

Cosmetics: Regulation, Ingredient and MSDS



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Outline:

- EU Cosmetic Regulation (EC1223/2009)
 - Definition
 - Annex
 - Product information file (PIF)
 - Cosmetic Product Safety Report (CPSR)
- Ingredient: COSING
 - INCI
 - Registration
 - REACH
- MSDS
 - Content
 - How to make MSDS

EU Regulation (EC 1223/2009)

28 Member States + 3 EEA countries + Monaco

Austria	Italy
Belgium	Latvia
Bulgaria	Lithuania
Croatia	Luxembourg
Cyprus	Malta
Czech Republic	Netherlands
Denmark	Poland
Estonia	Portugal
Finland	Romania
France	Slovakia
Germany	Slovenia
Greece	Spain
Hungary	Sweden
Ireland	United Kingdom

Iceland
Norway
Principality of Liechtenstein

Principality of Monaco
(EU agreement signed)



*All these countries follow Regulation (EC)
No 1223/2009 on cosmetic products*

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Product information file: PIF

1. Description of the cosmetic product
2. The Cosmetic Product Safety Report
 - Part A: Safety information on ingredient and product
 - Part B: Safety assessment
3. Manufacturing method + GMP Compliance statement
4. Proof of the effects claimed
5. Data on animal testing

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Content of Safety assessment

PART A: safety information on ingredients and product

1. Qualitative and quantitative composition of the product
2. Physical/chemical characteristics and stability of the product
3. Microbiological quality
4. Impurities, traces, information on packaging material
5. Normal and reasonably foreseeable use
6. Exposure to the cosmetic product
7. Exposure to the substances
8. Toxicological profile of the substances
9. Undesirable effects and serious undesirable effects
10. Information on the cosmetic product

PART B: safety assessment

1. Assessment conclusion
2. Labelled warnings and instructions of use
3. Reasoning
4. Assessor's credentials and approval

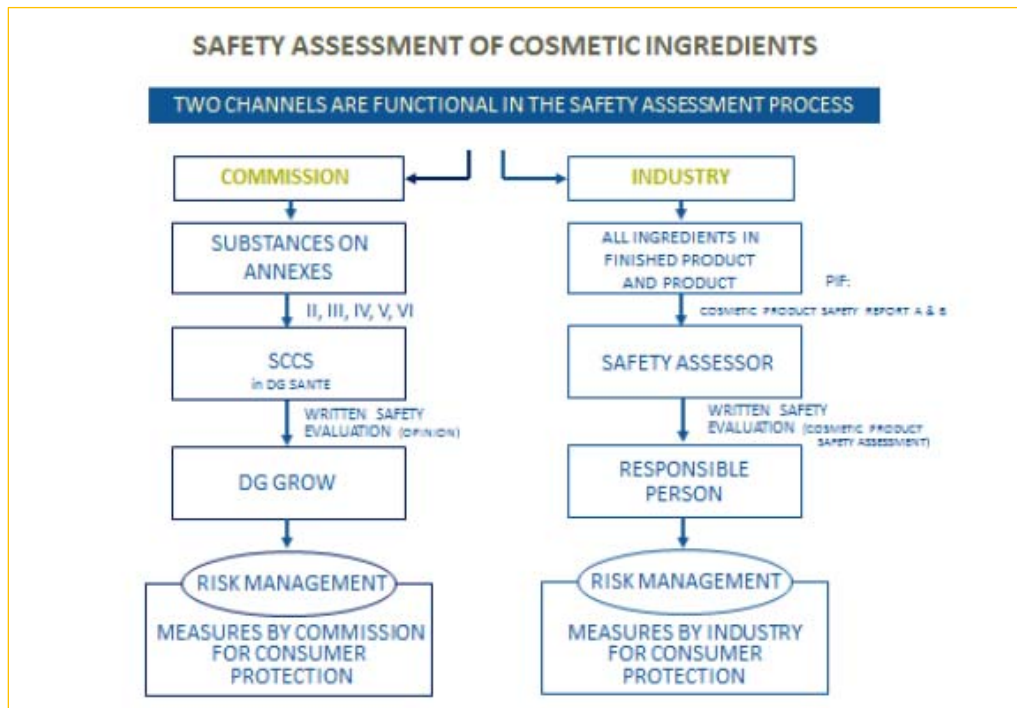
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Product information file: PIF

- Products which is placed on the market
- Responsible person: kept for a **period of 10 years after the last batch of cosmetic product**
- Electronic or other format
- Available in a language which can be easily understood by the competent authorities of the Member State

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Actual EU Cosmetics Legislation



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Commission and its priorities | Policies, information and services

