



MOMENTIVE
performance materials

UltraGlaze* SSG4400

silicone structural glazing adhesive

Product Description

UltraGlaze SSG4400 structural glazing adhesive is a high-modulus neutral curing structural silicone elastomeric adhesive which may be an excellent candidate for use in the fabrication and shop glazing of curtainwall modules. UltraGlaze SSG4400 structural glazing adhesive is a two-component product (part A + part B) that offers a fast and thorough deep-section cure. Uncured, both the A and B components are thixotropic pastes and, when mixed, cure quickly to a high strength durable silicone rubber adhesive and sealant at room temperature with primerless adhesion to many substrates.

Typical Performance Properties

- **Silicone durability** - exhibits excellent long term resistance to ultraviolet radiation, ozone, high and low temperatures, rain, snow and natural weathering.
- **Primerless adhesion** - bonds to most conventional substrates and finishes including: glass, glass coatings, ceramic frits, fluropolymer and powder coated paints, conversion-coated and anodized aluminum. Some finishes may require a primer.
- **Catalyst options** - increased cure speed and strength to accommodate faster project schedules and production processes.
- **Adjustable work life** - variable ratio of parts A+B to accommodate assembly and application under varying conditions.
- **Low pumping viscosity** - provides for longer pump life and reduced maintenance on equipment.
- **High application rate** - faster and more thorough joint filling capability with easier tooling effort.
- **Fast durometer and adhesion build** - enhances early stability of assembled parts.
- **Low sag or slump** - which may be used for application to horizontal, vertical or overhead surfaces.
- **Compatible** with these GE sealants insulating glass grades: IGS3703, IGS3713-D1, IGS3729, IGS3723, IGS3733.
- **Compatible** with these GE sealants weatherproofing series grades: SCS2000, SCS2700, SCS9000, SCS2800.
- **Compatible** with these GE sealants structural grades: SSG4000, SSG4000AC, SSG4800J, SCS2000.
- No kit matching required.
- Low odor.

Momentive Performance Materials is an exclusive licensee of General Electric. Momentive Performance Materials provides versatile materials as the starting point for its creative approach to ideas that help enable new developments across hundreds of industrial and consumer applications.

We are helping customers solve product, process, and performance problems; our silanes, fluids, elastomers, sealants, resins, adhesives, urethane additives, and other specialty products are delivering innovation in everything from car engines to biomedical

devices. From helping to develop safer tires and keeping electronics cooler, to improving the feel of lipstick and ensuring the reliability of adhesives, our technologies and enabling solutions are at the frontline of innovation.



Exclusive
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UltraGlaze* SSG4400 silicone structural glazing adhesive

Basic Uses

- UltraGlaze SSG4400 structural glazing adhesive may be an excellent material of choice for use in structural glazing applications such as factory glazing of curtainwall units and modules for unitized and panelized systems.
- UltraGlaze SSG4400 structural glazing adhesive can also be used as a weatherseal product, when movement expected in the joint does not exceed its movement capability ($\pm 12.5\%$).
- UltraGlaze SSG4400 structural glazing adhesive has been validated in designs as an excellent option for use in *protective glazing* applications.

Packaging

UltraGlaze SSG4400 structural glazing adhesive is available as a "kit" consisting of a 55-gallon drum of Base and a 5-gallon pail of curing agent (catalyst). Both the drum and the pail are straight-sided for use in commercially available pumping equipment.

Base: UltraGlaze SSG4400A structural glazing adhesive base, white paste in 55 gallon drum (containing ~50 US gallons (189.3 L)) with a polyethylene bag liner.

Catalyst: There are three catalyst options for use with UltraGlaze SSG4400A structural glazing adhesive base and are supplied in a 5-gallon pail (containing ~5.3 US gallons (20.1 L)).

Standard Cure Speed

- UltraGlaze SSG4400B structural glazing adhesive catalyst, black paste → mixes and cures to black rubber

Fast Cure Speed

- UltraGlaze SSG4710B structural glazing adhesive catalyst, light black paste → mixes and cures to grey rubber
- UltraGlaze SSG4713B structural glazing adhesive catalyst, black paste → mixes and cures to black rubber



Colors

UltraGlaze SSG4400 structural glazing adhesive is available in black and grey.

