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

1.1 Product Identifier

Trade name: **Flusol Forte**

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

Product category: PC35 Washing and cleaning products (including solvent based products)

Application: Professional use only

1.3 Details of the supplier of the safety data sheet

Manufacturer / Importer / Supplier:
Houweling Horticulture bv
Klappolder 104
2665 LP Bleiswijk
Nederland
tel +31 88 1210 400
horticulture@houweling.nl
houweling.com

Further information obtainable from: Product safety department

1.4 Emergency telephone number

During office hours: +31 88 1210 400

SECTION 2* Hazards identification

2.1 Classification of the substance or mixture

Description: Mixture

Classification according to Regulation (EC) No 1272/2008

Acute Tox. 2	H300	Fatal if swallowed
Acute Tox. 1	H310	Fatal in contact with skin
Skin Corr. 1A	H314	Causes severe skin burns and eye damage
Eye Dam. 1	H318	Causes serious eye damage

2.2 Label elements

The product is classified and labelled according to the CLP Regulation.

Labelling according to Regulation (EC) No 1272/2008

Hazard pictograms: GHS05, GHS06

Signal word: Danger

Hazard-determining components of labelling

Hydrofluoric acid

Hazard statements

H300+H310	Fatal if swallowed or in contact with skin.
H314	Causes severe skin burns and eye damage.

Precautionary statements

P260	Do not breathe dusts or mists.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P310	IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P405	Store locked up.

P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

2.3 Other hazards

There is no additional information available.

Results of PBT and vPvB assessment

PBT:	There is no additional information available.
vPvB:	There is no additional information available.

SECTION 3 Composition/information on ingredients

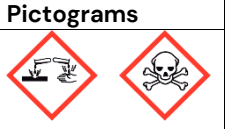
3.1 Chemical characterisation: Substances

Not applicable.

3.2 Chemical characterisation: Mixtures

Description: Mixture of substances listed below, possibly with non-hazardous additions.

Dangerous components

Component	Identification	Classification	Conc.%	Pictograms
Hydrofluoric acid	CAS: 7664-39-3 EINECS: 231-634-8 Reg.: 01-2119458860-33	Acute Tox. 2, H300 Acute Tox. 1, H310 Acute Tox. 2, H330 Met. Corr. 1, H290 Skin Corr. 1A, H314 Eye Dam. 1, H318	10 - 25%	

Additional information

For the wording of the listed hazard phrases see SECTION 16.

SECTION 4 First aid measures

4.1 Description of first aid measures

General information

Immediately remove any clothing soiled by the product.
Remove breathing equipment only after contaminated clothing have been completely removed.
In case of irregular breathing or respiratory arrest provide artificial respiration.
Persons, providing assistance, should avoid exposure and danger for themselves or others.

After inhalation

Remove the victim into fresh air, and keep at rest in a position that facilitates breathing.
Supply fresh air or oxygen; call for doctor.
In case of unconsciousness place patient stably in side position for transportation.

After skin contact

Rub in Ca-gluconate solution or Ca-gluconate gel immediately.
If skin irritation continues, consult a doctor.

After eye contact

Seek medical treatment immediately.
If possible, remove contact lenses.
Rinse opened eye for several minutes (>15) under running water. Then consult a doctor.

After ingestion

Do not induce vomiting; call for medical help immediately.
Drink plenty of water and provide fresh air. Call for a doctor immediately.

4.2 Most important symptoms and effects, both acute and delayed

There is no additional information available.

4.3 Indication of any immediate medical attention and special treatment needed

There is no additional information available.

SECTION 5 Firefighting measures

5.1 Extinguishing media

Suitable extinguishing agents
All extinguishing media are possible.
Use fire extinguishing methods suitable to surrounding conditions.

Unsuitable extinguishing media
There is no additional information available.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture
There is no additional information available.

Hazardous combustion products
Formation of toxic gases is possible during heating or in case of fire: Hydrogen fluoride (HF).

5.3 Advice for firefighters

Special precautions
There is no additional information available.

Protective equipment
Mouth respiratory protective device.
Wear self-contained respiratory protective device.

SECTION 6 Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Wear protective equipment. Keep unprotected persons away.
Avoid breathing vapor and contact with eyes, skin and clothing.
Ensure adequate ventilation
For emergency responders: Use personal protection recommended in SECTION 8.