European Commission | English EN | Search

European Commission > Internal Market, Industry, Entrepreneurship and SMEs > Sectors > Cosmetics > Cosmetic ingredient database

Internal Market, Industry, Entrepreneurship and SMEs

Single market and standards | Industry | Entrepreneurship and SMEs | Access to finance for SMEs | Sectors

Cosmetics

- Legislation
- Scientific and Technical Assessment
- Cosmetic ingredient database**
- Glossary of Ingredients
- Cosmetic Product Notification Portal
- Cosmetic products – specific topics
- Ban on Animal Testing
- Market Surveillance
- International Cooperation

Cosmetic ingredient database

Cosing is the European Commission database for information on cosmetic substances and ingredients contained in the

- Cosmetics Regulation (EC) No 1223/2009 of the European Parliament and of the Council
- Cosmetics Directive 76/768/EEC (cosmetics directive), as amended
- Glossary of common ingredient names for the purpose of labelling cosmetic products placed on the market (as established by Decision (EU) 2019/701 of 5 April 2019)
- Opinions on cosmetic ingredients of the Scientific Committee for Consumer Safety (List of SCCS opinions)

CAS, ELINCS or EINECS numbers can be searched for in Cosing.

The database includes all data since the adoption of the Cosmetics Directive in 1976. Current data is listed as 'active', while historical data is listed as 'not active'.

References to scientific opinions of the Scientific Committee on Consumer Safety are restricted to those published on the internet.

You can find more information about INCI-names in the Personal Care Products Council website.

Please note that Cosing database has informative purpose and no legal value.

[Search in the Cosing database](#)

Legal notice | Cookies | Contact | Search [English \(en\)](#)



GROWTH

Internal Market, Industry, Entrepreneurship and SMEs

European Commission > Growth > Sectors > Cosmetics > CosIng > Search > Simple search

Single Market and Standards | Industry | Entrepreneurship and SMEs | Access to finance for SMEs | Sectors

CosIng

Search

- Simple search
- Advanced search

Reference data

- Regulations
- Annexes
- Functions
- Abbreviations

User manual

Cosmetics - links

- News
- Events
- Contracts and grants
- Public consultations
- Publications

Simple Search

You can search for the name of a substance (displayed in small letters) as it is referred to in the Cosmetics Regulation or for the name of an INGREDIENT (displayed in CAPITAL LETTERS), listed in the Inventory for labelling purposes, or for the name of a FRAGRANCE also in the Inventory.

CosIng allows also users to search for relevant CAS and EC numbers.

The current data in the database can be found under the default **status** as "active", whereas historical data have the **status** "not active".

Version EC Regulation

Name or CAS/EC #

Scope

Status

or go to the:

- [Advanced search](#)
- [Proposed updates for the Inventory](#)
- [CosIng's Reference Data](#) (Regulations, Annexes, Functions, Abbreviations)

[Please keep us informed of any problems or requests](#)



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GROWTH

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European Commission > Growth > Sectors > Cosmetics > CosIng > Reference data > Annexes

Single Market and Standards | Industry | Entrepreneurship and SMEs | Access to finance for SMEs | Sectors

CosIng

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Regulation Annexes

List of Regulation Annexes

#	Description	Parts
I	COSMETIC PRODUCT SAFETY REPORT	-
II	LIST OF SUBSTANCES PROHIBITED IN COSMETIC PRODUCTS	-
III	LIST OF SUBSTANCES WHICH COSMETIC PRODUCTS MUST NOT CONTAIN EXCEPT SUBJECT TO THE RESTRICTIONS LAID DOWN	-
IV	LIST OF COLORANTS ALLOWED IN COSMETIC PRODUCTS	-
V	LIST OF PRESERVATIVES ALLOWED IN COSMETIC PRODUCTS	-
VI	LIST OF UV FILTERS ALLOWED IN COSMETIC PRODUCTS	-
Article 15	Article 15	-

7 records

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125 YEARS
Personal Care Products Council

