Product sheet
HaCaT Cells | 300493
General information

Description	HaCaT cells are a pivotal model in dermatological research, offering insights into the complex mechanisms of skin biology and pathology. The spontaneously immortalized HaCaT cell line is derived from adult human epidermal cells and retains the capacity to proliferate and undergo differentiation, similar to basal keratinocytes in vivo. HaCaT cells serve as a robust platform for investigating the epidermal differentiation process and studying the epidermal differentiation markers essential for maintaining skin integrity. The susceptibility of HaCaT cells to apoptosis and their sensitivity to apoptosis-inducing agents are extensively studied, particularly in the context of cytotoxic agents like RIPL. Researchers assess these agents' cytotoxicities and the extent of cytotoxicity using HaCaT cells, utilizing techniques such as fluorescence microscopy to visualize cellular changes. Researchers have leveraged HaCaT cells to examine the effects of various agents, including antimicrobial substrates and their influence on cell viability. These cells are an excellent substrate for testing antimicrobial biomaterials and antimicrobial atelocollagen substrates, crucial for skin repair and medical applications. The HaCaT epidermal line also plays a crucial role in studying cellular senescence, cytokines, and gene expression profiles related to aging and chronic diseases. The transcriptional profiles of HaCaT cells, including the role of κB and microRNAs, provide insight into the regulatory mechanisms at the molecular level. The HaCaT keratinocyte line, with their characteristics as epidermal keratinocytes, offers a tractable system for dissecting the intricate interplay between epidermal cells and the immune system, specifically the role of keratinocytes in disease states. They enable the exploration of epigenetic modifications and their influence on the differentiation of keratinocytes, including the formation of the cornified envelope, a key feature in the skin's barrier function. In summary, HaCaT cells are an indispensable model in dermatological research, facilitating a deeper understanding of skin biology and pathology through their resemblance to basal keratinocytes and their ability to undergo cell growth and differentiation. Their application spans from studying epidermal differentiation and antimicrobial effects to exploring cellular responses such as apoptosis, making them a cornerstone in cell biology and biomedical research.
Organism	Human
Tissue	Skin

Characteristics

Age	62 years
Gender	Male
Ethnicity	Caucasian
Cell type	Keratinocytes with a diameter of 20-25 micrometer.

Product sheet
HaCaT Cells | 300493

Growth properties	Adherent

Identifiers / Biosafety / Citation

Citation	HaCaT (Cytion catalog number 300493)
Biosafety level	1
Depositor	DKFZ, Heidelberg

Expression / Mutation

Tumorigenic	No
Karyotype	Aneuploid (hypotetraploid)

Handling

Culture Medium	DMEM, w: 4.5 g/L Glucose, w: 4 mM L-Glutamine, w: 1.5 g/L NaHCO3, w: 1.0 mM Sodium pyruvate (Cytion article number 820300a)
Medium supplements	Supplement the medium with 10% FBS
Passaging solution	The 1:1 mixture of EDTA (stock. 0.05%) and trypsin (stock: 0.1%) must be prepared each time ahead of detaching the cells using PBS without Ca2+ and Mg2+ to provide a physiologic osmolarity. Ready-to-use mixtures of trypsin/EDTA are not recommended, as this may result in cell clumps. As an alternative, TrypLE Express (Life Technologies) instead of trypsin/EDTA can be used. The protocol of the manufacturer should be followed.
Doubling time	The doubling time of HaCaT cells is 28 hours.

