

PEPSIN 1:10000

GHS Safety Data Sheet

Version No:2.0

Page 1 of 11

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

PEPSIN

OTHER NAMES

pepsinum, enzyme, "digestive enzyme", "pepsin a", pepsin-hf, "lactated pepsin", "pepsin fortior", "lactated pesin elixir"

PRODUCT USE

Medicine, naturally present in gastric juice digestive system of animals; used in cheese making; general laboratory reagent.

SUPPLIER

Company: S D FINE- CHEM LIMITED

Address:

315- 317, T.V. INDUSTRIAL ESTATE,

248, WORLI,

MUMBAI- 400030.INDIA.

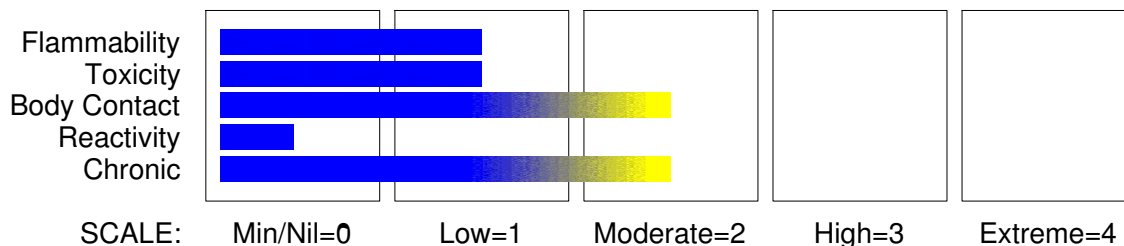
technical@sdfine.com

Telephone: 91- 22- 24959898

Telephone: 91- 22- 24959899

Fax: 91- 22- 24937232

HAZARD RATINGS



Section 2 - HAZARDS IDENTIFICATION

GHS Classification

Eye Irritation Category 2A

Respiratory Irritation Category 3

Respiratory Sensitizer Category 1

Skin Corrosion/Irritation Category 2

Skin Sensitizer Category 1

continued...

PEPSIN 1:10000

GHS Safety Data Sheet

Version No:2.0

Page 2 of 11

Section 2 - HAZARDS IDENTIFICATION



EMERGENCY OVERVIEW

HAZARD

DANGER

Determined by using GHS criteria:

H335 H315 H319 H334 H317

May cause respiratory irritation

Causes skin irritation

Causes serious eye irritation

May cause allergic or asthmatic symptoms or breathing difficulties if inhaled

May cause allergic skin reaction

PRECAUTIONARY STATEMENTS

Prevention

In case of inadequate ventilation wear respiratory protection.

Wash thoroughly after handling.

Contaminated clothing should not be allowed out of the workplace.

Avoid breathing dust/fume/gas/mist/vapours/spray.

Wash hands thoroughly after handling.

Response

Wear eye/face protection.

If eye irritation persists, get medical advice/attention.

If skin irritation or rash occurs, seek medical advice/attention.

If experiencing respiratory symptoms call a POISON CENTER or doctor/physician.

IF INHALED: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing.

If skin irritation occurs, seek medical advice/attention.

Wash/Decontaminate removed clothing before reuse.

Remove/Take off immediately all contaminated clothing

Specific treatment: refer to Label or MSDS.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Wash contaminated clothing before reuse.

IF ON SKIN: Gently wash with plenty of soap and water.

Disposal

Dispose of contents and container in accordance with relevant legislation.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
pepsin	9001-75-6	>90
some grades are controlled for activity with		
alpha- lactose	63-42-3	
or		
sucrose	57-50-1	

continued...

PEPSIN 1:10000

GHS Safety Data Sheet

Version No:2.0

Page 3 of 11

Section 4 - FIRST AID MEASURES

SWALLOWED

- Immediately give a glass of water.
- First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

EYE

If this product comes in contact with eyes:

- Wash out immediately with water.
- If irritation continues, seek medical attention.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

If skin contact occurs:

- Immediately remove all contaminated clothing, including footwear.
- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

INHALED

- If dust is inhaled, remove from contaminated area.
- Encourage patient to blow nose to ensure clear passage of breathing.
- If irritation or discomfort persists seek medical attention.

NOTES TO PHYSICIAN

Treat symptomatically.

