



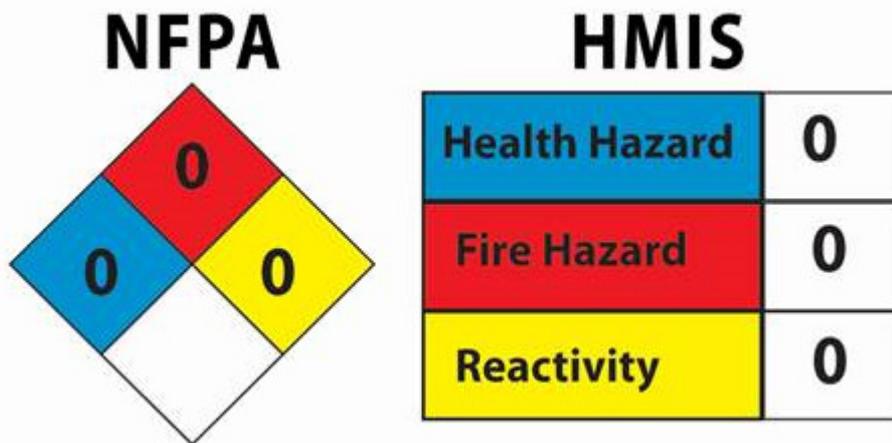
**STS SDS: 19/09/2016**

Safe Training Systems Ltd, Holly House, Maidenhead Road, Wokingham, RG40 5RR, England

**Product name: SS4 Simulated Source for use with STS 800 Series Simulators**

Please refer to Acota Safety Data Sheet below

NFPA and HMIS ratings for this product are:



SS4 consists of a 30 – 40% loading of the perfluoro compound, on silica gel.

These materials are supplied as part of the Safe Training Systems Ltd radiation simulation system, and must not be used for any other purpose, nor be substituted by any other material. Such substitution will render any guarantee null and void. Accidental skin contact by either LS1 or SS4 is very unlikely to result in any irritation or other effect, but it is recommended that it is not deliberately applied to the skin, especially the face and eyes, and that accidental splashes are washed off immediately.

**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1 Product identifier**

- Trade name CERTONAL® CT-250

**1.2 Relevant identified uses of the substance or mixture and uses advised against****Uses of the Substance/Mixture**

- Heat transfer medium
- For industrial use only.

**1.3 Details of the supplier of the safety data sheet****Company**

Acota Limited.  
 Centrepoint, Knights Way,  
 Shrewsbury  
 UK  
 Tel: +44-1743-466200  
 Fax: +44-1743-466555

**E-mail address**

admin@acota.co.uk

**1.4 Emergency telephone number**

+44(0)1743-466200

**SECTION 2: Hazards identification****2.1 Classification of the substance or mixture****Classification (Regulation (EC) No 1272/2008 )**

- Not classified as hazardous product under the regulation above.

**2.2 Label elements****Regulation (EC) No 1272/2008**

- Not labelled as hazardous product under the above regulation.

**2.3 Other hazards which do not result in classification**

- Thermal decomposition can lead to release of toxic and corrosive gases.

**SECTION 3: Composition/information on ingredients****3.1 Substance**

- Chemical nature Perfluorinated polyethers

**Information on Components and Impurities**

Chemical Name	Identification number	Concentration [%]
1-Propene, 1,1,2,3,3,3-hexafluoro-, oxidized, polymd.	CAS-No. : 69991-67-9	> 99.9

**3.2 Mixture**

- Not applicable, this product is a substance.

**SECTION 4: First aid measures****4.1 Description of first aid measures****In case of inhalation**

- Move to fresh air in case of accidental inhalation of fumes from overheating or combustion.
- Oxygen or artificial respiration if needed.

**In case of skin contact**

- Wash off with soap and water.

**In case of eye contact**

- Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
- If eye irritation persists, consult a specialist.

**In case of ingestion**

- Drink 1 or 2 glasses of water.
- Do NOT induce vomiting.
- If symptoms persist, call a physician.

**4.2 Most important symptoms and effects, both acute and delayed****In case of inhalation****Effects**

- No known effect.

