

## Selected 2-ethylhexyl esters: Human health tier II assessment



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- Chemicals in this assessment
- Preface
- Grouping Rationale
- Import, Manufacture and Use
- Restrictions
- Existing Worker Health and Safety Controls
- Health Hazard Information
- Risk Characterisation
- NICNAS Recommendation
- References

### Chemicals in this assessment

Chemical Name in the Inventory	CAS Number
<b>Octadecanoic acid, 2-ethylhexyl ester</b>	22047-49-0
<b>Dodecanoic acid, 2-ethylhexyl ester</b>	20292-08-4
<b>9-Octadecenoic acid, 2-ethylhexyl ester, (Z)-</b>	26399-02-0
<b>Octadecanoic acid, hydroxy-, 2-ethylhexyl ester</b>	29383-26-4
<b>Octadecanoic acid, 12-hydroxy-, 2-ethylhexyl ester</b>	29710-25-6
<b>Hexadecanoic acid, 2-ethylhexyl ester</b>	29806-73-3
<b>2-Ethylhexyl myristate</b>	29806-75-5
<b>Nonanoic acid, 2-ethylhexyl ester</b>	59587-44-9
<b>Fatty acids, tallow, 2-ethylhexyl ester</b>	68648-21-5
<b>Isononanoic acid, 2-ethylhexyl ester</b>	71566-49-9
<b>Fatty acids, C14-18, 2-ethylhexyl esters</b>	91031-47-9
<b>Fatty acids, C16-18, 2-ethylhexyl esters</b>	91031-48-0
<b>Fatty acids, coco, 2-ethylhexyl esters</b>	92044-87-6
<b>Isohexadecanoic acid, 2-ethylhexyl ester</b>	93843-32-4
<b>13-Docosenoic acid, 2-ethylhexyl ester, (Z)-</b>	94094-62-9
<b>Fatty acids, C8-C16, 2-ethyl hexyl esters</b>	135800-37-2

### Preface

This assessment was carried out by staff of the National Industrial Chemicals Notification and Assessment Scheme (NICNAS) using the Inventory Multi-tiered Assessment and Prioritisation (IMAP) framework.

The IMAP framework addresses the human health and environmental impacts of previously unassessed industrial chemicals listed on the Australian Inventory of Chemical Substances (the Inventory).

The framework was developed with significant input from stakeholders and provides a more rapid, flexible and transparent approach for the assessment of chemicals listed on the Inventory.

Stage One of the implementation of this framework, which lasted four years from 1 July 2012, examined 3000 chemicals meeting characteristics identified by stakeholders as needing priority assessment. This included chemicals for which NICNAS already held exposure information, chemicals identified as a concern or for which regulatory action had been taken overseas, and chemicals detected in international studies analysing chemicals present in babies' umbilical cord blood.

Stage Two of IMAP began in July 2016. We are continuing to assess chemicals on the Inventory, including chemicals identified as a concern for which action has been taken overseas and chemicals that can be rapidly identified and assessed by using Stage One information. We are also continuing to publish information for chemicals on the Inventory that pose a low risk to human health or the environment or both. This work provides efficiencies and enables us to identify higher risk chemicals requiring assessment.

The IMAP framework is a science and risk-based model designed to align the assessment effort with the human health and environmental impacts of chemicals. It has three tiers of assessment, with the assessment effort increasing with each tier. The Tier I assessment is a high throughput approach using tabulated electronic data. The Tier II assessment is an evaluation of risk on a substance-by-substance or chemical category-by-category basis. Tier III assessments are conducted to address specific concerns that could not be resolved during the Tier II assessment.

These assessments are carried out by staff employed by the Australian Government Department of Health and the Australian Government Department of the Environment and Energy. The human health and environment risk assessments are conducted and published separately, using information available at the time, and may be undertaken at different tiers.

This chemical or group of chemicals are being assessed at Tier II because the Tier I assessment indicated that it needed further investigation.

For more detail on this program please visit: [www.nicnas.gov.au](http://www.nicnas.gov.au)

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#### ACRONYMS & ABBREVIATIONS

## Grouping Rationale

This group of 16 chemical compounds consists of 2-ethylhexyl esters of selected fatty acids. These compounds have been included in this group due to the expectation that the physico-chemical properties will not vary greatly, leading to the compounds within this group having related end uses.

Each chemical in this group is produced through the esterification of 2-ethylhexanol (2-EH; CAS No. 104-76-7) and its respective fatty acid; therefore, they are expected to hydrolyse to these compounds via chemical or enzymatic processes.

