SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Mixture
Physical state : Liquid
Product name : AQUAPHOBE® CM
Product code : PP1-AQCM
Synonyms : CHLORINE TERMINATED POLYDIMETHYLSILOXANES
Chemical family : ORGANOSILOXANE

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

Use of the substance/mixture : Chemical intermediate

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

GELEST, INC.
11 East Steel Road
Morrisville, PA 19067
USA
T 215-547-1015 - F 215-547-2484 - (M-F): 8:00 AM - 5:30 PM EST
info@gelest.com - www.gelest.com

GELEST INC.
Fritz-Klatte-Strasse 8
65933 Frankfurt
Germany
T +49 (0) 69 3535106-500 - F +49 (0) 69 3535106-501 - (M-F): 8:00 AM - 4:00 PM
info@gelestd.de - www.gelestd.de

1.4. Emergency telephone number

Emergency number : CHEMTREC: 1-800-424-9300 (USA); +1 703-527-3887 (International)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]
Flammable liquids, Category 2 : H225
Skin corrosion/irritation, Category 1B : H314
Serious eye damage/eye irritation, Category 1 : H318

Adverse physicochemical, human health and environmental effects
No additional information available

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]
Hazard pictograms (CLP) :

<table>
<thead>
<tr>
<th>GHS02</th>
<th>GHS05</th>
</tr>
</thead>
</table>

Signal word (CLP) : Danger
Hazardous ingredients : 1,3-Dichlorotetramethyldisiloxane; 1,5-Dichloro-1,1,3,3,5,5-hexamethyltrisiloxane; 1,7-Dichlorooctamethyltetrasiloxane
Hazard statements (CLP) : H225 - Highly flammable liquid and vapour.
H314 - Causes severe skin burns and eye damage.
Precautionary statements (CLP):
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P240 - Ground/bond container and receiving equipment.
P260 - Do not breathe vapours.
P264 - Wash hands thoroughly after handling.
P310 - Immediately call a POISON CENTER or doctor/physician

EUH-statements:
EUH014 - Reacts violently with water.

2.3. Other hazards:
Other hazards not contributing to the classification:
Hydrogen chloride may be formed by reaction with water and moisture in air. The US OSHA PEL (TWA) for hydrogen chloride is 5 ppm.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>Classification according to Regulation (EC) No. 1272/2008 [CLP]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,5-Dichloro-1,1,3,3,5,5-hexamethyltrisiloxane</td>
<td>(CAS-No.) 3582-71-6 (EC-No.) 222-707-5</td>
<td>30 - 60</td>
<td>Skin Corr. 1B, H314 Eye Dam. 1, H318</td>
</tr>
<tr>
<td>1,3-Dichlorotetramethyldisiloxane</td>
<td>(CAS-No.) 2401-73-2 (EC-No.) 219-278-1</td>
<td>20 - 50</td>
<td>Flam. Liq. 2, H225 Skin Corr. 1B, H314 Eye Dam. 1, H318</td>
</tr>
<tr>
<td>1,7-Dichloroctamethyltetrasiloxane</td>
<td>(CAS-No.) 2474-02-4 (EC-No.) 219-597-6</td>
<td>20 - 50</td>
<td>Skin Corr. 1B, H314 Eye Dam. 1, H318</td>
</tr>
</tbody>
</table>

Full text of H-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general:
Remove contaminated clothing and shoes. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). If possible show this sheet; if not available show packaging or label. IF exposed or concerned: Get medical advice/attention.

First-aid measures after inhalation:
Remove person to fresh air and keep comfortable for breathing. If you feel unwell, seek medical advice.

First-aid measures after skin contact:
Wash with plenty of water/… Get immediate medical advice/attention.

First-aid measures after eye contact:
Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice/attention.

First-aid measures after ingestion:
Never give anything by mouth to an unconscious person. Get medical advice/attention.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects:
Causes severe skin burns and eye damage.

Symptoms/effects after inhalation:
May cause irritation to the respiratory tract.

Symptoms/effects after skin contact:
Causes (severe) skin burns.

Symptoms/effects after eye contact:
Causes serious eye damage.

Symptoms/effects after ingestion:
May be harmful if swallowed.