**In case of skin contact****Effects**

- Effects of skin contacts may include:
- Redness

**In case of eye contact****Effects**

- Contact with eyes may cause irritation.
- Redness

**In case of ingestion****Symptoms**

- Ingestion may provoke the following symptoms:
- Nausea
- Vomiting
- Diarrhoea

**4.3 Indication of any immediate medical attention and special treatment needed****Notes to physician**

- None

**SECTION 5: Firefighting measures****5.1 Extinguishing media Suitable****extinguishing media**

- Water
- powder
- Foam
- Dry chemical
- Carbon dioxide (CO<sub>2</sub>)

**Unsuitable extinguishing media**

- None

**5.2 Special hazards arising from the substance or mixture**

- The product is not flammable.
- Not explosive
- In case of fire hazardous decomposition products may be produced such as: Gaseous hydrogen fluoride (HF), Fluorophosgene

**5.3 Advice for firefighters****Special protective equipment for firefighters**

- Wear self-contained breathing apparatus and protective suit.
- When intervention in close proximity wear acid resistant over suit.

**Further information**

- Evacuate personnel to safe areas.
- Approach from upwind.
- Protect intervention team with a water spray as they approach the fire.
- Keep containers and surroundings cool with water spray.
- Keep product and empty container away from heat and sources of ignition.

**SECTION 6: Accidental release measures****6.1 Personal precautions, protective equipment and emergency procedures Advice for non-emergency personnel**

- Prevent further leakage or spillage if safe to do so.

**Advice for emergency responders**

- Ensure adequate ventilation.
- Material can create slippery conditions.
- Sweep up to prevent slipping hazard.
- Keep away from open flames, hot surfaces and sources of ignition.

**6.2 Environmental precautions**

- Should not be released into the environment.
- Do not flush into surface water or sanitary sewer system.

**6.3 Methods and materials for containment and cleaning up**

- Soak up with inert absorbent material.
- Suitable material for picking up.
- Dry sand
- Earth
- Shovel into suitable container for disposal.

**6.4 Reference to other sections**

- Refer to protective measures listed in sections 7 and 8.

**SECTION 7: Handling and storage****7.1 Precautions for safe handling**

- Ensure adequate ventilation.
- Use personal protective equipment.
- Keep away from heat and sources of ignition.
- To avoid thermal decomposition, do not overheat.
- Take measures to prevent the build up of electrostatic charge.
- Clean and dry piping circuits and equipment before any operations.
- Ensure all equipment is electrically grounded before beginning transfer operations.

**Hygiene measures**

- Ensure that eyewash stations and safety showers are close to the workstation location.
- When using do not eat, drink or smoke.
- Wash hands before breaks and at the end of workday.
- Handle in accordance with good industrial hygiene and safety practice.

**7.2 Conditions for safe storage, including any incompatibilities****Technical measures/Storage conditions**

- Keep away from heat and sources of ignition.
- Keep in properly labelled containers.
- Keep away from combustible material.
- Keep away from incompatible products
- Provide tight electrical equipment well protected against corrosion. - Refer to protective measures listed in sections 7 and 8.

**7.3 Specific end use(s)**

- Contact your supplier for additional information

**SECTION 8: Exposure controls/personal protection****8.1 Control parameters**

- Contains no substances with occupational exposure limit values above their regulatory reporting threshold.

**Threshold limit values of by-products from thermal decomposition:****Components with workplace occupational exposure limits**

Components	Value type	Value	Basis
hydrogen fluoride	TWA	1.8 ppm 1.5 mg/m <sup>3</sup>	UK. EH40 WEL - Workplace Exposure Limits
	Expressed as :Fluorine		
hydrogen fluoride	STEL	3 ppm 2.5 mg/m <sup>3</sup>	UK. EH40 WEL - Workplace Exposure Limits
	Expressed as :Fluorine		
hydrogen fluoride	TWA	1.8 ppm 1.5 mg/m <sup>3</sup>	Europe. Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values
	Indicative		

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CERTONAL® CT-250

Revision Date 01.08.2015

hydrogen fluoride	STEL	3 ppm 2.5 mg/m <sup>3</sup>	Europe. Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values
	Indicative		
hydrogen fluoride	TWA	0.5 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Danger of cutaneous absorption Expressed as :Fluorine		
hydrogen fluoride	C	2 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Danger of cutaneous absorption Expressed as :Fluorine		
carbonyl difluoride	TWA	2.5 mg/m <sup>3</sup>	UK. EH40 WEL - Workplace Exposure Limits
	Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used Expressed as :Fluorine		
carbonyl difluoride	TWA	2.5 mg/m <sup>3</sup>	Europe. Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values
	Indicative Expressed as :Fluorine		
carbonyl difluoride	TWA	2 ppm	USA. ACGIH Threshold Limit Values (TLV)
carbonyl difluoride	STEL	5 ppm	USA. ACGIH Threshold Limit Values (TLV)

**Biological Exposure Indices**

Components	Value type	Value	Basis
hydrogen fluoride	BEI	2 mg/l Fluoride Urine Prior to shift (16 hours after exposure ceases)	ACGIH - Biological Exposure Indices (BEI)
	BEI	3 mg/l Fluoride Urine End of shift (As soon as possible after exposure ceases)	ACGIH - Biological Exposure Indices (BEI)

**8.2 Exposure controls****Control measures****Engineering measures**

- Provide local ventilation appropriate to the product decomposition risk (see section 10).
- Refer to protective measures listed in sections 7 and 8.
- Apply technical measures to comply with the occupational exposure limits.