Product sheet
HaCaT Cells | 300493

Subculturing	1. **Discard Old Medium**: Carefully remove the old culture medium from the flasks. 2. **Wash Cells**: Add 3-5 ml of phosphate-buffered saline (PBS) without calcium and magnesium to T25 flasks, or 5-10 ml to T75 flasks, to rinse the adherent cells. 3. **Add EDTA Solution**: Cover the cell layer entirely with a freshly prepared 0.05% EDTA solution. Use 1-2 ml for T25 flasks and 2.5 ml for T75 flasks. 4. **Incubate**: Incubate the flasks at 37?C for 10 minutes. 5. **Add Trypsin/EDTA or TrypLE Express Solution**: After incubation, add a freshly prepared trypsin/EDTA solution (0.05% trypsin, 0.025% EDTA) or TrypLE Express to the flasks, ensuring the cell layer is fully covered. Use 1 ml for T25 flasks and 2.5 ml for T75 flasks. (Note: Steps 3 and 4 can be omitted if using TrypLE Express.) 6. **Monitor Detachment**: Observe the cells under a microscope. The cells should detach within 1-5 minutes. 7. **Neutralize Trypsin**: Add cell culture medium containing fetal bovine serum (FBS) to neutralize the trypsin activity as soon as the cells have detached. 8. **Transfer Cells**: Dispense the cell suspension into new flasks pre-filled with fresh culture medium.
Split ratio	A ratio of 1:5 to 1:10 is recommended
Seeding density	1 x 10^4 cells/cm^2
Fluid renewal	2 times per week
Freeze medium	CM-1 (Cytion catalog number 800100) or CM-ACF (Cytion catalog number 806100)

Product sheet
HaCaT Cells | 300493

Handling of cryopreserved cultures

1. Confirm that the vial remains deeply frozen upon delivery, as cells are shipped on dry ice to maintain optimal temperatures during transit.
2. Upon receipt, either store the cryovial immediately at temperatures below -150°C to ensure the preservation of cellular integrity, or proceed to step 3 if immediate culturing is required.
3. For immediate culturing, swiftly thaw the vial by immersing it in a 37°C water bath with clean water and an antimicrobial agent, agitating gently for 40-60 seconds until a small ice clump remains.
4. Perform all subsequent steps under sterile conditions in a flow hood, disinfecting the cryovial with 70% ethanol before opening.
5. Carefully open the disinfected vial and transfer the cell suspension into a 15 ml centrifuge tube containing 8 ml of room-temperature culture medium, mixing gently.
6. Centrifuge the mixture at 300 x g for 3 minutes to separate the cells and carefully discard the supernatant containing residual freezing medium. Optionally, skip centrifugation but remove any remaining freezing medium after 24 hours.
7. Gently resuspend the cell pellet in 10 ml of fresh culture medium. For adherent cells, divide the suspension between two T25 culture flasks; for suspension cultures, transfer all the medium into one T25 flask to promote effective cell interaction and growth.
8. Adhere to established subculture protocols for continued growth and maintenance of the cell line, ensuring reliable experimental outcomes.

Quality control / Genetic profile / HLA

Sterility

Mycoplasma contamination is excluded using both PCR-based assays and luminescence-based mycoplasma detection methods.

To ensure there is no bacterial, fungal, or yeast contamination, cell cultures are subjected to daily visual inspections.

Product sheet
HaCaT Cells | 300493

STR profile	**Amelogenin**: x,x **CSF1PO**: 9,11 **D13S317**: 10,12 **D16S539**: 9,12 **D5S818**: 12 **D7S820**: 9,11 **TH01**: 9.3 **TPOX**: 11,12 **vWA**: 16,17 **D3S1358**: 16 **D21S11**: 28,30.2 **D18S51**: 12 **Penta E**: 7,12 **Penta D**: 11,13 **D8S1179**: 14 **FGA**: 24 **D1S1656**: 11,12 **D2S1338**: 17,25 **D12S391**: 18,23 **D19S433**: 13,14
HLA alleles	**A***: 01.01.1900 07:01 **B***: 01.01.1900 16:01, 02.01.1900 03:01 **C***: 03:04:01, 15:02:01 **DRB1***: 04:01:01, 15:01:01 **DQA1***: 01:02:01, 03:03:01 **DQB1***: 03:01:01, 06:02:01 **DPB1***: 03:01:01, 04:01:01 **E**: 01:03:01, 01:03:02

Safety Data Sheet

HaCaT Cells | 300493

SECTION 1: IDENTIFICATION OF THE MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier:
Frozen and Living Cell Cultures (Biosafety Level, BSL 1 and 2), whereas BSL2 cell lines were categorized according to TRBA 468 and German IfSG (Infektions-Schutz-Gesetz, Germany).