4.3. Indication of any immediate medical attention and special treatment needed
No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media:
Suitable extinguishing media:

Unsuitable extinguishing media:
Water.

5.2. Special hazards arising from the substance or mixture:

Fire hazard:
Highly flammable liquid and vapour. Irritating fumes of hydrogen chloride and organic acid vapors may develop when material is exposed to water or open flame.

Explosion hazard:
May form flammable/explosive vapour-air mixture.
5.3. Advice for firefighters

Firefighting instructions: Use water spray to cool exposed surfaces. Exercise caution when fighting any chemical fire. Do not enter fire area without proper protective equipment, including respiratory protection. Avoid all eye and skin contact and do not breathe vapour and mist.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures: Eliminate every possible source of ignition. Use special care to avoid static electric charges.

6.1.1. For non-emergency personnel

Protective equipment: Wear protective equipment as described in Section 8.

Emergency procedures: Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment: Do not attempt to take action without suitable protective equipment. Equip cleanup crew with proper protection. For further information refer to section 8: “Exposure controls/personal protection”.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

For containment: Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.

Methods for cleaning up: Clean up any spills as soon as possible, using an absorbent material to collect it. Sweep or shovel spills into appropriate container for disposal. Use only non-sparking tools.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed: Handle empty containers with care because residual vapours are flammable. Do not allow contact with water.

Precautions for safe handling: Avoid all eye and skin contact and do not breathe vapour and mist. Provide good ventilation in process area to prevent formation of vapour. Ground/bond container and receiving equipment. Take precautionary measures against static discharge. Use only non-sparking tools.

Hygiene measures: Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures: Proper grounding procedures to avoid static electricity should be followed. Use explosion-proof electrical equipment.

Storage conditions: Keep container tightly closed. Keep in a cool place. Store locked up.


Storage area: Store in a well-ventilated place. Store away from heat.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No additional information available

8.2. Exposure controls

Appropriate engineering controls:

Provide local exhaust or general room ventilation.

Personal protective equipment:

Avoid all unnecessary exposure. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

Hand protection:

Neoprene or nitrile rubber gloves

Eye protection:

Chemical goggles or face shield. Contact lenses should not be worn
Skin and body protection:
Wear suitable protective clothing

Respiratory protection:
Where exposure through inhalation may occur from use, respiratory protection equipment is recommended. NIOSH-certified combination organic vapor/acid gas (yellow cartridge) respirator.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Liquid</td>
</tr>
<tr>
<td>Appearance</td>
<td>Liquid.</td>
</tr>
<tr>
<td>Molecular mass</td>
<td>203 - 353 g/mol</td>
</tr>
<tr>
<td>Colour</td>
<td>Straw. Amber.</td>
</tr>
<tr>
<td>Odour</td>
<td>Acrid.</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>Refractive index</td>
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</tr>
<tr>
<td>pH</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative evaporation rate (butylacetate=1)</td>
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</tr>
<tr>
<td>Melting point</td>
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</tr>
<tr>
<td>Freezing point</td>
<td>&lt; -20 °C</td>
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<tr>
<td>Boiling point</td>
<td>138 °C initial</td>
</tr>
<tr>
<td>Flash point</td>
<td>15 °C</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Highly flammable liquid and vapour.</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>8 mm Hg @ 25°C</td>
</tr>
<tr>
<td>Relative vapour density at 20 °C</td>
<td>&gt; 1</td>
</tr>
<tr>
<td>Relative density</td>
<td>0.99 - 1.01</td>
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<tr>
<td>Solubility</td>
<td>Reacts with water</td>
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<td>Log Pow</td>
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</tr>
<tr>
<td>Log Kow</td>
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</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Oxidising properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosive limits</td>
<td>No data available</td>
</tr>
</tbody>
</table>