Limitations

- Structural glazing industry guidelines (ASTM C1401) suggest that drawings and details are to be reviewed by all parties involved in the manufacture of an SSG system and for each building project. UltraGlaze SSG4400 structural glazing adhesive should be used in structural glazing applications only after Momentive Performance Materials¹ has reviewed shop drawings and has performed adhesion and compatibility tests on project substrates and spacer materials. Review and testing is done on a project-by-project basis. No blanket approval is given by Momentive Performance Materials¹ for structural glazing applications.
- UltraGlaze SSG4400 structural glazing adhesive is compatible with many types of coated glass, metal finishes, glazing gaskets, setting blocks and spacers. Momentive Performance Materials¹ policy is to test on a project-by-project basis each substrate and component used in a structural glazing assembly for adhesion and compatibility to assure optimum performance. No blanket approvals will be issued relative to adhesion or compatibility of UltraGlaze SSG4400 structural glazing adhesive with such materials.
- Do not apply acid-curing (Acetoxy) silicone sealants to UltraGlaze SSG4400 structural glazing adhesive, as this may cause loss of adhesion of UltraGlaze SSG4400 structural glazing adhesive to glass, and/or other substrates used in the system.
- Not recommended for water immersion applications.

Technical Services

Complete technical information and literature are available from Momentive Performance Materials.¹ Laboratory facilities and application engineering are available upon request from Momentive Performance Materials.¹

UltraGlaze* SSG4400 silicone structural glazing adhesive

Applicable Standards

UltraGlaze SSG4400 structural glazing adhesive meets or exceeds the requirements of the following specifications for two-component sealants.

U.S. Federal Specifications:

- TT-S-227E (COM-NBS)

ASTM Specifications:

- C1184, Type M, Use G and O (aluminum)
- C920, Type M, Grade NS, Class 12¹/₂, Use G and A

Joint Designs and Dimensions

Silicone contact width and thickness (see Figure 1) will vary by project with the design wind load and glass size. Contact width can be calculated using the following formula: [Design Wind Load (PSF) x Longest Short Span of Glass or Panel (Ft.)] divided by 480. A minimum sealant thickness of 1/4" (7mm) between substrates is required to accommodate thermal expansion and contraction (see Figure 2) of most systems and should be used in order to assure that sealant can be injected into the structural cavity obtaining full contact with both the glass and metal surfaces while remaining free of air voids. Greater joint thickness may be required to accommodate movement in some larger-sized SSG systems. Momentive Performance Materials¹ can be contacted to assist in determination of proper joint thickness to accommodate expected movement in structurally glazed applications.

The following materials are required to be submitted to Momentive Performance Materials¹ to receive suggestions for the use of UltraGlaze SSG4400 structural glazing adhesive.

- Architectural and shop drawings for review and comment.
- Design wind load requirement(s) for project.
- Glass or panel sizes.
- Production samples of metal, glass, gaskets, spacers and setting blocks with type and manufacturer identified.
- Specification and/or identification of paint or finish to which UltraGlaze SSG4400 structural glazing adhesive is intended to adhere (*i.e.*, 215-R1 anodized or if paint; manufacturer, finish system and ID#).

Momentive Performance Materials¹ will provide the following, after reviewing the materials above:

- Determination as to whether the submitted joint dimensions meet the minimum design criteria necessary for the use of UltraGlaze SSG4400 structural glazing adhesive.
- Short-term adhesion data using (typically) the ASTM C794 and/or ASTM C1135 test method. Other test methods may be employed.
- Short-term compatibility test results on gaskets, spacers and setting blocks and other accessories per ASTM C1087 or GE sealants test method for compatibility.
- Information regarding suggested primers, when required.