6.2 Environmental precautions

Remainder dilute with plenty of water.
Do not allow to enter sewers/surface/ground water.

6.3 Methods and material for containment and cleaning up

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Use neutralising agent.
Dispose contaminated material as waste according to SECTION 13.
Ensure adequate ventilation.

6.4 Reference to other sections

For information on safe handling: see SECTION 7.
For information on personal protection equipment: see SECTION 8.
For disposal information: see SECTION 13.

SECTION 7 Handling and storage

7.1 Precautions for safe handling

Handle in accordance with good industrial hygiene and safety procedures.
Ensure good ventilation/exhaustion at the workplace.
Open and handle receptacle with care.
Avoid inhalation of vapors and contact with eyes, skin and clothing.
Prevent formation of aerosols.

Information about fire and explosion protection
Keep respiratory protective device available.

7.2 Conditions for safe storage, including any incompatibilities

Storage must comply with the local regulations.

Requirements to be met by storerooms and tanks
Keep only in the original container tightly closed.
All hazardous products must be placed above a sump pallet.

Information about storage in one common storage facility
Do not store together with alkalis (caustic solutions).

Further information about storage conditions
Keep container tightly sealed.

7.3 Specific end use(s)
There is no additional information available.

SECTION 8* Exposure controls/personal protection

Additional information about design of technical facilities
No further data; see SECTION 7.

8.1 Control parameters

Ingredients with limit values that require monitoring at the workplace

7664-39-3 Hydrofluoric acid	
WEL (Great Britain)	Short-term value: 2.5 mg/m³, 3 ppm Long-term value: 1.5 mg/m³, 1.8 ppm
IOELV (EU)	Short-term value: 2.5 mg/m³, 3 ppm Long-term value: 1.5 mg/m³, 1.8 ppm

DNEL

7664-39-3 Hydrofluoric acid				
Inhalative	Acute	Systemic	2,5 mg/m3	Worker
Inhalative	Long-term	Local	0,0015 mg/m3	Worker
Inhalative	Long-term	Systemic	1,5 mg/m3	Worker
Inhalative	Acute	Local	2,5 mg/m3	Worker

PNEC

7664-39-3 Hydrofluoric acid		
Fresh water	0,9 mg/l	
Marine water	0,9 mg/l	
Sewage Treatment Plant	51 mg/l	
Soil	11 mg/kg	

Additional information
The lists valid during the making were used as basis.

8.2 Exposure controls

Personal protective equipment

General protective and hygienic measures
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing
Wash hands before breaks and at the end of work.
Store protective clothing separately.
Avoid contact with the eyes and skin.

Respiratory protection
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.
Filter type E.

Protection of hands

Protective gloves

Use protective gloves to EN ISO 374-1.
Only use chemical-protective gloves with CE-labelling of category III.
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Material of gloves
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
Gloves made of Nitrile rubber, NBR.
Thickness: 18 mil / 0.46 mm.

Penetration time of glove material
Permeation: Breakthough time > 240 min.
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

Eye protection/Face protection

Tightly sealed goggles

Body protection
Protective work clothing.
Acid resistant protective clothing.

Limitation and supervision of exposure into the environment
Do not allow to enter in surface water or soil.

Risk management measures
See information of local authorities.

SECTION 9* Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Form:	Liquid.
Colour:	Pink.
Odour:	Pungent.
Odour threshold:	Not determined.

Other physical and chemical parameters

pH-value at 20 °C:	1.9
Change in condition	
• Melting point/freezing point:	Not determined.
• Initial boiling point and boiling range:	> 100 °C
Flash point:	Not determined.
Flammability (solid, gas):	Not determined.
Ignition temperature:	Not determined.
Decomposition temperature:	Not determined.
Auto-ignition temperature:	Product is not self-igniting.
Explosive properties:	Product does not present an explosion hazard.

Explosion limits

• Lower explosion limit (LEL):	Not determined.
• Upper explosion limit (UEL):	Not determined.
Vapour pressure at 20 °C:	40 hPa
Density at 20 °C:	1.055 g/cm³
Relative density:	Not determined.
Vapour density:	Not determined.
Evaporation rate:	Not determined.
Solubility in/miscibility with water:	Fully miscible.
Partition coefficient (n-octanol/water):	Not determined.
Viscosity	
• Dynamic:	Not determined.
• Kinematic:	Not determined.
Solvent content VOC (EU 1999/13/EC):	Not determined.