1.2. Relevant identified uses of the mixture and uses advised against:
For in vitro research use
only. For professional,
industrial use.
Not for use in human, therapeutic or diagnostic applications.

1.3. Details of the supplier of the safety data sheet:
Information about the
distributor/manufacturer:CLS Cell Lines
Service GmbH
Dr.-Eckener-Str. 8
69214
Eppelheim
Germany
Tel: +49(0)6221-700799

1.3.1. Responsible person: Jonathan
SteubingE-mail: info@cls.shop

1.4. Emergency telephone number: +49(0)6221-700799

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the

mixture:Biological Hazards:
For Biosafety Level 1 Cell Cultures
Handle as a potentially biohazardous material at least under Biosafety Level 1 containment. Although the material is not known to cause disease in healthy humans, this cannot be excluded. The material has not been screened for Hepatitis B, human immunodeficiency viruses or other adventitious agents, unless otherwise reported on the Certificate of Analysis or the product information sheet. However, personal protective equipment (PPE) and procedures should be followed at all means when working with such material.
For Biosafety Level 2 Cell Cultures
Handle as a potentially biohazardous material at least under Biosafety Level 2 containment. This material is virally transformed or intrinsically carries Epstein-Barr-Virus particles, which may be associated with human disease, hazards include percutaneous injury, ingestion, mucous membrane exposure. The material has not been screened for Hepatitis B, human immunodeficiency viruses or other adventitious agents, unless otherwise reported on the Certificate of Analysis or the product information sheet. Personal protective equipment (PPE) and procedures MUST be followed at all means when working with such material.
Chemical Hazards:
Frozen cell cultures may contain 5 to 10% (v/v) dimethyl sulphoxide (DMSO). DMSO may be harmful and toxic if in contact with skin or ingested, (R23/24/25), irritating to eyes and respiratory system (R36/37/38).

Avoid skin contact, eye contact, digestive, and respiratory epithelium (S24/25) if thawed. Person handling the cells should wear PPE (S36/37).

Physical Hazards:
There is a small risk that frozen vials may be pressurized, because of the trapped liquid nitrogen, and could explode on warming. Such a risk will be increased if the vial has been shipped to the customer in a liquid nitrogen container (dry shipper). Wear protective equipment when handling such packages.
Classification according to Regulation (EC) No 1272/2008 (CLP):
Not considered as hazardous mixture.
Hazard statements: No hazard statements.

2.2. Label elements:
Hazard statements: No hazard statements.
Precautionary statements: No precautionary statements.

2.3. Other hazards:
Results of PBT and vPvB assessment: No data available.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances:
Not applicable.

3.2. Mixtures:
Description:
Various animal and human cell cultures at Biosafety level 1 or 2
Frozen or growing cells are shipped in a yellow or pink liquid cell culture medium (pH 6-8) which may contain inorganic salts, vitamins, amino acids, carbohydrates, other nutrients and phenol red dissolved in water. Frozen cultures may also contain 5-10% DMSO as a cryoprotectant.
Unit: cryovial; frozen liquid in a small plastic container (vial)or
Flask: living cell culture in a plastic flaskHazardous ingredients:

Description	CAS number	EC number / ECHA list number	REACH registration number	Conc. (%)	Classification according to Regulation(EC) No 1272/2008 (CLP)		
					Pictogram, signal word code(s)	Hazard class and category code(s)	Hazard statement code(s)
Dimethyl					GHS06	Acute Tox. 3 Acute Tox. 3	H30 1

*: Classification specified by the manufacturer; the substance is not listed in Annex VI of theRegulation (EC) No 1272/2008.