Figure 1:

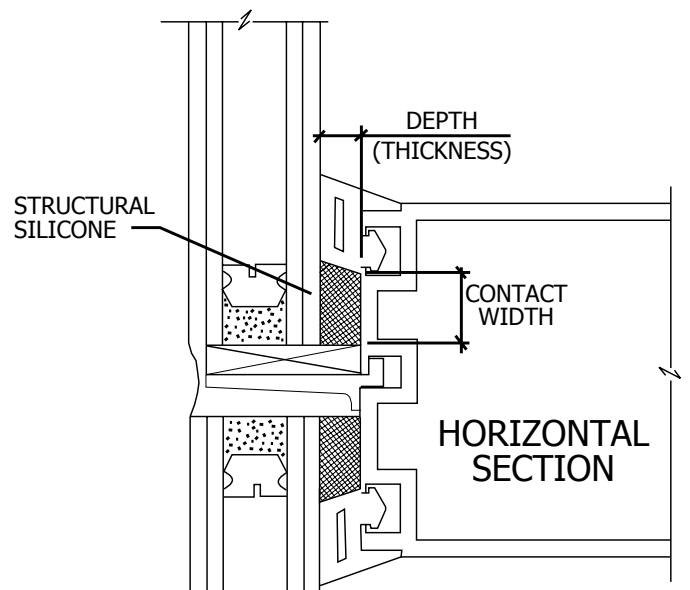
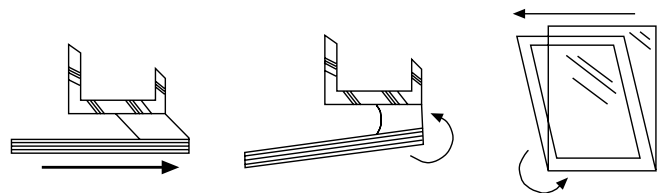


Figure 2: Movement from thermal expansion and contraction and/or glass rotation.



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Joint Designs and Dimensions (continued)

Momentive Performance Materials¹ will not:

- Design sealant joints.
- Provide comments on the structural integrity of overall framing system(s).
- Provide long-term performance data.

The design professional has final responsibility for the determination of structural sealant joint dimensions based on project conditions, design wind load(s), glass or panel sizes, anticipated thermal, seismic or other movement of the system.

The ASTM C1401 Standard Guide for Structural Sealant Glazing provides a thorough overview of design topics and information for use in SSG systems.

STANDARD CURE SPEED GRADES

UltraGlaze SSG4400A+UltraGlaze SSG4400B → BLACK

Typical Properties

Uncured Properties	Base	UltraGlaze SSG4400A
Color	White	Thixotropic Paste
Specific Gravity	1.42	
Storage Warranty	12 months ⁽¹⁾	
Uncured Properties	Catalyst	UltraGlaze SSG4400B
Color	Black	Thixotropic Paste
Specific Gravity	1.03	
Storage Warranty	6 months ⁽¹⁾	

Mixed Compound Properties

UltraGlaze SSG4400A+UltraGlaze SSG4400B
@ 12:1 mix ratio, ambient conditions

Color	Black	Thixotropic Paste
Specific Gravity	1.37	
Ratio Range	9:1 to 14:1	By weight
Tooling Time	Up to 45 minutes	Depends on mix ratio
Snap Time	45-60 minutes	Depends on mix ratio
Consistency/Sag	0.1" (2.5 mm)	Non-sagging
VOC Content	27 g/l	

Cured Properties

21 days @ 70°F (21°C), 50% R.H.
UltraGlaze SSG4400A+UltraGlaze SSG4400B @ 12:1 mix ratio

Color	Black	
Durometer	40	Shore A
Tensile Strength	140.6 psi (0.97 MPa)	ASTM C1135
Ult. Elongation	116%	ASTM C1135
Tear Strength	39.1 ppi (die B)	ASTM D624
Shear Strength	153.3 psi (1.06 MPa)	ASTM C961
Heat Resistance	300°F (149°C)	
Movement Capability	±12.5%	ASTM C717

(1) When properly stored; see section on storage.

FAST CURE SPEED GRADES

UltraGlaze SSG4400A+UltraGlaze SSG4710B → GREY

UltraGlaze SSG4400A+UltraGlaze SSG4713B → BLACK

Typical Properties

Uncured Properties	Catalyst	UltraGlaze SSG4710B
Color	Light Black	Thixotropic Paste
Specific Gravity	1.04	
Storage Warranty	6 months ⁽¹⁾	
Uncured Properties	Catalyst	UltraGlaze SSG4713B
Color	Black	Thixotropic Paste
Specific Gravity	1.10	
Storage Warranty	6 months ⁽¹⁾	