9.2 Other information
There is no additional information available.

SECTION 10* Stability and reactivity

10.1 Reactivity
Reacts violently with bases.

10.2 Chemical stability

Thermal decomposition / conditions to be avoided
No decomposition if used according to specifications.

10.3 Possibility of hazardous reactions
No dangerous reactions known.

10.4 Conditions to avoid
There is no additional information available.

10.5 Incompatible materials
Metals.
Strong bases.
The product affects glass and other silicon compounds.

10.6 Hazardous decomposition products
Hydrogen fluoride.

SECTION 11* Toxicological information

11.1 Information on toxicological effects

Acute toxicity
Fatal if swallowed or in contact with skin.

LD/LC50 values relevant for classification

ATE (Acute Toxicity Estimates)		
Oral	LD50	29 mg/kg (rat)
Dermal	LD50	29 mg/kg (rabbit)

7664-39-3 Hydrofluoric acid		
Oral	LD50	6.67 mg/kg (rat)
Dermal	LD50	6.67 mg/kg (rabbit)
Inhalative	LD50/1h	1,300 ppm (rat)

Primary irritant effect

- **Skin corrosion/irritation**
  Causes severe skin burns and eye damage.
- **Serious eye damage/irritation**
  Causes serious eye damage.
- **Respiratory or skin sensitization**
  Based on available data, the classification criteria are not met.

CMR effects (carcinogenic, mutagenic and reprotoxic)

- **Germ cell mutagenicity**
  Based on available data, the classification criteria are not met.
- **Carcinogenicity**
  Based on available data, the classification criteria are not met.
- **Reprotoxicity**
  Based on available data, the classification criteria are not met.
- **Specific target organ toxicity from single exposure**
  Based on available data, the classification criteria are not met.
- **Specific target organ toxicity from repeated exposure**
  Based on available data, the classification criteria are not met.

Aspiration hazard
Based on available data, the classification criteria are not met.

SECTION 12* Ecological information

12.1 Toxicity

Aquatic toxicity

7664-39-3 Hydrofluoric acid	
Bioconcentrationfactor (BCF)	53-58
LC50/48h	>500 mg/l (Leuciscus idus)
EC50/96h	48 mg/l (Daphnia magna)

12.2 Persistence and degradability
There is no additional information available.

12.3 Bioaccumulative potential
There is no additional information available.

12.4 Mobility in soil
There is no additional information available.

Additional ecological information
Must not reach sewage water or drainage ditch undiluted or unneutralised.
Rinse off of bigger amounts into drains or the aquatic environment may lead to decreased pH-values. A low pH-value harms aquatic organisms. In the dilution of the use-level the pH-value is considerably increased, so that after the use of the product the aqueous waste, emptied into drains, is only low water-dangerous.
Do not allow product to reach ground water, water course or sewage system.
Danger to drinking water if even small quantities leak into the ground.

12.5 Results of PBT and vPvB assessment
There is no additional information available.

12.6 Other adverse effects
There is no additional information available.

SECTION 13 Disposal considerations

13.1 Waste treatment methods

Product

Recommendation	Must not be disposed together with household garbage. Do not allow product to reach sewage system.

Contaminated packaging

Recommendation	Disposal must be made according to official Regulations.
Recommended cleansing agents	Water, if necessary together with cleansing agents.

SECTION 14* Transport information

14.1 UN-number: UN1790

14.2 UN proper shipping name: HYDROFLUORIC ACID

14.3 Transport hazard class(es):

Class: 8 Corrosive substances

14.4 Packing group: II

14.5 Environmental hazards: None.

14.6 Special precautions for user: Warning: Corrosive substances

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code: Not applicable.