## Import, Manufacture and Use

### Australian

The following Australian industrial use was reported for 2-ethylhexyl oleate, under previous mandatory and/or voluntary calls for information.

The chemical has reported commercial use in lubricants and additives.

The total volume of this chemical manufactured in Australia, as reported under previous mandatory and/or voluntary calls for information, was <100 tonnes per annum.

### International

The chemicals in this group have one or more of the following international uses, as identified through the European Union (EU) Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) dossiers, the European Commission Cosmetic Ingredients and Substances (CosIng) database, the US Personal Care Products Council International Nomenclature of Cosmetic Ingredients (INCI) Dictionary, the US Department of Health and Human Services Household Products Database (HPD) and the Substances and Preparations in Nordic countries (SPIN) database.

The majority of the chemicals in this group have reported cosmetic use in:

- make-up (lipstick, blush, foundation and concealer) products;

- moisturising and sunscreen lotions;
- antiperspirants and deodorants;
- hair removal products; and
- hair care products.

Chemicals in this group have reported domestic uses, including in washing and cleaning products.

Chemicals in this group have reported commercial uses, including in:

- lubricants and greases;
- metal working fluids;
- hydraulic fluids; and
- dyes and textile treatment products.

## Restrictions

### Australian

No known restrictions have been identified for any of the chemicals in this group.

### International

No known international restrictions have been identified for any of the chemicals in this group.

## Existing Worker Health and Safety Controls

### Hazard Classification

The chemicals are not listed on the Hazardous Substances Information System (HSIS (Safe Work Australia).

### Exposure Standards

#### Australian

No specific exposure standards are available for the chemicals in this group. However, stearates have an exposure standard of 10 mg/m<sup>3</sup> time weighted average (TWA), which may apply to 2-ethylhexyl stearate.

#### International

No specific exposure standards are available. However, the following exposure standards are identified for stearates, which may apply to 2-ethylhexyl stearate:

Stearates have an exposure limit of 5–10 mg/m<sup>3</sup> TWA in different countries such as the USA, Canada, Singapore and Sweden (Galleria Chemica).

## Health Hazard Information

While limited health hazard information is available for the specific chemicals in this group, each of the chemicals is expected to hydrolyse by chemical or enzymatic process, to produce its respective fatty acid component and 2-EH (CAS No. 104-76-7). Although the fatty acid components possess potential local skin irritant properties (which are not relevant for the esters in this group), the fatty acids are not expected to contribute to any significant systemic toxicity (OECD, 2014). The common hydrolysis product, 2-EH, of all chemicals has been assessed by NICNAS and, where relevant, available information for 2-EH has been included in this report (NICNAS).

### Acute Toxicity

#### Oral

Based on available data for several chemicals in this group, the remainder of the chemicals in this group are also expected to have low acute oral toxicity.

The oral median lethal dose (LD50) values in rats are reported to be >2000 mg/kg bw for 2-ethylhexyl laurate, 2-ethylhexyl palmitate, 2-ethylhexyl cocoate and fatty acids C8-C16, 2-ethylhexyl esters (REACH a; REACH b; REACH c; REACH g).

Mouse oral LD50 values are reported to be >2000 mg/kg bw for 2-ethylhexyl laurate, 2-ethylhexyl palmitate, 2-ethylhexyl cocoate, 2-ethylhexyl stearate and 2-ethylhexyl oleate (REACH a; REACH b; REACH c; REACH d; REACH e).

## Dermal

The dermal LD50 value in rats is reported to be >2000 mg/kg bw for 2-ethylhexyl laurate (REACH a). No data are available for any of the remaining chemicals in this group.

## Inhalation

The chemicals in this group are anticipated to have low acute inhalation toxicity, based on the limited available data.

The median lethal concentration (LC50) value in rats is reported to be >5.7 mg/L, in air, for 2-ethylhexyl oleate, following a four-hour exposure period (REACH e). An LC50 value >280 ppm for 2-ethylhexyl laurate is also reported (REACH a). However, very limited study details are available.

## Corrosion / Irritation

### Skin Irritation

The chemicals in this group may slightly irritate the skin, based on animal studies of several of the chemicals. However, the effects are not sufficient to warrant hazard classification (also see **Observations in humans** section).