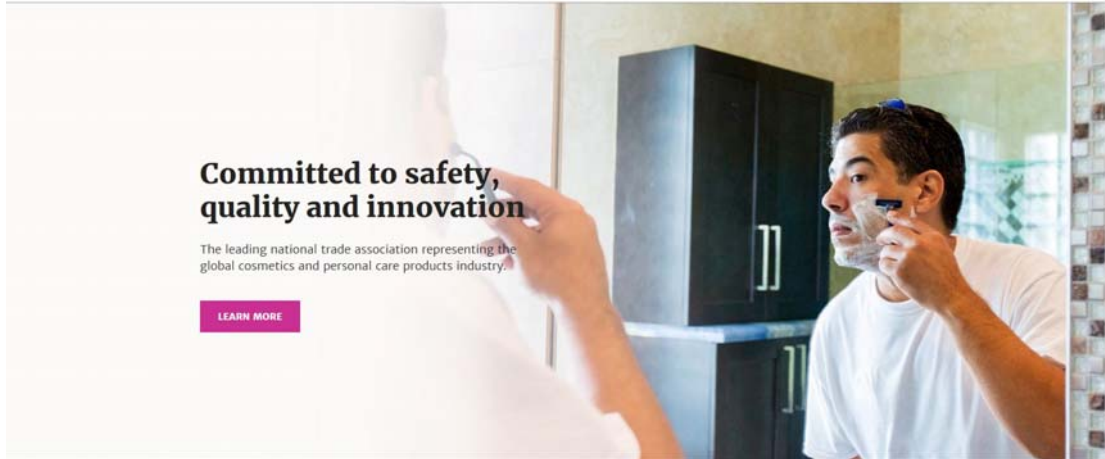
Member Portal [CP](#)
Cosmeticsinfo.org [CP](#)

[About Us](#) [Resources](#) [Science & Safety](#) [Public Policy](#) [Newsroom & Events](#) [Join PCPC](#) [Q](#)

Committed to safety, quality and innovation

The leading national trade association representing the global cosmetics and personal care products industry.

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SulforaWhite
Phyto agent for visible whitening

SulforaWhite

Phyto agent for visible whitening

Whitening with a New Mechanism

SulforaWhite is a liposomal preparation of Swiss garden cress sprouts rich in sulforaphane, a powerful antioxidant phytonutrient.

Market trends reflect a general demand for whitening products to lighten the skin complexion, to lessen differences in pigmentation but also to give a more radiant look. SulforaWhite effectively inhibits pigmentation by targeting two key upstream reaction steps in the melanin cascade:

- Neutralization of reactive oxygen species
- Inhibition of α -MSH, a natural hormone which stimulates skin pigmentation.

To facilitate absorption into the skin and to target melanocytes, garden cress extract was incorporated into liposomes.

The whitening effect of SulforaWhite was proven both in vitro and in vivo. Its mechanism was clearly demonstrated and its lightening efficacy was proven both on Asian and Caucasian skin types.

Claim Ideas for SulforaWhite

- Effectively inhibits melanin formation
- Provides exceptional brightening benefits
- Fades the appearance of dark spots and discolorations
- Reduces the effects of daytime stressors
- Evens skin tone

Applications

- Brightening for face and body
- Anti-aging with correction of age spot and pigmentation disorders
- Protective formulations

Formulating with SulforaWhite

- Recommended concentration: 2–5%
- Incorporation: For cold processes, dissolve SulforaWhite into the aqueous phase. In cold/hot processes, add during the cooling phase below 40°C.
- Thermostability: temperatures of up to 60°C for a short time do not affect the stability of SulforaWhite.

INCI (EU/PCPC) Declaration

Lepidium Sativum Sprout Extract (and) Glycerin (and) Lecithin (and) Phenoxyethanol (and) Aqua/Water