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

- Water spray or fog.
- Foam.
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.

FIRE FIGHTING

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water courses.
- Use water delivered as a fine spray to control fire and cool adjacent area.
- DO NOT approach containers suspected to be hot.
- Cool fire exposed containers with water spray from a protected location.
- If safe to do so, remove containers from path of fire.
- Equipment should be thoroughly decontaminated after use.

FIRE/EXPLOSION HAZARD

- Combustible.
- Slight fire hazard when exposed to heat or flame.
- Heating may cause expansion or decomposition leading to violent rupture of containers.
- On combustion, may emit toxic fumes of carbon monoxide (CO).
- May emit acrid smoke.
- Mists containing combustible materials may be explosive.

continued...

PEPSIN 1:10000

GHS Safety Data Sheet

Version No:2.0

Page 4 of 11

Section 5 - FIRE FIGHTING MEASURES

Other combustion products include: nitrogen oxides (NO_x).
Avoid creating dust - may present dust explosion hazard. Dry dust can be electrostatically charged by turbulence, pneumatic transport, pouring, in exhaust ducts and during transport. Build-up of electrostatic charge may be prevented by grounding.

FIRE INCOMPATIBILITY

Avoid contamination with strong oxidising agents as ignition may result.

Personal Protective Equipment

Gas tight chemical resistant suit.
Limit exposure duration to 1 BA set 30 mins.

Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

MINOR SPILLS

Remove all ignition sources.

- Clean up all spills immediately.
- Avoid contact with skin and eyes.
- Wear protective clothing, gloves, safety glasses and dust respirator.
- Use dry clean up procedures and avoid generating dust.
- Sweep up or
- Vacuum up (consider explosion-proof machines designed to be grounded during storage and use).
- Place in clean drum then flush area with water.

MAJOR SPILLS

Remove all ignition sources.

- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- Control personal contact by using protective equipment and dust respirator.
- Prevent spillage from entering drains, sewers or water courses.
- Recover product wherever possible. Avoid generating dust.
- Sweep / shovel up.
- If required, wet with water to prevent dusting.
- Put residues in labelled plastic bags or other containers for disposal.
- Wash area down with large quantity of water and prevent runoff into drains.
- If contamination of drains or waterways occurs, advise emergency services.

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



+: May be stored together

O: May be stored together with specific preventions

X: Must not be stored together

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

continued...

PEPSIN 1:10000

GHS Safety Data Sheet

Version No:2.0

Page 5 of 11

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

Avoid generating and breathing dust.

- Limit all unnecessary personal contact.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- Keep containers securely sealed when not in use.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

SUITABLE CONTAINER

Glass container.

Plastic container.

- Check that containers are clearly labelled.
- Packaging as recommended by manufacturer.

STORAGE INCOMPATIBILITY

Avoid reaction with oxidising agents.

Avoid storage with acids.

STORAGE REQUIREMENTS

Store in a refrigerator at 4 deg.C.

Keep dry.

- Store in original containers.
- Keep containers securely sealed.
- No smoking, naked lights or ignition sources.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storing and handling recommendations.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

The following materials had no OELs on our records

- | | |
|-------------------|--|
| • pepsin: | CAS:9001- 75- 6 CAS:8048- 15- 5 CAS:9001- 76- 7
CAS:63- 42- 3 CAS:5989- 81- 1 CAS:14641- 93- 1
CAS:64044- 51- 5 CAS:10039- 26- 6 CAS:89466- 76- 2
CAS:36570- 80- 6 CAS:73824- 63- 2 CAS:1336- 90- 9
CAS:35396- 14- 6 CAS:200734- 90- 3 |
| • alpha- lactose: | CAS:57- 50- 1 CAS:75398- 84- 4 CAS:30027- 72- 6
CAS:47167- 52- 2 CAS:29253- 78- 9 CAS:12040- 73- 2
CAS:47185- 09- 1 CAS:47257- 91- 0 CAS:50857- 68- 6
CAS:8030- 20- 4 CAS:51909- 69- 4 CAS:8027- 47- 2
CAS:65545- 99- 5 CAS:29764- 06- 5
CAS:104242- 10- 6 CAS:786702- 63- 4 CAS:635681- 90- 2
CAS:220376- 22- 7 CAS:151756- 02- 4 |
| • sucrose: | |