**Individual protection measures****Respiratory protection**

- In case of decomposition (see section 10), use an air breathing apparatus with face mask.
- Use only respiratory protection that conforms to international/ national standards.

**Hand protection**

- Wear protective gloves.

**Suitable material**

- Nitrile rubber
  - PVC
  - Neoprene gloves
  - butyl-rubber
- Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).

**Eye protection**

- Tightly fitting safety goggles

**Skin and body protection**

- Wear work overall and safety shoes.

**Hygiene measures**

- Ensure that eyewash stations and safety showers are close to the workstation location.
- When using do not eat, drink or smoke.
- Wash hands before breaks and at the end of workday.
- Handle in accordance with good industrial hygiene and safety practice.

**Environmental exposure controls**

- Dispose of rinse water in accordance with local and national regulations.

**SECTION 9: Physical and chemical properties****9.1 Information on basic physical and chemical properties**

<b><u>Appearance</u></b>	<b><u>Form:</u></b> liquid
	<b><u>Physical state:</u></b> liquid
	<b><u>Colour:</u></b> colourless
<b><u>Odour</u></b>	no data available
<b><u>Odour Threshold</u></b>	no data available
<b><u>pH</u></b>	no data available
<b><u>Melting point/range</u></b>	Not applicable
<b><u>Boiling point/boiling range</u></b>	250 °C
<b><u>Flash point</u></b>	The product is not flammable.
<b><u>Evaporation rate (Butylacetate = 1)</u></b>	no data available
<b><u>Flammability (liquids)</u></b>	The product is not flammable.

<b><u>Flammability/Explosive limit</u></b>	<b><u>Explosiveness:</u></b> Not explosive
<b><u>Auto-ignition temperature</u></b>	no data available
<b><u>Vapour pressure</u></b>	ca. 0.01 hPa
<b><u>Vapour density</u></b>	no data available
<b><u>Density</u></b>	1.83 g/cm <sup>3</sup>
<b><u>Solubility</u></b>	<b><u>Water solubility :</u></b> insoluble
	<b><u>Solubility in other solvents:</u></b> Fluorinated solvents : soluble
<b><u>Partition coefficient: n-octanol/water</u></b>	no data available
<b><u>Thermal decomposition</u></b>	> 290 °C
<b><u>Viscosity</u></b>	<b><u>Viscosity, dynamic:</u></b> ca. 26 mPa.s
<b><u>Explosive properties</u></b>	no data available
<b><u>Oxidizing properties</u></b>	Not considered as oxidizing

**9.2 Other information**

<b><u>Molecular weight</u></b>	1,550 Da Polymer Molar Mass
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**SECTION 10: Stability and reactivity****10.1 Reactivity**

- No dangerous reaction known under conditions of normal use.

**10.2 Chemical stability**

- Stable under recommended storage conditions.
- Metals promote and lower decomposition temperature

**10.3 Possibility of hazardous reactions**

- No dangerous reaction known under conditions of normal use.

**10.4 Conditions to avoid**

- Avoid to use in presence of high voltage electric arc and in absence of oxygen.
- Keep away from flames and sparks.
- To avoid thermal decomposition, do not overheat.

**10.5 Incompatible materials**

- Alkali metals
- Lewis acids (Friedel-Crafts) above 100°C
- Aluminum and magnesium in powder form above 200°C

**10.6 Hazardous decomposition products**

- Gaseous hydrogen fluoride (HF).
- Fluorophosgene

**SECTION 11: Toxicological information****11.1 Information on toxicological effects****Acute toxicity**

**Acute oral toxicity** LD50 : > 15,000 mg/kg - Rat  
Test substance: Molecular weight ~ 650

**Acute inhalation toxicity** LC50 - 4 h > 66.6 mg/l - Rat  
Test substance: Molecular weight ~ 650

**Acute dermal toxicity** LD50 > 5,000 mg/kg - Rat  
Test substance: Molecular weight ~ 650

**Acute toxicity (other routes of administration)** no data available

**Skin corrosion/irritation**

Rabbit  
No skin irritation  
Test substance: Molecular weight ~ 650

14 Days - Rabbit  
No skin irritation  
Test substance: Molecular weight ~ 650

**Serious eye damage/eye irritation**

Rabbit  
No eye irritation  
Test substance: Molecular weight ~ 650

**Respiratory or skin sensitisation**

Guinea pig  
Did not cause sensitization on laboratory animals. Test substance: Molecular weight ~ 650