Mixed Compound Properties

UltraGlaze SSG4400A+UltraGlaze SSG47XXB
@ 12:1 mix ratio, ambient conditions

Color	Black or Grey	Thixotropic Paste
Specific Gravity	1.38	
Ratio Range	9:1 to 14:1	By weight
Tooling Time	Up to 20 minutes	Depends on mix ratio
Snap Time	20-30 minutes	Depends on mix ratio
Consistency/Sag	0.1" (2.5 mm)	Non-sagging
VOC Content	to come	

Cured Properties

21 days @ 70°F (21°C), 50% R.H.
UltraGlaze SSG4400A+UltraGlaze SSG47XXB @ 12:1 mix ratio

Color	Black or Grey	
Durometer	34	Shore A
Tensile Strength	142.2 psi (0.98 MPa)	ASTM C1135
Ult. Elongation	149%	ASTM C1135
Tear Strength	36.9 ppi (die B)	ASTM D624
Shear Strength	126.2 psi	ASTM C961
Heat Resistance	300°F (149°C)	
Movement Capability	±12.5%	ASTM C717

(1) When properly stored; see section on storage.

UltraGlaze* SSG4400 silicone structural glazing adhesive

Installation

Prior to production, a sample of A base and B catalyst should be taken from each lot of material to be used, weighed to the desired A/B ratio, mixed and checked for proper curing before placing material in production.

Surface Preparation

Sealants may not adhere or maintain long-term adhesion to substrates if the surface is not prepared and cleaned properly before sealant application. Using proper materials and following prescribed surface preparation and cleaning procedures is vital for sealant adhesion. Momentive Performance Materials¹ can provide quality control information and suggestions to user upon request.

Materials

- Use clean, fresh solvent as recommended by the sealant manufacturer's test report. When handling solvents, refer to manufacturer's MSDS for information on handling, safety and personal protective equipment. Isopropyl Alcohol (IPA) is commonly used and has proven useful for most substrates encountered in SSG systems. Xylene and Toluene have also been found useful on many substrates.
- Use clean, white cloths free of lint or other lint-free wiping materials.
- Use a clean, narrow-blade putty knife when tooling structural silicone into the cavity.
- Use primer when required.

Cleaning Procedures

- Remove all loose material (such as dirt and dust), plus any oil, frost or other contaminants from the substrates to which the structural silicone will be adhered.
- Do not use detergent to clean the substrate as residue may be left on the surface.
- Clean the substrates receiving the sealant as follows: Using a two-rag wipe technique. Wet one rag with solvent and wipe the surface with it, then use the second rag to wipe the wet solvent from the surface BEFORE it evaporates. Allowing solvent to dry on the surface without wiping with a second cloth can negate the entire cleaning procedure because the contaminants may be re-deposited as the solvent dries.
- Change the cleaning rags frequently, as they become soiled. It is easier to see the soiling if white rags are used. Do not dip used wipe cloths into solvent as this can contaminate the solvent. Cleaning with contaminated solvent can result in sealant adhesion issues. Always use clean containers for solvent use and for solvent storage.
- When cleaning deep, narrow joints, wrap the cleaning cloth around a clean, narrow-blade putty knife. This permits force to be applied to the cleaned surface.
- Clean only as much area as can be sealed in one hour. If cleaned areas are again exposed to rain or contaminants, the surface must be cleaned again.

Primers

UltraGlaze SSG4400 structural glazing adhesive will bond to many clean surfaces without the aid of a primer. For difficult-to-bond substrates, the use of a primer or special surface preparation should be evaluated. An evaluation should be made for each specific application/substrate to determine quality of bond. When properly used, primers help assure strong and consistent sealant adhesion to surfaces that may be difficult to bond. Most primers are a blend of organic and inorganic chemicals, resins and solvents. NEVER APPLY PRIMER TO GLASS SURFACES. Obtaining the proper materials, as well as following the prescribed procedures, is vital to ensure the successful use of primers. PRIMER APPLICATION IS NOT A SUBSTITUTE FOR SURFACE PREPARATION. Consult GE sealants primer datasheet(s) for specifics and recommendations for use.

CAUTION

Primers may contain solvents. When handling solvents, refer to manufacturer's MSDS for information on handling, safety and personal protective equipment.