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PEPSIN 1:10000

GHS Safety Data Sheet

Version No:2.0

Page 6 of 11

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

CAS:146187- 04- 4 CAS:146054- 35- 5 CAS:64533- 66- 0 CAS:131932- 12- 2 CAS:76056- 38- 7
CAS:100405- 08- 1 CAS:85456- 51- 5 CAS:78654- 77- 0 CAS:80165- 03- 3 CAS:86101- 30- 6
CAS:92004- 84- 7 CAS:87430- 66- 8

MATERIAL DATA

CEL Ceiling: 0.00006 mg/m³ (sensitiser)

(compare TLV-C subtilisins; proteolytic enzymes - 100% crystalline)

Exposure at or below the recommended TLV-C is thought to minimise the potential for allergic respiratory sensitization for the majority of immunologically normal persons and to minimise skin irritation and sensitization. TLV compliance is contingent on measurement of workplace air concentrations with a high volume sampler appropriate to capture these proteins for at least 60 minutes.

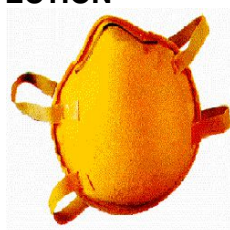
Although the recommended TLV-C is specifically prescribed for subtilisins, the recommendation (CEL) recognizes that all proteins have the potential to produce allergic responses. It should be noted, however, that proteins are typically poorly absorbed through the skin and after inhalation. Literature reports indicate that protein bioavailability, via the lung, is as low as 2%.

INGREDIENT DATA

SUCROSE:

Sucrose has little adverse effect on the lung and does not produce significant organic disease. Massive doses are necessary to produce systemic toxicity. A Finnish study concluded that exposures below 5 mg/m³ should protect dental health, provided worker ingestion of the product was controlled. This finding was prompted by concerns within the bakery and confectionery industry of a connection between sucrose exposure and dental caries.

PERSONAL PROTECTION



EYE

- Safety glasses with side shields; or as required,
- Chemical goggles.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].

HANDS/FEET

Wear general protective gloves: i.e. Disposable polythene gloves or Cotton gloves or Light weight rubber gloves, with Barrier cream preferably Safety footwear.

continued...

PEPSIN 1:10000

GHS Safety Data Sheet

Version No:2.0

Page 7 of 11

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

OTHER

- Overalls.
- Barrier cream
- Eyewash unit.

RESPIRATOR

Protection Factor	Half- Face Respirator	Full- Face Respirator	Powered Air Respirator
10 x ES	P1 Air- line*	- -	PAPR- P1 -
50 x ES	Air- line**	P2	PAPR- P2
100 x ES	-	P3	-
		Air- line*	-
100+ x ES	-	Air- line**	PAPR- P3

* - Negative pressure demand ** - Continuous flow.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.

For further information consult your Occupational Health and Safety Advisor.

ENGINEERING CONTROLS

Use in a well-ventilated area.

- Local exhaust ventilation is required where solids are handled as powders or crystals; even when particulates are relatively large, a certain proportion will be powdered by mutual friction.
- Exhaust ventilation should be designed to prevent accumulation and recirculation of particulates in the workplace.
- If in spite of local exhaust an adverse concentration of the substance in air could occur, respiratory protection should be considered. Such protection might consist of:
 - (a): particle dust respirators, if necessary, combined with an absorption cartridge;
 - (b): filter respirators with absorption cartridge or canister of the right type;
 - (c): fresh-air hoods or masks
- Build-up of electrostatic charge on the dust particle, may be prevented by bonding and grounding.
- Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explosion venting.

Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to efficiently remove the contaminant.

Type of Contaminant:
direct spray, spray painting in shallow booths,
drum filling, conveyer loading, crusher dusts,
gas discharge (active generation into zone of
rapid air motion)
grinding, abrasive blasting, tumbling, high
speed wheel generated dusts (released at high
initial velocity into zone of very high rapid
air motion).

Air Speed:
1- 2.5 m/s (200- 500 f/min.)

2.5- 10 m/s (500- 2000 f/min.)