9.2. Other information
No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity
No additional information available

10.2. Chemical stability
Stable in sealed containers stored under a dry inert atmosphere.

10.3. Possibility of hazardous reactions
Reacts with water and moisture in air, liberating hydrogen chloride.

10.4. Conditions to avoid
Heat. Open flame. Sparks.

10.5. Incompatible materials

10.6. Hazardous decomposition products

SECTION 11: Toxicological information

11.1. Information on toxicological effects
Acute toxicity: Not classified
Skin corrosion/irritation: Causes severe skin burns and eye damage.
Serious eye damage/irritation: Causes serious eye damage.
Respiratory or skin sensitisation: Not classified
Germ cell mutagenicity: Not classified
Carcinogenicity: Not classified
Reproductive toxicity: Not classified
STOT-single exposure: Not classified
STOT-repeated exposure: Not classified
Aspiration hazard: Not classified
Symptoms/effects after inhalation: May cause irritation to the respiratory tract.
Symptoms/effects after skin contact: Causes (severe) skin burns.
Symptoms/effects after eye contact: Causes serious eye damage.
Symptoms/effects after ingestion: May be harmful if swallowed.
Reason for classification: Expert judgment

SECTION 12: Ecological information

12.1. Toxicity
Acute aquatic toxicity: Not classified
Chronic aquatic toxicity: Not classified

12.2. Persistence and degradability
No additional information available

12.3. Bioaccumulative potential
No additional information available

12.4. Mobility in soil
No additional information available

12.5. Results of PBT and vPvB assessment
No additional information available

12.6. Other adverse effects
Other adverse effects: This substance may be hazardous to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods
Sewage disposal recommendations: Do not dispose of waste into sewer.
Product/Packaging disposal recommendations: Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to licensed waste disposal facility.
Additional information: Handle empty containers with care because residual vapours are flammable.
Ecology - waste materials: Avoid release to the environment.

SECTION 14: Transport information

14.1. UN number
In accordance with ADR / RID / IMDG / IATA / ADN

14.1. UN number
UN-No. (ADR) : 2924
UN-No. (IMDG) : 2924
UN-No. (IATA) : 2924
UN-No. (ADN) : 2924
UN-No. (RID) : 2924

14.2. UN proper shipping name
Proper Shipping Name (ADR) : FLAMMABLE LIQUID, CORROSIVE, N.O.S.
Proper Shipping Name (IMDG) : FLAMMABLE LIQUID, CORROSIVE, N.O.S.
Proper Shipping Name (IATA) : Flammable liquid, corrosive, n.o.s.
Proper Shipping Name (ADN) : FLAMMABLE LIQUID, CORROSIVE, N.O.S.
Proper Shipping Name (RID) : FLAMMABLE LIQUID, CORROSIVE, N.O.S.
Transport document description (ADR) : UN 2924 FLAMMABLE LIQUID, CORROSIVE, N.O.S. (CHLORINE TERMINATED POLYDIMETHYSILOXANES), 3 (B), II, (D/E)
**14.3. Transport hazard class(es)**

<table>
<thead>
<tr>
<th>ADR</th>
<th>Transport hazard class(es) (ADR)</th>
<th>3 (8)</th>
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</thead>
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<td>Danger labels (ADR)</td>
<td>3, 8</td>
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<tr>
<td>IMDG</td>
<td>Transport hazard class(es) (IMDG)</td>
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<tr>
<td></td>
<td>Danger labels (IMDG)</td>
<td>3, 8</td>
</tr>
<tr>
<td>IATA</td>
<td>Transport hazard class(es) (IATA)</td>
<td>3 (8)</td>
</tr>
<tr>
<td></td>
<td>Hazard labels (IATA)</td>
<td>3, 8</td>
</tr>
<tr>
<td>ADN</td>
<td>Transport hazard class(es) (ADN)</td>
<td>3 (8)</td>
</tr>
<tr>
<td></td>
<td>Danger labels (ADN)</td>
<td>3, 8</td>
</tr>
<tr>
<td>RID</td>
<td>Transport hazard class(es) (RID)</td>
<td>3 (8)</td>
</tr>
<tr>
<td></td>
<td>Danger labels (RID)</td>
<td>3, 8</td>
</tr>
</tbody>
</table>

**14.4. Packing group**

<table>
<thead>
<tr>
<th>ADR</th>
<th>Packing group (ADR)</th>
<th>II</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMDG</td>
<td>Packing group (IMDG)</td>
<td>II</td>
</tr>
</tbody>
</table>