Masking

- To simplify clean up of excess sealant, use easy to release, pressure sensitive tape to mask adjacent surfaces before applying the structural silicone sealant.
- Start from the top down and overlap the runs. Tool in direction of over-lap so that masking is not disturbed during tooling.
- Remove masking immediately after application of silicone or as soon as possible or practical.
- Drop cloths can be used to cover any surfaces likely to collect excess sealant removed during tooling operations.

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Structural Glazing

Sealant Application

- Apply the sealant by pushing the bead ahead of the nozzle and making sure that the entire cavity is filled. Tooling should be done neatly, forcing the sealant into contact with the sides of the joint, thus helping to eliminate any internal voids and assuring good substrate contact. AIR POCKETS OR VOIDS WITHIN THE STRUCTURAL CAVITY ARE NOT ACCEPTABLE.
- Sealant application is not recommended when the temperature is below 40°F (4°C) or if frost or moisture is present on the surfaces to be sealed.
- UltraGlaze SSG4400 structural glazing adhesive works best when applied to surfaces below 140°F (60°C).
- Due to the smooth consistency of UltraGlaze SSG4400 structural glazing adhesive, tooling agents such as water, soap or detergent solutions are not necessary or recommended. Dry tooling is recommended.

Mixing, Pumping and Dispensing

- UltraGlaze SSG4400 structural glazing adhesive should be mixed and dispensed using two-component mixing equipment, which is available from several equipment manufacturers. These mixing / pumping systems are specifically designed to meter precise proportions of A base and B catalyst, in an air-free environment, and mix and dispense material at proper pressures and volumes to insure thoroughly mixed air-free material.
- Consult equipment manufacturer or system handbook for startup and shutdown procedures that cover proper operating pressures, mixing devices, and purging requirements.
- Hand mixing of A base + B catalyst is not recommended.
- Kit matching of the A and B components of UltraGlaze SSG4400 structural glazing adhesive is not required.
- UltraGlaze SSG4400 structural glazing adhesive has been used successfully in both "In-line" mixing systems and on "purgeless" after-the-gun mixing equipment. Consult equipment manufacturer and/or Momentive Performance Materials¹ for information on mixing device options.
- When properly mixed, the material should be a solid, homogeneous color (gray when using UltraGlaze SSG4710B structural glazing adhesive catalyst, black when using UltraGlaze SSG4400B structural glazing adhesive catalyst or UltraGlaze SSG4713B structural glazing adhesive catalyst) free of any swirling or marbling of colors. If incomplete mixing is noticed, cease use of the material until equipment has been adjusted and confirmed that complete mixing is being attained.

Curing

- When mixing UltraGlaze SSG4400A structural glazing adhesive base + UltraGlaze SSG4400B structural glazing adhesive catalyst at approximately a 12:1 ratio, the material will become tack-free at about 2 hours under ambient conditions of @ 70°F (21°C), 50% R.H. Under these conditions approximately 80% of strength should develop within 24 hours. Development of maximum properties requires full evaporation of cure by-products and will normally be achieved within 7 days.

- When mixing UltraGlaze SSG4400A structural glazing adhesive base + UltraGlaze SSG47XXB structural glazing adhesive catalyst at approximately a 12:1 ratio, the material will become tack-free at about 45 minutes under ambient conditions of @ 70°F (21°C), 50% R.H. Under these conditions approximately 80% of strength will normally develop within 12 hours. Development of maximum properties requires full evaporation of cure by-products and will normally be achieved within 7 days.
- Work life and cure rate may be adjusted by changing the A base to B catalyst ratio. Ratio must be within recommended range to achieve desired cured material property profile.
- Work life and cure rate can be affected by temperature and humidity levels. Mild heat (*i.e.*, around 120°F/49°C) will shorten the work life of the material, but will not significantly reduce the time required for complete cure. Cooler temperatures and lower humidity (*i.e.*, <40°F/4°C and <30% R.H.) tend to slow the cure and adhesion process.
- The B catalysts are sensitive to prolonged exposure to atmospheric moisture and the storage containers should be kept tightly closed whenever possible to maximize useful life.
- The catalyst may require mixing before placing container in pumping equipment if settling of components has occurred. Contact Momentive Performance Materials¹ technical services for additional information.