In skin irritation studies, conducted according to OECD Test Guideline (TG) 404, for 2-ethylhexyl palmitate and 2-ethylhexyl cocoate, 0.5 mL of each of the chemicals was applied to the shaved intact skin of New Zealand White (NZW) rabbits (n=3), under semioclusive conditions for four hours, with observations for 72 hours and seven days, respectively (REACH b; REACH c). While slight irritation reactions (erythema and oedema) were reported for both chemicals (mean Draize scores  $\leq 1$ ), all effects were fully reversible within the study observation periods.

In skin irritation studies, conducted similarly to OECD TG 404, for 2-ethylhexyl oleate (n=3) and fatty acids C8-C16, 2-ethylhexyl esters (n=4), 0.5 mL of each of the chemicals was applied to the shaved intact skin of NZW rabbits, under occlusive conditions, for four hours and 24 hours, respectively (REACH e; REACH g). Slight irritation reactions (erythema and oedema) were reported for both chemicals (mean Draize scores  $\leq 1$ ). However, all effects were fully reversed within the study observation periods.

Non-guideline skin irritation studies have also been conducted in NZW rabbits for 2-ethylhexyl laurate and 2-ethylhexyl stearate, with slight skin irritation reactions reported for both chemicals. Effects were fully reversible for the laurate within the seven-day study observation period, while for the stearate, effects were still visible after the 72-hour study observation period; no seven-day observations were conducted to determine reversibility of effects. However, for both of these studies, only limited details (methodology and results) are available (REACH a; REACH d).

### Eye Irritation

The chemicals in this group may be slight eye irritants, based on animal studies with several of the chemicals. However, the effects are not sufficient to warrant hazard classification.

In eye irritation studies with 2-ethylhexyl laurate, 2-ethylhexyl palmitate and 2-ethylhexyl cocoate, conducted according to OECD TG 405, 0.1 mL of each respective chemical was instilled into one eye of NZW rabbits (n=3), with observations for seven days (REACH a; REACH b; REACH c). Slight irritation reactions were reported for the laurate and cocoate; however, all effects were fully reversible within 24-48 hours. No irritation effects were reported for the laurate.

An in vitro study, the 'hen's egg test on the chorioallantoic membrane' (HET-CAM assay), was conducted for 2-ethylhexyl stearate. Application of the chemical to the chorioallantoic membrane of four White Leghorn chicken eggs was reported to result in an irritation index of zero, and the chemical was concluded to be non-irritating (REACH d).

### Observation in humans

In a skin irritation study using 10 human volunteers (male and female), fatty acids C8-C16, 2-ethylhexyl esters did not induce any skin reactions after one hour of epidermal exposure to a 50 % solution of the chemical, or the undiluted (100 %) chemical, under open conditions (REACH g).

## Sensitisation

### Skin Sensitisation

Based on the available data, the chemicals in this group are not anticipated to be skin sensitisers.

In a guinea pig maximisation test (GPMT), conducted according to OECD TG 406, intradermal induction with 0.1 mL of a 25 % solution of fatty acids, C16-18, 2-ethylhexyl esters in paraffin oil, and epidermal induction with 0.5 mL of undiluted chemical, was followed by a challenge dose of 0.5 mL of a 50 % solution of the chemical in paraffin oil 12 days later. No skin sensitisation reactions were reported in any of the animals.

In a GPMT using fatty acids C8-C16, 2-ethylhexyl esters, conducted according to OECD TG 406, intradermal induction with a 5 % solution and epidermal induction with a 40 % solution of the chemical in paraffin oil, was followed by a challenge using a 20 % solution of the chemical in paraffin oil 14 days later. No skin sensitisation reactions were reported in any of the animals.

## Repeated Dose Toxicity

### Oral

Based on the available data, the chemicals in this group are not expected to cause serious damage to health, following repeated oral exposure.

In a 28-day repeated oral dose toxicity study using 2-ethylhexyl stearate, conducted similarly to OECD TG 407 (available in the REACH dossier for fatty acids, C16-18, 2-ethylhexyl esters), the test chemical was administered by oral gavage to male and female Sprague Dawley (SD) rats (10 animals/sex/dose) at 100, 500 or 1000 mg/kg bw/day (REACH f). No clinical signs of toxicity were observed throughout the study. While mean water intake was reported to be slightly increased in the low and mid-dose groups, this was not considered to be treatment-related. No significant differences in body weights, food consumption, clinical chemistry or organ weights were reported between treatment and control group animals. No significant abnormalities were noted at necropsy or at histological examination. A no observed adverse effect level (NOAEL) of 1000 mg/kg bw/day was reported for this study.

