HP** (minimum 0.50 litres per m²).
7. Allow to cure.

## DANOFORCE FLEX HP - PVC MEMBRANE STAND-ALONE DETAILING

1. Mask off an area of 300mm wide surrounding the detail. (Note: you may need to remove and reapply as necessary between coats).
2. Abrade PVC membrane using a suitable tool and clean with **PVC CLEANER**.
3. Where applicable, apply a debonding tape to bridge any gaps between substrates.
4. Prime substrate with **DANOFORCE® PRIMER**. (Metal substrates should be primed with **DANOFORCE® METAL PRIMER** and pre-treated with **M-WASH TREATMENT** if required).
5. Apply local reinforcements to any details as required using **GLASSFLEX REINFORCEMENT**, ensuring 50mm overlaps and catalysed **DANOFORCE® FLEX HP** liquid resin (1.30 to 1.50 litres per m2).
6. Apply 1st coat of catalysed **DANOFORCE® FLEX HP** to the whole area (1.30 to 2.00 litres per m2) and fully reinforce with **GLASSFLEX REINFORCEMENT** ensuring 50mm overlaps. Allow to cure.
7. Apply 2nd coat of catalysed **DANOFORCE® FLEX HP** to the whole area using catalysed **DANOFORCE® FLEX HP** (minimum 0.50 litres per m2). Allow to cure.
8. Seal around all the termination points of the **DANOFORCE® FLEX HP** coating with **SEELEX LMC** sealant and **DANOFORCE® PRIMER**.



### DANOFORCE® DARK SIDE



DANOFORCE® DARK SIDE liquid perfectly compliments reinforced bitumen membrane (felt) roof systems.

Designed to mimic the appearance of black bitumen and applied in a single coat, it provides an excellent option for repair works or for detailing complex scenarios on any project.

Mineral chippings to match the roof membrane colour are cast into the waterproofing as it cures. The new detail seamlessly blends in with the roof.



CAST CHIPPINGS



DETAIL COMPLETE

1. Mask off an area of 150mm wide surrounding the detail.
2. Where applicable, apply a debonding tape to bridge any gaps between substrates.
3. Prime substrate with **DANOFORCE® PRIMER+ LT**. (Metal substrates should be primed with **DANOFORCE® METAL PRIMER** and pre-treated with **M-WASH TREATMENT** if required).
4. Apply by brush one overall coat of catalysed **DANOFORCE® DARK SIDE** (1.50 litres or 1.80 kg per m²).
5. Check for any thin areas and apply additional catalysed **DANOFORCE® DARK SIDE** as required.
6. Fully blind the applied **DANOFORCE® DARK SIDE** with mineral slate chippings until all areas of exposed resin are covered.
7. Remove masking tape and allow to cure.
8. Once cured, remove loose mineral slate chippings.
9. Seal around all the termination points of the **DANOFORCE® DARK SIDE** coating with **ALL-WEATHER SEALANT** sealant and **DANOFORCE® PRIMER** or **DANOFORCE® PRIMER+ LT**.

## DANOFORCE® CATALYST CALCULATIONS

**DANOFORCE® CATALYST** is supplied in 1.00-kilogram tubs, which includes a scoop measuring approximately 12.50 grams.

For every litre of **DANOFORCE® FLEX HP**, **DANOFORCE® PRIMER+ LT** and **DANOFORCE® SEALER**, you will use the following:

AMBIENT TEMPERATURE °C	CATALYST % PER LITRE NOT PER CONTAINER	NUMBER OF SCOOPS PER LITRE NOT PER CONTAINER	TOTAL GRAMS CATALYST PER LITRE NOT PER CONTAINER	TOTAL LITRES CATALYSED PER 1.00KG CATALYST
19 - 30	2	2	25.00	40.00
11 - 18	3	3	38.50	25.00 - 26.00
1 - 10*	4	4	50.00	20.00

Experienced DANOFORCE® system installers use a measuring jug (or similar) to measure out different volumes of catalyst. They will mark lines on a measuring jug for more straightforward application in future to avoid the need to measure out scoops individually, which can be time-consuming. You can have a jug for measuring out scoops per litre at 2, 3 and 4% catalyst, or where appropriate, 2, 3 and 4% catalyst per drum.