**Transport document description (IMDG)**: UN 2924 FLAMMABLE LIQUID, CORROSIVE, N.O.S. (CHLORINE TERMINATED POLYDIETHYLSILOXANES), 3 (8), II

**Transport document description (IATA)**: UN 2924 Flammable liquid, corrosive, n.o.s. (CHLORINE TERMINATED POLYDIETHYLSILOXANES), 3 (8), II

**Transport document description (ADN)**: UN 2924 FLAMMABLE LIQUID, CORROSIVE, N.O.S. (CHLORINE TERMINATED POLYDIETHYLSILOXANES), 3 (8), II

**Transport document description (RID)**: UN 2924 FLAMMABLE LIQUID, CORROSIVE, N.O.S. (CHLORINE TERMINATED POLYDIETHYLSILOXANES), 3 (8), II
14.5. Environmental hazards

Dangerous for the environment: No
Marine pollutant: No
Other information: No supplementary information available

14.6. Special precautions for user

- Overland transport
  Classification code (ADR): FC
  Special provisions (ADR): 274
  Limited quantities (ADR): 1l
  Excepted quantities (ADR): E2
  Packing instructions (ADR): P001, IBC02
  Mixed packing provisions (ADR): MP19
  Portable tank and bulk container instructions (ADR): T11
  Tank code (ADR): L4BH
  Vehicle for tank carriage: FL
  Transport category (ADR): 2
  Special provisions for carriage - Operation (ADR): S2, S20
  Hazard identification number (Kemler No.): 338
  Orange plates: 338
  Tunnel restriction code (ADR): D/E

- Transport by sea
  Special provisions (IMDG): 274
  Limited quantities (IMDG): 1 L
  Excepted quantities (IMDG): E2
  Packing instructions (IMDG): P001
  IBC packing instructions (IMDG): IBC02
  Tank instructions (IMDG): T11
  Tank special provisions (IMDG): TP2, TP27
  EmS-No. (Fire): F-E
  EmS-No. (Spillage): S-C
  Stowage category (IMDG): B
  Stowage and handling (IMDG): SW2
  Properties and observations (IMDG): Causes burns to skin, eyes and mucous membranes.

- Air transport
  PCA Excepted quantities (IATA): E2
  PCA Limited quantities (IATA): Y340
  PCA limited quantity max net quantity (IATA): 0.5L
  PCA packing instructions (IATA): 352
  PCA max net quantity (IATA): 1L
  CAO packing instructions (IATA): 363
  CAO max net quantity (IATA): 5L
  Special provisions (IATA): A3
  ERG code (IATA): 3CH

- Inland waterway transport
  Classification code (ADN): FC
14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU-Regulations

Contains no REACH substances with Annex XVII restrictions
Contains no substance on the REACH candidate list
Contains no REACH Annex XIV substances
Contains no REACH Annex XIV substances

15.1.2. National regulations

Germany
Reference to AwSV : Water hazard class (WGK) 3, Highly hazardous to water (Classification according to AwSV, Annex 1)

Netherlands
SZW-list van kankerverwekkende stoffen : None of the components are listed
SZW-list van mutagene stoffen : None of the components are listed
NIET-limiteelie lijst van voor de voorplanting giftige stoffen – Borstvoeding : None of the components are listed
NIET-limiteelie lijst van voor de voorplanting giftige stoffen – Vruchtbaarheid : None of the components are listed
NIET-limiteelie lijst van voor de voorplanting giftige stoffen – Ontwikkeling : None of the components are listed

Denmark
Class for fire hazard : Class I-1
Store unit : 1 liter
Classification remarks : F <Flam. Liq. 2>; Emergency management guidelines for the storage of flammable liquids must be followed
Danish National Regulations: Young people below the age of 18 years are not allowed to use the product

15.2. Chemical safety assessment
No additional information available

SECTION 16: Other information

Abbreviations and acronyms:
Abbreviations: ND: Not Determined, No Data; NA: Not Applicable; LD: Lethal Dose; LC: Lethal Concentration; ATE: Acute Toxicity Estimates; H: hour; °: °C unless otherwise stated; mm: millimeters Hg, torr; PEL: permissible exposure level; TWA: time weighted average; TLV: threshold limit value; TG: Test Guideline; NIOSH: National Institute for Occupational Safety and Health; IARC: International Agency for Research on Cancer; NTP: National Toxicology Program; HMIS: Hazardous Material Information System; CAS No.: Chemical Abstract Service Registration Number; EC No.: European Commission Registration Number; EC Index No.: European Commission Index Number; OECD: The Organisation for Economic Co-operation and Development; GHS: The Globally Harmonized System of Classification and Labelling; APF: Assigned Protection Factor

Other information: Prepared by safety and environmental affairs.