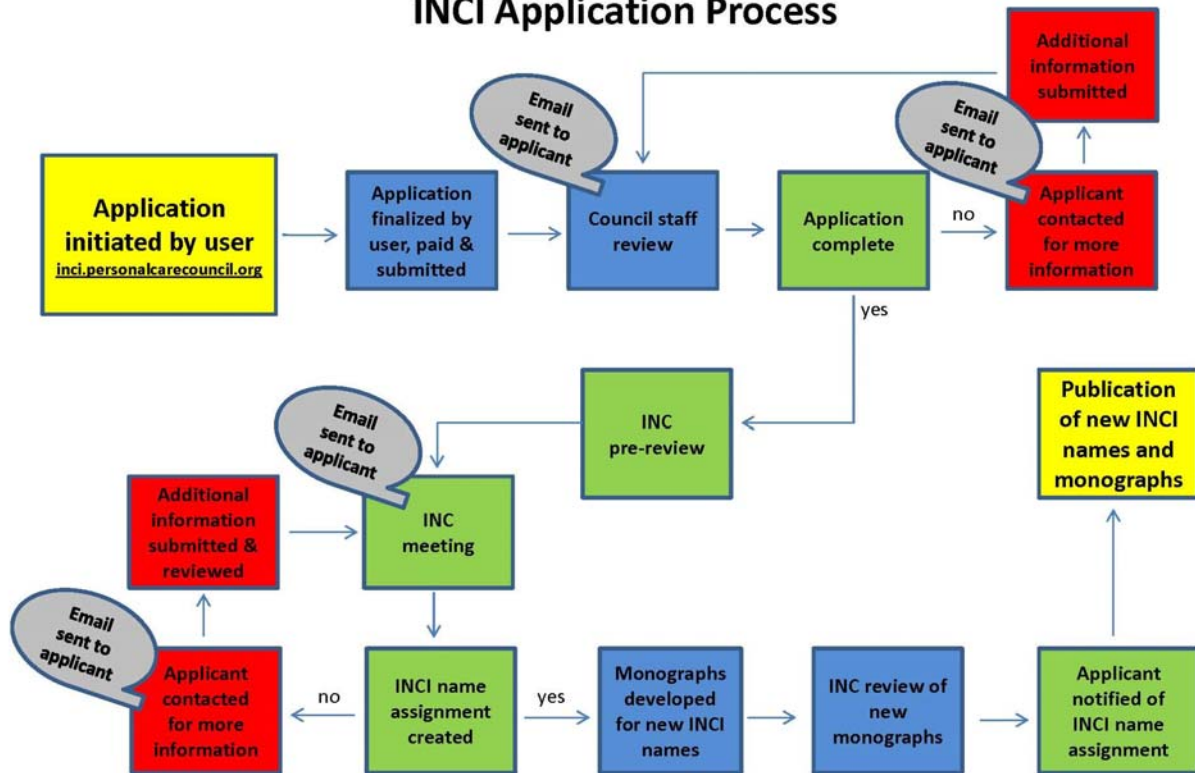
Additional Information

Available in a preservative-free version

INCI application

- One trade name per application
- Additional information: word, excel, pdf (Max: 8 MB)
- 400 US per application (credit card)

INCI Application Process



Personal Care Products Council

You are not currently logged in.

[INCI Application Process](#) [Instructions](#) [The Personal Care Products Council Home Page](#) [Contact](#)

Welcome to the INCI Name Application System

The INCI Application is required for the assignment of an INCI name to a cosmetic ingredient.

Complete information about the INCI program can be obtained by visiting the Council's home page: www.personalcarecouncil.org.

Here you will find links to important information including:

- INCI Application Instructions
- INCI Nomenclature Conventions
- International Nomenclature Committee
- Labeling and Regulatory Information
- INCI FAQs
- INCI Name Change Procedure
- INCI Name Revisions
- INCI Application Name Assignment Timetable
- INCI Application Process Diagram
- Contact info for INCI support

First time user?
Click [here](#) to create your INCI Application User ID and Password.

User ID:

Password:

Forgot your password? Click [here](#)

To ensure proper communication throughout the application process please be sure that your email server accepts mail from inci@personalcarecouncil.org

For secure payment details, click here: [Secure Payment Information](#)

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www.personalcarecouncil.org

The Personal Care Products Council - INCI Name Application

Personal Care Products Council

Welcome Dr. Veerawat Teeranachaladeekul

Login at Fri Sep 13 23:4

INCI Name Application Archive User Profile Instructions INCI Application Process Pers

New INCI Name Application

EDIT

Save Exit Print Form

Required fields are in red *

Is Your Ingredient (Choose One): *

Vegetable
 Mineral
 Organic/Inorganic
 Fungi/Single-Cellled Organism
 Human/Animal
(If "Animal or Human Based" is selected, please also give your descriptors in the text box below)

Anticipated Committee Review Date:

Trade Name: *

State "None" if you do not have a trade name.

EINECS/ELINCS/EC Number:
<http://echa.europa.eu/information-on-chemicals/registered-substances>

Category: *

CAS Number:

Suggested Nomenclature: *
(Use INCI names if applicable)

Chemical Synonyms:
(Insert a semi-colon ";" after each ingredient name listed below)

Functions: *
(Hold down the "Ctrl" key to select multiple functions from the list. Select no more than the 5 most relevant functions for the material.)

Antifungal Agents
 Antimicrobial Agents
 Antioxidants
 Antiperspirant Agents
 Antistatic Agents
 Artificial Nail Builders
 Binders

Other Functions:

Genus, Species, Plant Part: *
(Provide genus and species name, and plant part for each botanical in an organized list. If the product contains more than 4 plants, attach an Excel spreadsheet which identifies the genus/species name of the microorganism in column A, corresponding type of microorganism, e.g., bacteria, fungi, algae, in column B; genus/species name of plants in column C; corresponding plant part in column D.)