**Mutagenicity**

**Genotoxicity in vitro** Test substance: Molecular weight ~ 650  
Not mutagenic in Ames Test

Chromosome aberration test in vitro  
negative  
Test substance: Molecular weight ~ 650

**Genotoxicity in vivo** no data available

**Carcinogenicity** no data available

**Toxicity for reproduction and development**

**Toxicity to reproduction/Fertility** no data available

**Developmental Toxicity/Teratogenicity** no data available

**STOT**

**STOT - single exposure** no data available

**STOT - repeated exposure** no data available

**Aspiration toxicity** no data available

**Further information**

Description of possible hazardous to health effects is based on experience and/or toxicological characteristics of several components.

Thermal decomposition can lead to release of toxic and corrosive gases.  
Exposure to decomposition products  
Causes severe irritation of eyes, skin and mucous membranes.

**SECTION 12: Ecological information****12.1 Toxicity****Aquatic Compartment****Acute toxicity to fish**

- 96 h : >360 mg/l - Oncorhynchus mykiss (rainbow trout)  
Test substance: Molecular weight ~ 1500  
saturated aqueous solution

**Acute toxicity to daphnia and other aquatic invertebrates.**

- 48 h : > 360 mg/l - Daphnia magna (Water flea)  
Test substance: Molecular weight ~ 1500  
saturated aqueous solution

**12.2 Persistence and degradability** no data available

**12.3 Bioaccumulative potential** no data available

**12.4 Mobility in soil** no data available

**12.5 Results of PBT and vPvB assessment** no data available

**12.6 Other adverse effects** no data available

**Remarks**

Ecological injuries are not known or expected under normal use.

**SECTION 13: Disposal considerations****13.1 Waste treatment methods****Product Disposal**

- Can be incinerated, when in compliance with local regulations.
- The incinerator must be equipped with a system for the neutralisation or recovery of HF. - Dispose of in accordance with local regulations.

**Advice on cleaning and disposal of packaging**

- Empty containers can be landfilled, when in accordance with the local regulations.

**SECTION 14: Transport information****ADR**

not regulated

**RID**

not regulated

**IMDG**

not regulated

**IATA**

not regulated

**ADN/ADNR**

not regulated

Note: The above regulatory prescriptions are those valid on the date of publication of this sheet. Given the possible evolution of transport regulations for hazardous materials, it would be advisable to check their validity with your sales office.

**SECTION 15: Regulatory information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****Other regulations**

- Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, as amended
- Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), as amended - European Waste Catalogue
- Waste codes should be assigned by the user based on the application for which the product was used.

<b>Inventory Information</b>	<b>Status</b>
United States TSCA Inventory	- Listed on Inventory
Canadian Domestic Substances List (DSL)	- Listed on Inventory
Australia Inventory of Chemical Substances (AICS)	- Listed on Inventory
Korea. Korean Existing Chemicals Inventory (KECI)	- Listed on Inventory
China. Inventory of Existing Chemical Substances in China (IECSC)	- Listed on Inventory
Japan. ISHL - Inventory of Chemical Substances	- Listed on Inventory
Japan. CSCL - Inventory of Existing and New Chemical Substances	- Listed on Inventory
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	- Listed on Inventory
New Zealand. Inventory of Chemical Substances	- Listed on Inventory
Taiwan. Chemical Substance Inventory (TCSI)	- Listed on Inventory
EU. European Registration, Evaluation, Authorisation and Restriction of Chemical (REACH)	- If product is purchased from Solvay in Europe it is in compliance with REACH, if not please contact the supplier.

**Notification status****15.2 Chemical Safety Assessment**

- A Chemical Safety Assessment is not required for this substance.

**SECTION 16: Other information****Key or legend to abbreviations and acronyms used in the safety data sheet**

- C Ceiling limit
- STEL Short term exposure limit
- TWA Limit Value - eight hours

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. Such information is only given as a guidance to help the user handle, use, process, store, transport, dispose and release the product in satisfactory safety conditions and is not to be considered as a warranty or quality specification. It should be used in conjunction with technical sheets but do not replace them. Thus, the information only relates to the designated specific product and may not be applicable if such product is used in combination with other materials or in any other manufacturing process, unless otherwise specifically indicated. It does not release the user from ensuring he is in conformity with all regulations linked to its activity.