Within each range the appropriate value depends on:

Lower end of the range
1: Room air currents minimal or favourable to
capture

Upper end of the range
1: Disturbing room air currents

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PEPSIN 1:10000

GHS Safety Data Sheet

Version No:2.0

Page 8 of 11

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

2: Contaminants of low toxicity or of nuisance value only

3: Intermittent, low production.

4: Large hood or large air mass in motion

2: Contaminants of high toxicity

3: High production, heavy use

4: Small hood- local control only

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 4-10 m/s (800-2000 f/min) for extraction of crusher dusts generated 2 metres distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

White to pale cream powder; soluble in water. No odour.

Converts protein into proteoses and peptones, converts starch into dextrins and sugars. Greatest activity is in dilute acid pH 1.8 media.

Denatured by heat, strong acids, pancreatin, salt.

Absorbs moisture from the air.

PHYSICAL PROPERTIES

Solid.

Molecular Weight: 34, 500

Melting Range (°C): Not available.

Solubility in water (g/L):

pH (1% solution): 4.6

Volatile Component (%vol): <1

Relative Vapour Density (air=1): Not available.

Lower Explosive Limit (%): Not applicable

Autoignition Temp (°C): Not applicable

State: Divided solid

Boiling Range (°C): Not available.

Specific Gravity (water=1): >1.0

pH (as supplied):

Vapour Pressure (kPa): Not available.

Evaporation Rate:

Flash Point (°C): Not applicable

Upper Explosive Limit (%): Not applicable

Decomposition Temp (°C): 100+

log Kow : -2.25- -3.67

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerisation will not occur.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

continued...

Section 11 - TOXICOLOGICAL INFORMATION

SWALLOWED

Although ingestion is not thought to produce harmful effects (as classified under EC Directives), the material may still be damaging to the health of the individual, following ingestion, especially where pre-existing organ (e.g liver, kidney) damage is evident. Present definitions of harmful or toxic substances are generally based on doses producing mortality rather than those producing morbidity (disease, ill-health). Gastrointestinal tract discomfort may produce nausea and vomiting. In an occupational setting however, ingestion of insignificant quantities is not thought to be cause for concern.

Considered an unlikely route of entry in commercial/industrial environments.

EYE

Evidence exists, or practical experience predicts, that the material may cause eye irritation in a substantial number of individuals and/or may produce significant ocular lesions which are present twenty-four hours or more after instillation into the eye(s) of experimental animals.

Repeated or prolonged eye contact may cause inflammation characterised by temporary redness (similar to windburn) of the conjunctiva (conjunctivitis); temporary impairment of vision and/or other transient eye damage/ulceration may occur.

The dust may produce eye discomfort causing transient smarting, blinking.

SKIN

Evidence exists, or practical experience predicts, that the material either produces inflammation of the skin in a substantial number of individuals following direct contact, and/or produces significant inflammation when applied to the healthy intact skin of animals, for up to four hours, such inflammation being present twenty-four hours or more after the end of the exposure period. Skin irritation may also be present after prolonged or repeated exposure; this may result in a form of contact dermatitis (nonallergic). The dermatitis is often characterised by skin redness (erythema) and swelling (oedema) which may progress to blistering (vesiculation), scaling and thickening of the epidermis. At the microscopic level there may be intercellular oedema of the spongy layer of the skin (spongiosis) and intracellular oedema of the epidermis.

Skin contact is not thought to have harmful health effects (as classified under EC Directives); the material may still produce health damage following entry through wounds, lesions or abrasions.

INHALED

Evidence shows, or practical experience predicts, that the material produces irritation of the respiratory system in a substantial number of individuals following inhalation. Although inhalation is not thought to produce harmful effects (as classified under EC Directives), the material may still produce health damage, especially where pre-existing organ (e.g liver, kidney) damage is evident. Present definitions of harmful or toxic substances are generally confined to doses producing mortality rather than those producing morbidity (disease, ill-health).

CHRONIC HEALTH EFFECTS

Practical evidence shows that inhalation of the material is capable of inducing a sensitisation reaction in a substantial number of individuals at a greater frequency than would be expected from the response of a normal population.

Pulmonary sensitisation, resulting in hyperactive airway dysfunction and pulmonary allergy may be accompanied by fatigue, malaise and aching. Significant symptoms of exposure may persist for extended periods, even after exposure ceases. Symptoms can be activated by a variety of nonspecific environmental stimuli such as automobile exhaust, perfumes and passive smoking.