Category of ingredient

- Biotechnology
- Botanicals
- Ferments
- General chemistry
- Mineral/Inorganics
- Polymer/Silicones

Each category corresponds to a specific application which contains required fields about the ingredient's identity and composition. Details about these fields are described as follows

INCI application form

Trade Name – A trade name or commercial name for the ingredient should be provided. Applicants that do not want their trade name or company name published should check “no” at the end of the application where it states: “Do you want this trade name published in the International Cosmetic Ingredient Dictionary and supplier company name published in the Council's International Buyers' Guide?”

INCI application form

- **Suggested Nomenclature** – Applicants may recommend an INCI name. Suggested names should be based on INCI Conventions. If you are submitting an ingredient that is similar to an existing INCI name, or relates to a trade name previously submitted by your company, be sure to provide this information.
- **Chemical Structure** – Where applicable, structures may be submitted as attachments to the application. Descriptions for R groupings, (e.g., alkyl groups), or repeating units (e.g., moles ethylene oxide or propylene oxide) must be provided

INCI application form

- **Empirical Formula** – Provide where applicable.
- **CAS Number** – Provide if available. CAS Numbers are provided by the Chemical Abstracts Service and are unique numerical identifiers of chemical substances.
- **Chemical Synonyms** – Provide related chemical, technical or common names
- **Composition Statement** – If the final product is a blended mixture, identify the components in an organized list in descending order of predominance. Indicate approximate percentages of each component when possible. If the product is not a mixture, this field may be used to provide additional compositional information.

INCI application form

- **Manufacturing Method** – A detailed, step-by-step manufacturing method must be provided, including complete identification of all starting materials.
 - Reaction schemes, flow charts or process diagrams are very helpful and may be added as an attachment. Preservatives used to protect the raw material are not typically included in the INCI name unless requested by the applicant
- **Solvents or Diluents** – List the name and relative percentage of any solvents or diluents present in the raw material as it is sold for use in finished products.

INCI application form

- Botanicals: provide the genus, species and plant part for each botanical material in the product, and manufacturing information
 - If specific component(s) is isolated, the manufacturing information should clearly describe the isolation technique, the relative % purity of the isolated fraction based on dry weight, the chemical identity of the fraction and method used to characterize its identity and purity

Genus	Species	Plant Part
Daucus	sativa	Root
Pyrus	malus	seed, peel
Camellia	sinensis	Leaf
Glycine	soja	Whole

Ingredient : ACANTHOPANAX KOREANUM EXTRACT

INCI Name	ACANTHOPANAX KOREANUM EXTRACT
Description	Acanthopanax Koreanum Extract is the extract of the whole plant, Acanthopanax koreanum, Araliaceae
INN Name	
Ph. Eur. Name	
CAS #	-
EC #	-
Chemical/IUPAC Name	
Cosmetic Restriction	
Other Restriction(s)	
Functions	<ul style="list-style-type: none">• SKIN CONDITIONING
SCCS opinions	
Identified INGREDIENTS or substances e.g.	

Ingredient : ETLINGERA ELATIOR EXTRACT

INCI Name	ETLINGERA ELATIOR EXTRACT
Description	Etlingera Elatior Extract is the extract of the whole plant, Etlingera elatior. See "Regulatory and Ingredient Use Information," regarding use of EU Trivial names in Volume 1, Introduction, Part A.
INN Name	

Ingredient : ETLINGERA ELATIOR FLOWER EXTRACT

INCI Name	ETLINGERA ELATIOR FLOWER EXTRACT
Description	Etlingera Elatior Flower Extract is the extract of the flowers of Etlingera elatior, Zingiberaceae.

INCI application form

- **Animal-Derived Ingredients** –For this category, applicants must include the identity of the animal and its genus/species, part of animal material is derived from, and step-by-step details for manufacturing method. If a specific component is isolated, the % purity of the isolated fraction based on dry weight must be provided, its chemical identity and method used to characterize the identity and purity.

INCI Name	SNAIL EXTRACT
Description	Snail Extract is the extract of the body of the snail, <i>Pomacea canaliculata</i> .
NN Name	

INCI Name	SNAIL SECRETION FILTRATE
Description	Snail Secretion Filtrate is the product obtained from the filtered secretion of one or more species of snails

INCI Name	SACCHAROMYCES/SNAIL SECRETION FILTRATE FERMENT FILTRATE
Description	Saccharomyces/Snail Secretion Filtrate Ferment Filtrate is a filtrate of the product obtained by the fermentation of Snail Secretion Filtrate (q.v.) by the microorganism, <i>Saccharomyces</i> .



INCI application form

- **Polymers** - The manufacturing details must list all starting monomers, all cross-linking agents, and a reaction scheme that describes step-wise process. For monomers that are alkoxyated, the degree of alkoxylation must be indicated (moles EO, PO, etc.) The degree of polymerization of any polyether must be provided. All R groups, (e.g., alkyl groups) must be disclosed.