Full text of H- and EUH-statements:

| Eye Dam. 1 | Serious eye damage/eye irritation, Category 1 |
| Flam. Liq. 2 | Flammable liquids, Category 2 |
| Skin Corr. 1B | Skin corrosion/irritation, Category 1B |
| H225 | Highly flammable liquid and vapour. |
| H314 | Causes severe skin burns and eye damage. |
| H318 | Causes serious eye damage. |
| EUH014 | Reacts violently with water. |

SDS EU (REACH Annex II) - Custom

The information contained in this document has been gathered from reference materials and/or Gelest, Inc. test data and is to the best knowledge and belief of Gelest, Inc. accurate and reliable. Such information is offered solely for your consideration, investigation and verification. It is not suggested or guaranteed that the hazard precautions or procedures described are the only ones which exist. Gelest, Inc. makes no warranties, express or implied, with respect to the use of such information and assumes no responsibility therefore. Information on this safety data sheet is not intended to constitute a basis for product specifications.

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Aquaphobe® CM

Hydrophobic Treatments For Glass and Ceramics

Features: Provides water-repellent silicone, molecular films with high durability for glass and vitreous surfaces. Acidic byproducts remove surface alkali from soda-lime glass substrates.

Applications:
- laboratory glassware - improves drainage, reduce breakage.
- optical fibers - reduces moisture adsorption and surface fracture.
- clinical analysis - reduces protein and lipid adsorption. (Not for food or drug use.)
- glass plate and glazing - provides high water contact angle, facilitate forced air blow-off.

Capsular Description: Thickness Cure Hardness Type
- molecular air/moisture low 100% active 1-part

**Aquaphobe® CM** chlorinated polydimethylsiloxane

Description
Aquaphobe® CM is a chlorine terminated polydimethylsiloxane oligomer. The chlorines react with hydroxy and silanol groups of glass, siliceous surfaces and other metal oxide surfaces to form a chemically bound polydimethylsiloxane “siliconized” surface.

Properties of Treated Surfaces
(Values reported are for glass slides dipped in 1% solutions of Aquaphobe® CM and cured at 100°C.)

- critical surface tension
  - untreated $\gamma_c = 78$ dynes/cm
  - treated (hydrophobic) $\gamma_c = 25$ dynes/cm

Typical Properties of Aquaphobe™ CM
- % active 100%
- flashpoint 15°C
- specific gravity 0.99-1.01
- viscosity 3-6 cSt.

Standard Packaging
PP1-AQCM Aquaphobe® CM
- 100g/$26.00
- 1kg/$196.00
- 18kg/commercial package

Cautions
Aquaphobe® is a mixture of corrosive chlorinated polysiloxanes. Avoid skin and eye contact. Use in a well ventilated area. Wear gloves and safety glasses.

Application Methods
1. Aquaphobe® coatings are most frequently applied as a 2-10% solution in dry solvents such as hexane, methylene chloride or toluene. Articles are dipped or wiped. Articles can be cured by air drying for 24 hours at conditions of <75% relative humidity. Heat curing at 110°C for 15-20 minutes in an exhausted oven provides the most effective surface treatment.
2. A master batch of Aquaphobe® in isopropanol or ethanol is desirable when large areas are to be treated and the acidic byproducts are difficult to handle. A 0.5-2.0% solution in isopropanol is prepared in a well-ventilated area. Hydrogen chloride fumes issue during this stage. Acidic character is reduced for subsequent surface treatment.

Over treatment results in a cloudy surface. The concentration should be reduced to eliminate this effect.