Safety Data Sheet
HaCaT Cells | 300493

Non-Hazardous Ingredient(s)	Percentage
Cell culture media, supplemented for freezing	60-80
FBS (Fetal Bovine Serum)	0-20
Cells	1

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures:INGESTION:

Measures:

- If the material was swallowed, rinse the mouth with water.
- If the person is unconscious seek emergency medical attention.
- Avoid vomiting unless directed by a medical doctor.

INHALATION:

Measures:

- If the person is unconscious seek emergency medical attention.
- Remove person to fresh air.

SKIN CONTACT:

Measures:

- Wash off immediately with plenty of water and soap.
- Remove all contaminated clothing.

EYE CONTACT:

Measures:

- Flush eyes immediately with water for 10-15 minutes.

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

See Section 11.

4.3. Indication of any immediate medical attention and special treatment needed:

No special treatment needed; treat symptomatically.

If exposed or concerned: Report to your Safety Officer and seek Medical Advice immediately.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media:

5.1.1. Suitable extinguishing media:

Choose extinguishing media depending on surrounding fire.

5.1.2. Unsuitable extinguishing media:

No data available.

5.2. Special hazards arising from the substance or mixture:

During a fire, irritating and toxic gases may be generated by thermal decomposition. The inhalationof such combustion products can have serious adverse effects on health.

5.3. Advice for firefighters:

Wear full protective clothing and self-contained breathing apparatus.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures:

6.1.1. **For non-emergency personnel:**
Allow only well-trained experts wearing suitable protective clothing to abide in the field ofaccident.

6.1.2. **For emergency responders:**
Use personal protective equipment when working with the cell lines, including safety glasses, laboratory gloves and appropriate laboratory clothing to prevent skin exposure.
Do not open primary containers if not authorized.

6.2. Environmental precautions:

Dispose of the spillage and the resulting waste according to the applicable environmental regulations. Do not allow the product and the resulting waste to enter sewers/soil/surface or groundwater. Notify the respective authorities in accordance with local law in the case of environmental pollution immediately.

6.3. Methods and material for containment and cleaning up:
Clean contaminated surface thoroughly.
Autoclave before disposal into appropriated containers.If spilled, follow appropriate cleaning procedure.
Use absorbent material and disinfect.
Wash contaminated clothing separately.
Wash with soap and water. Additional personal protective equipment for cleaning may bemandatory.

6.4. Reference to other sections:
For further and detailed information see Sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling:
Observe conventional hygiene precautions.
Handle and store according to instructions on product information sheet.
Technical measures:
Follow established laboratory procedures when handling.Open only under a sterile workbench.
Wear protective equipment.
Handle as if containing infectious material.
Precautions against fire and explosion:
No special measures required.

7.2. Conditions for safe storage, including any incompatibilities:Technical measures and storage condition:
Handle and store according to instructions on product information sheet. Keep cryovial at -150°C (freezer) or at -196°C (liquid nitrogen vapour phase).**Incompatible materials:** See Section 10.5
Packaging material: No special prescriptions.

7.3. Specific end use(s):
No specific instructions available.

Safety Data Sheet
HaCaT Cells | 300493

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters:

Occupational exposure limit values (Commission Directive (EC) No 2000/39 of 8 June 2000):The components of the mixture are not regulated with exposure limit value.

DNEL values		Oral exposure		Dermal exposure		Inhalative exposure	
		Short term (acute)	Long term (chronic)	Short term (acute)	Long term (chronic)	Short term (acute)	Long term (chronic)
Consumer	Local	no data	no data	no data	no data	no data	no data
	Systemic	no data	no data	no data	no data	no data	no data
Worker	Local	no data	no data	no data	no data	no data	no data
	Systemic	no data	no data	no data	no data	no data	no data

PNEC values		
Compartment	Value	Note(s)
Freshwater	no data	no notes
Marine water	no data	no notes
Freshwater sediment	no data	no notes
Marine water sediment	no data	no notes
Sewage Treatment Plant (STP)	no data	no notes
Intermittent release	no data	no notes
Secondary poisoning	no data	no notes
Soil	no data	no notes

8.2. Exposure controls:

In case of a hazardous material with no controlled concentration limit it is the employer's duty to keep concentration levels down to a minimum achievable by existing scientific and technological means, where the hazardous substance poses no harm to workers.