INCI application form

- **Ferments** – Complete step-by-step details of the fermentation method should be provided in addition to a description of any downstream processing. Products that are derived by spontaneous fermentation, or co-fermentation, should be specified. The identity of the genus of all microorganisms must be provided; genus and species must be provided for pathogenic organisms.

Microorganism	Genus	Species	Plant Part	Other
Lactobacillus	Oryza	sativa	Whole	honey
Saccharomyces	Rosmarinus	officinalis	Leaf	royal jelly
	Phyllostachis	bambusoides	Rhizome	
	Pyrus	malus	fruit, peel, seed	

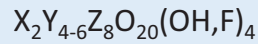
INCI application form

- **Minerals and Inorganics** – Mineral composition information must be provided, along with manufacturing details. For mined materials, describe mining process and particle size of final product. Attach X-ray diffraction pattern of product, synthesized and natural, in addition to a Bureau Standard.
- **Biotech Ingredients** – Complete step-by-step manufacturing details must be provided.
 - For ingredients derived by plant tissue culture, process details are very important; clearly indicate when a callus is isolated, and if the culture media is removed from the final preparation.
 - For peptides, identify if the protein originates from a gene directly isolated from a human cell; or if it is a chemically synthesized copy of a human gene or gene fragment produced in a gene synthesizer. If the peptide is derived from other organisms, provide the common name and genus/species for the organism.
 - Provide the protein name and reference number; identify the total number of amino acids in the peptide; and attach a word document with complete amino acid sequence by single letter designation. If the peptide is a fusion peptide, provide the sequence for each fragment along with each corresponding protein name and protein reference numbers.
 - Provide % purity of the final protein and purification method. If the final product is a blended mixture, identify the components in an organized list in descending order of predominance. Indicate approximate percentages of each component when possible.

Mica



Chemically, micas can be given the general formula

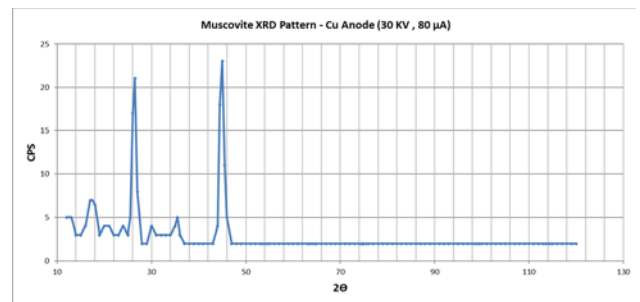
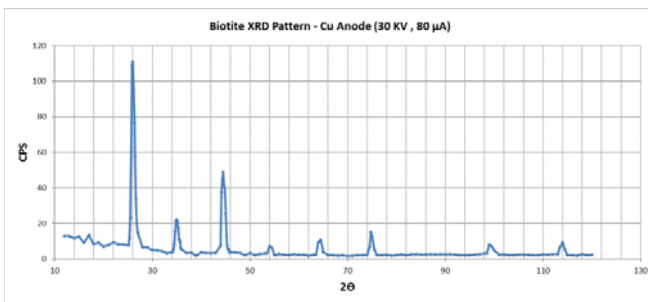


Where

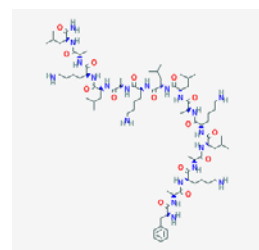
X is K, Na, Ca or less commonly Ba, Rb or Cs

Y is Al, Mg, Fe or less commonly Mn, Cr, Ti, Li, etc.

Z is chiefly Si or Al but also may include Fe³⁺ or Ti



INCI Name	ACETYL HEPTAPEPTIDE-9
Description	Acetyl Heptapeptide-9 is the reaction product of acetic acid and Heptapeptide-9
INCI Name	OLIGOPEPTIDE-10
Description	Alanine, 15-unit synthetic peptide with leucine, lysine, and phenylalanine
INCI Name	HYDROLYZED PLACENTAL EXTRACT
Description	Hydrolyzed Placental Extract is the hydrolysate of swine placental extract derived by acid, enzyme or other method of hydrolysis
INCI Name	HYDROLYZED PLACENTAL PROTEIN
Description	Protein hydrolyzates, placenta. Substance obtained by acidic, alkaline, or enzymatic hydrolysis of placenta composed primarily of amino acids, peptides, and proteins. It may contain impurities consisting chiefly of carbohydrates and lipids along with smaller quantities of miscellaneous organic substances of biological origin



Safety Data Sheet (SDS)