Adhesion

Development of maximum bond strength will depend on substrate finish, joint configuration, primer use, adhesive thickness, substrate preparation and ambient conditions at location of use. Minimum stress should be applied to the adhesive bond for 24 hours. The adhesive strength of the bond should eventually exceed the cohesive strength of the silicone rubber adhesive. Maximum bond strength will typically be reached within 7 days.

Maintenance and Repairs

If repairs are required, the following products are candidates for use: UltraGlaze SSG4000 structural glazing adhesive, UltraGlaze SSG4000AC structural glazing adhesive, UltraGlaze SSG4800J structural glazing adhesive and SilPruf* SCS2000 structural glazing adhesive and weatherproofing sealant. Contact Momentive Performance Materials¹ technical services for suggested reglazing procedures and specific product suggestions.

HANDLING AND SAFETY

Material Safety Data Sheets are available @ www.gesealants.com or, upon request, from a Momentive Performance Materials¹ representative. Similar information for solvents and other chemicals used with GE sealants products should be obtained from your suppliers.

UltraGlaze* SSG4400 silicone structural glazing adhesive

Structural Glazing (continued)

Storage Information

UltraGlaze SSG4400A Structural Glazing Adhesive Base

Store in the original unopened container at 75°F (24°C) or lower.

UltraGlaze SSG4400B Structural Glazing Adhesive Catalyst

Store in the original unopened container at 75°F (24°C) or lower.

UltraGlaze SSG4710B Structural Glazing Adhesive Catalyst and UltraGlaze SSG4713B Structural Glazing Adhesive Catalyst

Store in the original unopened container at 55°F (13°C) or lower. These materials may be shipped at ambient temperature of up to 110°F (43°C) for up to 7 days maximum.

Availability

Information on ordering can be obtained from Momentive Performance Materials,¹ Waterford, NY; the sales office nearest to you, or an authorized GE sealants' product distributor. For information regarding cost, contact your local distributor or territory manager. Our Customer Service number is: 877-943-7325.

Government Requirement

Prior to considering use of a GE sealants product in fulfilling any government requirement, please contact the Government and Trade Compliance office.

Emergency Service

Momentive Performance Materials¹ maintains an around-the-clock emergency service for its products. The American Chemistry Council (CHEMTREC), Transport Canada (CANUTEC), and the Chemical Emergency Agency Service also maintain an around-the-clock emergency service for all chemical products:

Location	GE Branded Products	All Chemical Products
Mainland U.S., Puerto Rico	518.233.2500	CHEMTREC: 800.424.9300
Alaska, Hawaii	518.233.2500	CHEMTREC: 800.424.9300
Canada	518.233.2500	CANUTEC: 613.996.6666 (collect) or CHEMTREC: 800.424.9300
Europe, Middle East, Africa	+32.(0)14.58.45.45 (Belgium)	CHEMTREC: +1-703.527.3887 (collect)
Latin America, Asia/Pacific, all other locations worldwide	+518.233.2500	CHEMTREC: +1-703.527.3887 (collect)
At sea	Radio U.S. Coast Guard, which can directly contact Momentive Performance Materials ¹ at 518.233.2500	CHEMTREC: 800.424.9300

DO NOT WAIT. Phone if in doubt. You will be referred to a specialist for advice.

Patent Status

Nothing contained herein shall be construed to imply the nonexistence of any relevant patents or to constitute the permission, inducement or recommendation to practice any invention covered by any patent, without authority from the owner of the patent.

Product Safety, Handling and Storage

Customers considering the use of this product should review the latest Material Safety Data Sheet and label for product safety information, handling instructions, personal protective equipment if necessary, and any special storage conditions required. Material Safety Data Sheets are available at www.momentive.com or, upon request, from any Momentive Performance Materials¹ representative. Use of other materials in conjunction with Momentive Performance Materials¹ products (for example, primers) may require additional precautions. Please review and follow the safety information provided by the manufacturer of such other materials.

CUSTOMER SERVICE CENTERS

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| • RTV's and Elastomers | T +1.800.332.3390 | F +1.304.746.1623 |
| • Consumer Sealants & Construction Sealants and Adhesives | T +1.877.943.7325 | F +1.304.746.1654 |
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