8.2.1. Appropriate engineering controls:

In pursuance of work is proper foresight needed to avoid spilling onto clothes and floors and to avoid contact with eyes and skin.

8.2.2. Individual protection measures, such as personal protective equipment:

Avoid the contact with skin, eyes, and
clothing.Keep away from food and drinks.
Wash hands immediately after handling the product.

1. **Eye/face protection:** Use appropriate protective glasses (EN 166).
2. **Skin protection:**
   a. **Hand protection:** Use appropriate protective gloves (EN 374).
   b. **Other:** Wear a lab coat while handling the product.
3. **Respiratory protection:** Normally, no respiratory protective equipment is required. Use fume hood to keep airborne concentrations low. No exposure limits are known. European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.
4. **Thermal hazards:** No thermal hazards known.

8.2.3. Environmental exposure controls:

No specific prescription.

The requirements detailed in Section 8 assume skilled work under normal conditions and usage of the product for appropriate aims. If conditions differ from normal or work is carried out under extreme conditions, an expert's advice is necessary before deciding upon further protective measures.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties:

Parameter	Value / Test method / Remarks
1. Appearance:	frozen or liquid, no informationavailable for cell cultures
2. Odour:	no data*
3. Odour threshold:	no data*
4. pH:	no data*
5. Melting point/freezing point:	no data*
6. Initial boiling point and boiling range:	no data*
7. Flash point:	no data*
8. Evaporation rate:	no data*
9. Flammability (solid, gas):	no data*
10. Upper/lower flammability or explosive limits:	no data*
11. Vapour pressure:	no data*
12. Vapour density:	no data*
13. Relative density:	no data*
14. Solubility(ies):	no data*
15. Partition coefficient: n-octanol/water:	no data*
16. Auto-ignition temperature:	no data*
17. Decomposition temperature:	no data*
18. Viscosity:	no data*
19. Explosive properties:	no data*
20. Oxidizing properties:	no data*

9.2. Other information:

Chemical Properties:
Frozen cell cultures may contain DMSO.
DMSO is stable. It is incompatible with a very wide range of materials, including acid chlorides, strong acids, strong oxidizing agents, strong reducing agents, phosphorus halides, moisture, copperwool + trichloroacetic acid, hygroscopic.

*: The manufacturer did not carry out any tests on this parameter for the product or the results of the tests are not available at the time of publication of the data sheet.

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity:
No reactivity known.

10.2. Chemical stability:
Stable under normal conditions.

10.3. Possibility of hazardous reactions:
Hazardous polymerization: will not occur.

10.4. Conditions to avoid:
No conditions to avoid known.

10.5. Incompatible materials:
No incompatible materials known.

10.6. Hazardous decomposition products:
No hazardous decomposition products known.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects:
Acute toxicity: Based on available data, the classification criteria are not met.
Skin corrosion/irritation: Based on available data, the classification criteria are not met.
Serious eye damage/irritation: Based on available data, the classification criteria are not met. **Respiratory or skin sensitisation:** Based on available data, the classification criteria are not met.**Germ cell mutagenicity:** Based on available data, the classification criteria are not met.
Carcinogenicity: Based on available data, the classification criteria are not met.
Reproductive toxicity: Based on available data, the classification criteria are not met.
STOT-single exposure: Based on available data, the classification criteria are not met. **STOT-repeated exposure:** Based on available data, the classification criteria are not met.**Aspiration hazard:** Based on available data, the classification criteria are not met.