- เอกสารข้อมูลความปลอดภัย ซึ่งเป็นเอกสารที่แสดงข้อมูลเฉพาะของสารเคมีแต่ละตัวเกี่ยวกับลักษณะความเป็นอันตราย พิษ วิธีใช้ การเก็บรักษา การขนส่ง การกำจัด และการจัดการอื่นๆ
- GHS (The Globally Harmonized System of Classification and Labelling of Chemicals: กำหนดให้มีการจัดทำ SDS และมีการกำหนดรูปแบบของ SDS
- REACH (Registration, Evaluation, Authorisation and Restriction of chemical)
- สหภาพยุโรปกำหนดให้ใช้เอกสารในห่วงโซ่อุปทานด้วย โดยผู้ประกอบการต้องแนบข้อมูลเกี่ยวกับลักษณะและโอกาสที่ผู้เกี่ยวข้องจะสัมผัสกับสารเคมี

องค์ประกอบของ SDS

1. Identification
2. Composition/Information on ingredients
3. Hazards Identifications
4. First Aid Measures
5. Fire Fighting Measures
6. Accidental Release Measure
7. Handling and Storage
8. Exposure Controls/Personal Protection
9. Physical and Chemical Properties
10. Stability and Reactivity
11. Toxicological information
12. Ecological Information
13. Disposal Consideration
14. Transport Information
15. Regulation Information
16. Others

Physical Hazard

- Explosive: วัตถุระเบิด
- Flammable gas: ก๊าซไวไฟ
- Aerosol: สารละอองลอยไวไฟ
- Flammable liquid: ของเหลวไวไฟ
- Flammable solid: ของแข็งไวไฟ
- Pyrophoric: ลุกติดไฟได้เอง
- Substances and mixtures which, in contact with water, emit flammable gases: สารเคมีและสารผสมที่สัมผัสน้ำแล้วให้ก๊าซไวไฟ
- Self heating substances and mixtures: สารเคมีและสารผสมที่เกิดความร้อนได้เอง
- Oxidizing: ออกซิไดซ์
- Gas under pressure: ก๊าซภายใต้ความดัน
- Self-reactive substances and mixtures: สารเคมีและสารผสมที่ทำปฏิกิริยาได้เอง
- Corrosive to metals: สารกัดกร่อนโลหะ



Health Hazard

- Acute toxicity : ความเป็นพิษเฉียบพลัน
- Target organ system toxicity-single exposure: เป็นพิษต่ออวัยวะเป้าหมายเฉาะจง การได้รับสัมผัสครั้งเดียว
- Target organ system toxicity-repeated exposure: เป็นพิษต่ออวัยวะเป้าหมายเฉาะจง การได้รับสัมผัสหลายครั้ง
- Aspiration hazardous : อันตรายจากการหายใจ
- Skin corrosive/irritation: กัดกร่อน หรือระคายเคืองต่อผิวหนัง
- Serious eye damage/eye irritation: การทำลายดวงตาอย่างรุนแรง ระคายเคืองต่อดวงตา
- Respiratory or skin sensitization: กระตุ้นให้เกิดการแพ้ระบบทางเดินหายใจ หรือผิวหนัง
- Carcinogenicity: ก่อให้เกิดมะเร็ง
- Germ cell mutagenicity: การกลายพันธุ์ของเซลล์สืบพันธุ์
- Hazardous to the aquatic environment: ความเป็นอันตรายต่อสิ่งแวดล้อมทางน้ำ

Mixture: GHS (กายภาพ)

- มีข้อมูลของสารผสม ให้ใช้ข้อมูลของสารผสม
- หากไม่มีข้อมูลของสารผสม ใช้หลัก **Bridging principle**
- ไม่มีข้อมูลสารผสม ไม่สามารถใช้หลัก Bridging principle ให้อธิบายไว้ในแต่ละประเภทความเป็นอันตรายเพื่อคาดคะเนความเป็นอันตราย

การจำแนกประเภทก๊าซผสมไวไฟโดยวิธีการคำนวณตาม ISO 10156: 1996

ก๊าซผสมประกอบด้วย 2% (H₂), 6% (CH₄), 27% (Ar) และ 65% (He)

K_i (Ar) = 0.5, K_i (He) = 0.5

คำนวณก๊าซผสมเทียบเท่ากับไนโตรเจน โดยใช้ค่า K_i

2% (H₂)+6% (CH₄)+ 27%(0.5) (N₂)+65%(0.5) (N₂) = 54%

ปรับค่าผลรวมให้เป็น 100% จะได้เท่ากับ

3.7% (H₂)+11.1% (CH₄)+ 85.2 (N₂)