\*At ambient temperatures below 5°C, you will require the addition of **DANOFORCE® FLEX HP ACCELERATOR** or **DANOFORCE® PRIMER+ LT ACCELERATOR** as appropriate.

## DANOFORCE® COLD WEATHER ACCELERATORS

These products are used in winter months when the ambient temperature is less than 5°C. You will use one full pack of each accelerator product per tin/drum of the corresponding DANOFORCE® liquid/primer product.

Each accelerator should be added in full to each tin/drum of the corresponding DANOFORCE® liquid/primer product, which can subsequently be decanted as required.

The addition of the accelerator does not start the curing process. Therefore, once the accelerator has been added, the required volumes of DANOFORCE® liquid can be decanted and catalysed as required.

## PRIMER SELECTION

The below is for guidance only. In all instances, a bond test should be completed prior to starting.

PRIMER	SUITABLE SUBSTRATES
<b>DANOFORCE PRIMER</b>	PVC Membranes, SELF-DAN AL+ 1200 membranes.
<b>DANOFORCE PRIMER+ LT</b>	Bitumen membranes, asphalt, plywood, OSB/3, concrete, GRP.
<b>DANOFORCE METAL PRIMER</b>	Galv steel*, aluminum, lead, cast iron, copper, zinc*. (*M-Wash prior treatment required).

## TERMINATING DETAILS

While the DANOFORCE systems are excellent products that could be considered self-terminating. However, we do not promote the products as self-terminating or condone this practice due to the variability between substrates.

All terminations must be completed following the latest edition of BS 6229.

We require using **SEELEX LMC** sealant with **DANOFORCE PRIMER** for all seals, including top edge terminations and around all localised stand-alone details.

## LOCAL REINFORCEMENTS

All changes of plane (angle/direction) require a localised reinforcement. A localised reinforcement consists of a strip of **GLASSFLEX REINFORCEMENT**, ensuring 50mm overlaps, finished with a coat of catalysed **DANOFORCE® FLEX HP** liquid resin (1.30 to 1.50 litres per m2).

## DEBONDING TAPES

Where any gap exists between two substrates, including around penetration details or changes of plane, prior to the application of a local reinforcement, all DANOFORCE® systems require a strip of debonding tape to be installed. A debonding tape can be any suitable hard-wearing tape, such as duct tape, which is used to bridge the gap. In the instance of excessive moment, the tape will debond from the substrate, ensuring that the DANOFORCE® system continues to function as expected.

## AVOID THE COMMON MISTAKE: APPLY A LIBREAL FIRST COAT

The most common mistake is not to apply sufficient **DANOFORCE® FLEX HP** resin in the 1st coat. A minimum of 1.30 litres per m2 is required. The total system consumption will range from 1.50 litres per m2 to 2.00 litres per m2, depending on the substrate.

Once sufficient **DANOFORCE® FLEX HP** resin has been applied, the **GLASSFLEX REINFORCEMENT** should be laid directly into the liquid. Using a suitable roller, the underlying **DANOFORCE® FLEX HP** liquid resin should then be drawn through. Applying significant additional **DANOFORCE® FLEX HP** resin at this stage (due to insufficient resin being applied beforehand) is likely to affect the even distribution of the reinforcement and may lead to strands or wicking.

The final (2<sup>nd</sup> coat) of the **DANOFORCE® FLEX HP** resin is applied at approximately 0.50 litres per m2.

To help you understand the distribution of the resin between the coats, consider the following:

Your 1st Coat **DANOFORCE® FLEX HP** will consume 75 - 80% of the total liquid required.

The 2nd Coat **DANOFORCE® FLEX HP** will consume 20 - 25% of the total liquid required.





#### Opening Hours

Monday to Thursday (Office)

08:00am to 05:00pm

Friday (Office)

08:00am to 04:30pm

Weekends & Bank Holidays

Closed

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