11.1.1. Summaries of the information derived from the test conducted:
No data available.

11.1.2. Relevant toxicological properties:
Toxicity data for DMSO:

ORL-RAT LD50 14500 mg kg^{-1} ORL-MAM LD50 21400 mg kg^{-1}IVN-MAN TDLO 686 mg kg^{-1} IPR-RAT LD50 8200 mg kg^{-1} IVN-MUS LD50 3100 mg kg^{-1} ORL-BWD LD50 100 mg kg^{-1} IVN-DOG LD50 2500 mg kg

11.1.3. Information on likely routes of exposure:
Ingestion, inhalation, skin contact, eye contact.

11.1.4. Symptoms related to the physical, chemical, and toxicological characteristics:
No data available.

11.1.5. Delayed and immediate effects as well as chronic effects from short and long-term exposure:
No data available.

11.1.6. Interactive effects:
No data available.

11.1.7. Absence of specific data:
The toxicological properties have not been fully reported.

11.1.8. Other information:
No toxic or exposure data available for cell lines, however general protection procedures occur.Wear appropriate protection equipment.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity:
No data available.

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.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods:
Disposal according to the local regulations.

13.1.1. Information regarding the disposal of the product:
Follow established procedures for Containment (Biosafety) Level 1 and 2.Hazardous waste generators are required.
Please check if discarded chemical is classified as a hazardous waste.Follow all national, regional and local regulations.
List of Waste Code:
No waste disposal key according to the List of Waste Code (LoW code) can be determined for this product, as only the purpose of application defined by the user enables an allocation. The LoW codenumber must be determined after a discussion with a waste disposal specialist.

13.1.2. Information regarding the disposal of the packaging:
Dispose of in accordance with applicable regulations.

13.1.3. Physical/chemical properties that may affect waste treatment options shall be specified:
No data available.

13.1.4. Sewage disposal:
No data available.

13.1.5. Special precautions for any recommended waste treatment:
No data available.

SECTION 14: TRANSPORT INFORMATION

ADR/RID; ADN; IMDG; IATA:

Not subject to the conventions of carriage of dangerous goods.

14.1. UN Number:
No UN Number.

14.2. UN proper shipping name:
No proper shipping name.

14.3. Transport hazard class(es):
No transport hazard classes.

14.4. Packing group:
No packing group.

14.5. Environmental hazards:
No relevant information available.

14.6. Special precautions for user:
Additional information may occur for the carriage of Dangerous Goods by road and air, regardingclassification, packaging, and labelling, as cryovials (deep-frozen ampoules) must be shipped on dry ice or liquid nitrogen. The package will indicate all required information.
Please contact the manufacturer in case of any questions regarding the transport.

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 ormixture:

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), establishing a European Chemicals Agency, amending Directive (EC) No 1999/45 and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive (EEC) No 76/769 and Commission Directives (EEC) No 91/155,(EEC) No 93/67, (EC) No 93/105 and (EC) No 2000/21

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, amending and repealing Directives (EEC) No 67/548 and (EC) No 1999/45, and amending Regulation (EC) No1907/2006

COMMISSION REGULATION (EU) No 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

All necessary licenses for import, holding, transfer and export are in place from CLS. Recipient onlymust provide evidence of permits and licenses required by lay for receiving and handling. Substances are for research use only.

15.2. Chemical safety assessment: No information.

SECTION 16: OTHER INFORMATION

Information regarding the revision of the safety data sheet: No information.