14.8 Information for each of the UN Model Regulations

Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN)

UN-number:	UN1790
Proper shipping name:	1790 HYDROFLUORIC ACID
Particulars in the transport document:	UN1790, HYDROFLUORIC ACID, 8 (6.1), II
Class:	8 Corrosive substances
Classification code:	CT1
Packing group:	II
Danger label(s):	8 + 6.1

Excepted quantities (EQ):	E2
Limited quantities (LQ):	1L
Transport category (TC):	2
Tunnel restriction code (TRC):	E
Hazard Identification No:	86

International Maritime Dangerous Goods Code (IMDG)

UN-number:	UN1790
Proper shipping name:	HYDROFLUORIC ACID

Particulars in the transport document:	UN 1790 HYDROFLUORIC ACID, 8 (6.1), II
Class:	8 Corrosive substances
Marine pollutant:	No
Packing group:	II
Danger label(s):	8 + 6.1

Excepted quantities (EQ):	E2
Limited quantities (LQ):	1L
EmS:	F-A,S-B
Stowage category:	D
Stowage code:	SW1 Protected from sources of heat. SW2 Clear of living quarters.
Segregation group:	Strong acids.

International Civil Aviation Organization (ICAO-IATA/DGR)

UN-number:	UN1790
Proper shipping name:	HYDROFLUORIC ACID
Particulars in the transport document:	UN 1790 HYDROFLUORIC ACID, 8 (6.1), II
Class:	8 Corrosive substances
Packing group:	II
Danger label(s):	8 + 6.1

Excepted quantities (EQ):	E2
Limited quantities (LQ):	0,5L

SECTION 15 Regulatory information

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

International Regulations

Directive 2012/18/EU

- **Named dangerous substances - ANNEX I**
  None of the ingredients are listed.
- **Seveso category**
  H1 ACUTE TOXIC
- **Qualifying quantity (tonnes) for the application of lower-tier requirements**
  5 t
- **Qualifying quantity (tonnes) for the application of upper-tier requirements**
  20 t

- **Regulation (EC) No 1907/2006 - ANNEX XVII**
  Conditions of restriction: 3

National Regulations

- **Water hazard class:**
  -

15.2 Chemical safety assessment
A chemical safety assessment has not been carried out.

SECTION 16 Other information

Relevant phrases

H290	May be corrosive to metals.
H300	Fatal if swallowed.
H310	Fatal in contact with skin.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H330	Fatal if inhaled.

Department issuing SDS
Environment protection department

Abbreviations and acronyms

Acute Tox. 1	Acute toxicity, Hazard Category 1
Acute Tox. 2	Acute toxicity, Hazard Category 2
ADN	Accord Européen relatif au Transport International des Marchandises Dangereuses par voie de Navigation intérieures (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways)
ADR	Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
CAS	Chemical Abstracts Service (division of the American Chemical Society)
DNEL	Derived No-Effect Level (REACH)
EC50	Effective Concentration, 50 percent
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
Eye Dam. 1	Serious eye damage/eye irritation, Hazard Category 1
GHS	Globally Harmonised System of Classification and Labelling of Chemicals
IATA	International Air Transport Association
IMDG	International Maritime Code for Dangerous Goods
IOELVs	Indicative Occupational Exposure Limit Values
LC50	Lethal concentration, 50 percent
LD50	Lethal dose, 50 percent
Met. Corr.1	Corrosive to metals, Hazard Category 1
OEL	Occupational Exposure Limit
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No-Effect Concentration (REACH)
RID	Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
Skin Corr. 1A	Skin corrosion/irritation, Hazard Category 1A
STEL	Short Term Exposure Limit
VOC	Volatile Organic Compounds (USA, EU)
vPvB	very Persistent and very Bioaccumulative
WEL	Workplace Exposure Limits

References
This information is based on the current available data (suppliers of raw materials, chemistry maps, Annex VI).
See also the internet site: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database.
Based on Regulations - 1907/2006/EC, 272/2008/EC and directive 2012/18/EU.

Date of composition
23/02/2015
Version date

30/06/2020

Indication of changes
Revisions were made in sections marked with *.

Disclaimer
The information provided in this Material Safety Data Sheet has been prepared with the utmost care and corresponds to the most recent information available to the supplier on the date of publication mentioned in the header of every page. The contents of this Material Safety Data Sheet should not be considered as a guarantee for certain product properties or fitness for particular purposes. It is the obligation of the user to determine whether the product is suitable for the specific purpose, intended use and the method of application. This Safety Data Sheet only relates to the product described and does not apply to any not defined use or the use of the product in combination with other materials, substances or products. It is the responsibility of the user to use and handle the product with care and to comply with all applicable laws and Regulations. The supplier accepts no liability for direct or indirect damages resulting from improper use of this Material Safety Data Sheet and / or the products described therein.