ค่าสัมประสิทธิ์ T สำหรับก๊าซไวไฟ คือ

T(H₂) = 5.7%

T(CH₄) = 14.3%

คำนวณค่าความไวไฟ

$$= \frac{3.7}{5.7} + \frac{11.1}{14.3} = 1.42$$

$$\Sigma \frac{V\%}{T} \geq 1$$

V% = ปริมาณของก๊าซไวไฟเทียบเท่า

T = ค่าความเข้มข้นสูงสุดของก๊าซ

ไวไฟในไนโตรเจนที่ยังไม่เป็นส่วนผสม

ไวไฟในอากาศ

K_i = แฟกเตอร์เทียบเท่าสำหรับก๊าซ

เฉื่อยต่อไนโตรเจน

ก๊าซผสมนี้มีความไวไฟในอากาศ (> 1)

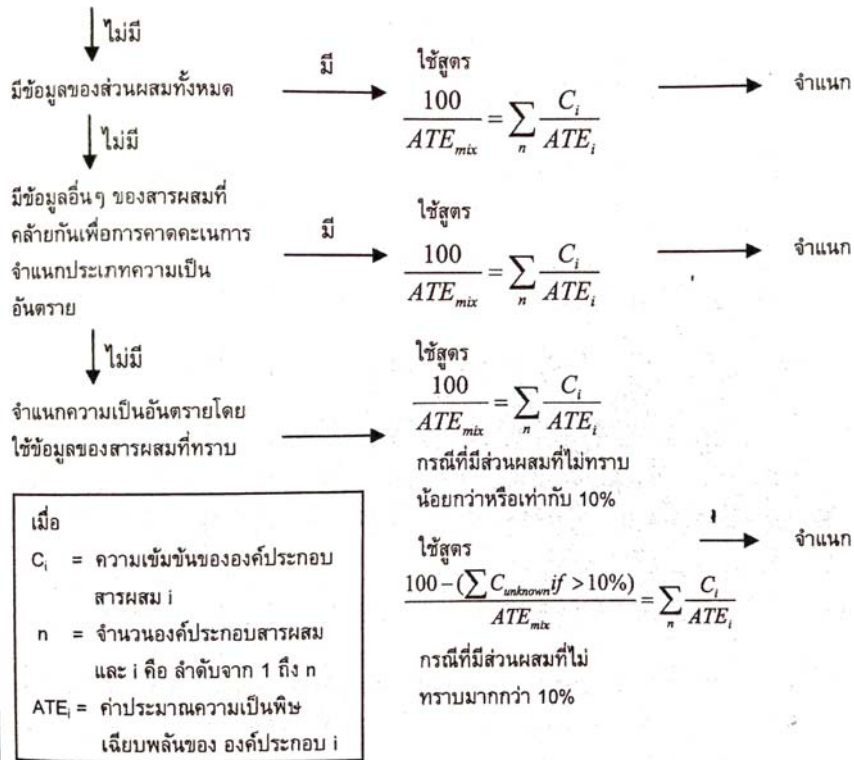
Mixture: GHS (สุขภาพและสิ่งแวดล้อม)

- มีข้อมูลของสารผสม ให้ใช้ข้อมูลของสารผสม
- หากไม่มีข้อมูลของสารผสม ใช้หลักเชื่อมโยง **Bridging principle**
- การคำนวณ
- อื่นๆ

หลักการเชื่อมโยง

- การเจือจาง (dilution)
- การผลิตในแต่ละครั้ง (Batching)
- ความเข้มข้นของสารผสมที่มีความเป็นพิษสูง (Concentration of highly toxic mixtures)
- การตีความเพื่อให้อยู่ในกลุ่มของความเป็นพิษกลุ่มใดกลุ่มหนึ่ง (Interpolation with one toxic category)
- สารผสมที่มีคุณสมบัติคล้ายคลึงกัน (Substantially similar mixtures)
- สารละอองลอยที่บรรจุในภาชนะปิด (Aerosol)

มีข้อมูลเพียงพอของสารผสมที่คล้ายกันเพื่อการคาดคะเน
การจำแนกประเภทความเป็นอันตราย โดยใช้หลักการเชื่อมโยง



ตัวอย่างการเทียบค่า ATE

ทางรับสัมผัส	ค่า LD50	ATE
ทางปาก	0 < กลุ่มที่ 1 ≤ 5	0.5
	5 < กลุ่มที่ 2 ≤ 50	5
	50 < กลุ่มที่ 3 ≤ 300	100
	300 < กลุ่มที่ 4 ≤ 2000	500
	2000 < กลุ่มที่ 5 ≤ 5000	2500

THANK YOU
FOR YOUR ATTENTION