There exists limited evidence that shows that skin contact with the material is capable either of inducing a sensitisation reaction in a significant number of individuals, and/or of producing positive response in experimental animals.

Principal routes of exposure are usually by inhalation of generated dust and skin contact.

PEPSIN 1:10000

GHS Safety Data Sheet

Version No:2.0

Page 10 of 11

Section 11 - TOXICOLOGICAL INFORMATION

Dusts produced by proteins such as enzymes, may attack the mucous membranes of the eyes and respiratory tract. These are capable, under certain conditions, of sensitising workers by virtue of the body's reaction to foreign proteins. Typical allergic asthma may be rapidly produced after exposure, with symptoms including spasm, wheezing and difficulty in breathing. Other symptoms may include chronic cough, sputum production, fever, myalgia, fatigue, airway obstruction; chest radiographs may show a generalised reticulonodular pattern, or basal or apical fibrosis. In addition there may be retrosternal discomfort, headache, stomach-ache and general malaise. Alternatively, some hours after exposure, general malaise and severe dyspnoea may develop giving a clinical picture similar to that of farmer's lung and allied conditions of extrinsic allergic alveolitis. No irritation is likely after brief skin contact, but prolonged contact in the presence of moisture may result in soreness, redness, inflammation and possible ulceration of the skin. Repeated attacks may lead to permanent impairment of lung function due to fibrotic change.

TOXICITY AND IRRITATION

No significant acute toxicological data identified in literature search.

ALPHA-LACTOSE:

TOXICITY

Oral (rat) LD50: >10000 mg/kg

Equivocal tumorigenic agent by RTECS criteria.

IRRITATION

Nil Reported

SUCROSE:

TOXICITY

Oral (rat) LD50: 29700 mg/kg

IRRITATION

Nil Reported

Section 12 - ECOLOGICAL INFORMATION

No data for pepsin.

Refer to data for ingredients, which follows:

SUCROSE:

log Pow (Verschueren 1983): - 3.67

ThOD: 1.12

log Kow : -2.25- -3.67

ThOD: 1.12

Section 13 - DISPOSAL CONSIDERATIONS

- Recycle wherever possible or consult manufacturer for recycling options.
- Dilute with water and flush to sewer.
- Decontaminate empty containers with water.
- Recycle containers if possible, or dispose of in authorised landfill.

Section 14 - TRANSPORTATION INFORMATION

HAZCHEM: None

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS:UN, IATA,
IMDG

continued...

PEPSIN 1:10000

GHS Safety Data Sheet

Version No:2.0

Page 11 of 11

Section 15 - REGULATORY INFORMATION

REGULATIONS

No regulations applicable

No data available for pepsin as CAS: 9001-75-6, CAS: 8048-15-5, CAS: 9001-76-7.

Section 16 - OTHER INFORMATION

INGREDIENTS WITH MULTIPLE CAS NUMBERS

Ingredient Name	CAS
pepsin	9001- 75- 6, 8048- 15- 5, 9001 - 76- 7
alpha- lactose	63- 42- 3, 5989- 81- 1, 14641 - 93- 1, 64044- 51- 5, 10039- 26- 6, 89466- 76- 2, 36570- 80- 6, 73824- 63- 2, 1336- 90- 9, 35396- 14- 6, 200734- 90- 3
sucrose	57- 50- 1, 75398- 84- 4, 30027 - 72- 6, 47167- 52- 2, 29253- 78- 9, 12040- 73- 2, 47185- 09- 1, 47257- 91- 0, 50857- 68- 6, 8030- 20- 4, 51909- 69- 4, 8027- 47- 2, 65545- 99- 5, 29764- 06- 5, 104242- 10- 6, 786702- 63- 4, 635681- 90- 2, 220376- 22- 7, 151756- 02- 4, 146187- 04- 4, 146054- 35- 5, 64533- 66- 0, 131932 - 12- 2, 76056- 38- 7, 100405- 08- 1, 85456- 51- 5, 78654- 77- 0, 80165- 03- 3, 86101- 30- 6, 92004- 84- 7, 87430- 66- 8

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