Safety Data Sheet
HaCaT Cells | 300493

Literature references / data sources:
Safety data sheet issued by the manufacturer (October 2020, English).
Methods used for the classification according to Regulation (EC) No 1272/2008:
Not considered as a hazardous mixture.
Relevant hazard statements (code and full text) of Sections 2 and 3:H301 – Toxic if swallowed.
H311 – Toxic in contact with skin.
H319 – Causes serious eye irritation.
H335 – May cause respiratory irritation.
Training advice: No data available.
Full text of the abbreviations in the safety data sheet:
ADN: The European Agreement concerning the International Carriage of Dangerous Goods byInland Waterways.
ADR: The European Agreement concerning the International Carriage of Dangerous Goods by Road.ATE: Acute Toxicity Estimate.
AOX: Adsorbable organic halides.BCF: Bioconcentration factor.
BOD: Biological Oxygen Demand.
CAS number: Chemical Abstract Service number.
CLP: Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures.
CMR effects: Carcinogenic, mutagenic, reprotoxic effects.COD: Chemical Oxygen Demand.
CSA: Chemical Safety Assessment.CSR: Chemical Safety Report.
DNEL: Derived-No-Effect-Level.
ECHA: European Chemical Agency.EC: European Community.
EC number: EINECS and ELINCS numbers (see also EINECS and ELINCS).EEC: European Economic Community.
EEA: European Economic Area (EU + Iceland, Liechtenstein, and Norway). EINECS: European Inventory of Existing Commercial Chemical Substances.ELINCS: European List of Notified Chemical Substances.
EN: European Norm.
EU: European Union.
EWC: European Waste Catalogue (replaced by LoW – see below).
GHS: Globally Harmonized System of Classification and Labelling of Chemicals.IATA: International Air Transport Association.
ICAO-TI: Technical Instructions for the Safe Transport of Dangerous Goods by Air.IMDG: International Maritime Dangerous Goods.
IMSBC: International Maritime Solid Bulk Cargoes.
IUCLID: International Uniform Chemical Information Database.IUPAC: International Union of Pure and Applied Chemistry.
Kow: n-Octanol - Water Partition Coefficient.
LC50: Lethal concentration resulting in 50 % mortality.
LD50: Lethal dose resulting in 50 % mortality (median lethal dose).LoW: List of Waste.

LOEC: Lowest Observed Effect Concentration.LOEL: Lowest Observed Effect Level.
NOEC: No Observed Effect Concentration.NOEL: No Observed Effect Level.
NOAEC: No Observed Adverse Effect Concentration.NOAEL: No Observed Adverse Effect Level.
OECD: Organization for Economic Cooperation and Development.OSHA: Occupational Safety and Health Administration.
PBT: Persistent, Bioaccumulative and Toxic.PNEC: Predicted No Effect Concentration.
QSAR: Quantitative Structure Activity Relationship.
REACH: Regulation 1907/2006/EC concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals.
RID: Regulations Concerning the International Transport of Dangerous Goods by Rail.SCBA: Self Contained Breathing Apparatus.
SDS: Safety Data Sheet.
STOT: Specific Target Organ Toxicity.
SVHC: Substances of Very High Concern.UN: United Nations.
UVCB: Chemical Substances of Unknown or Variable Composition, Complex Reaction Products and Biological Materials.
VOC: Volatile Organic Compound.
vPvB: very Persistent and very Bioaccumulative.

This safety data sheet had been prepared by MSDS-Europe (International branch of Toxinfo Kft. onthe basis of information provided by the manufacturer/supplier and conform to the relevant regulations. Professional help regarding the explanation of the safety data sheet: +36 70 335 8480; info@msds-europe.com www.msds-europe.com. The information, data and recommendations contained herein are provided in good faith, obtained from reliable sources, and believed to be true and accurate as of the date issued; however, no representation is made as to the comprehensiveness of the information. The MSDS shall be used only as a guide for handling the product; while handling and using theproduct other considerations may arise or be required.
Users are cautioned to determine the appropriateness and applicability of the above information totheir circumstances and purposes and assume all risk associated with the use of this product.
It is the responsibility of the user to fully comply with local, national, and international regulations concerning the use of this product. Biological material may be hazardous and should be used with caution. CLS Cell Lines Service GmbH shall not be held liable for any damage resulting from handling or fromcontact with the product.