A 28-day repeat oral dose toxicity study is also available for the fatty acids C8-C16, 2-ethylhexyl esters, conducted according to OECD TG 407, where the test chemical was administered by oral gavage to male and female SD rats (5 animals/sex/dose) at 100, 300 or 1000 mg/kg bw/day, daily, five days a week, for 28 days. No clinical signs of toxicity were observed throughout the study. No significant differences in body weights, food consumption, blood chemistry or organ weights were reported between treatment and control group animals. No abnormalities were noted at necropsy or at histopathological examination. A NOAEL of 1000 mg/kg bw/day was reported for this study.

### Dermal

No data are available.

### Inhalation

No data are available.

## Genotoxicity

Based on the weight of evidence from the available in vitro and in vivo genotoxicity studies, the chemicals in this group are not considered to be genotoxic.

For 2-ethylhexyl oleate, negative results were observed in two different in vitro assays (REACH e):

- a gene mutation test in mouse lymphoma L5178Y cells at 0.03-100 µg/mL, with and without metabolic activation, conducted according to OECD TG 476; and
- a chromosomal aberration test in human lymphocytes at 3-33 µg/mL, with and without metabolic activation, conducted according to OECD TG 473.

For 2-ethylhexyl laurate, negative results were observed in one in vitro assay and one in vivo assay (REACH a):

- an in vitro point mutation assay (Ames test) at 8-5000 µg/plate (species or strain not specified), with or without metabolic activation; and
- an in vivo chromosomal aberration (micronucleus assay) in mice, following oral (gavage) exposure to the chemical at 1.25, 2.5 or 5.0 mL/kg bw. No further study details are provided.

For fatty acids, C16-18, 2-ethylhexyl esters, negative results were reported for one in vitro point mutation assay (Ames test), conducted according to OECD TG 470, in *Salmonella typhimurium* strains TA 98, 100, 1535 and 1537, at test concentrations of 8-5000 µg/plate, with or without metabolic activation (REACH f).

For fatty acids C8-C16, 2-ethylhexyl esters, negative results were reported in one in vitro assay and one in vivo assay (REACH g):

- an in vitro point mutation assay (Ames test), conducted according to OECD TG 470, in *S. typhimurium* strains TA 98, 100, 1535 and 1537, at test concentrations of 8-5000 µg/plate, with or without metabolic activation; and
- an in vivo chromosomal aberration (micronucleus assay) in CD-1 mice, following intraperitoneal (i.p.) administration of the chemical at 1075, 2150 or 4300 mg/kg bw.

In addition, the fatty acid hydrolysis products of each of the esters are not expected to be genotoxic based on a weight of evidence approach (OECD, 2014). The common hydrolysis product, 2-EH, of all the chemicals in this group, has been assessed by NICNAS, and is also not considered to be genotoxic, based on both in vitro and in vivo studies (NICNAS).

## Carcinogenicity

While no specific data are available for the chemicals in this group, fatty acid hydrolysis products of each of the esters are not expected to be carcinogenic (OECD, 2014). The common hydrolysis product, 2-EH, of all the chemicals in this group, was reported to not be carcinogenic in a two-year oral gavage study in rats (NICNAS).

## Reproductive and Developmental Toxicity

Limited data are available for the chemicals in this group.

In developmental toxicity study in SD rats using 2-ethylhexyl stearate, conducted according to OECD TG 414 (available in the REACH dossier for fatty acids, C16-18, 2-ethylhexyl esters), the test chemical was administered by oral gavage to pregnant females (24 animals per group), at 100, 300 or 1000 mg/kg bw/day, from gestation day (GD) five to GD 15 (REACH f). No clinical signs of maternal toxicity were observed in this study, and the chemical was considered to not induce any treatment-related developmental or teratogenic effects. A NOAEL, for maternal and developmental toxicity, of 1000 mg/kg bw/day, was reported. However, statistically significant increases in foetal skeletal retardations were observed in the 100 mg/kg bw/day group (lack of ossification of one vertebra) and the 1000 mg/kg bw/day group (lack of ossification of one or two vertebrae) compared to control group foetuses. The study authors considered these to be incidental effects as they were not accompanied by weight retardation, and that the values were considered to be within the normal range of variation for this strain.

The common hydrolysis product, 2-EH, for all the esters in this group, is classified as a Category 3 hazardous substance toxic to reproduction, with the risk phrase 'Possible risk of harm to the unborn child' (Xn; R63) in HSIS (Safe Work Australia).

The hydrolysis product, 2-EH, was reported to cause developmental toxicity, but not teratogenicity, in rats following treatment via the oral route (NICNAS). These effects were noted in the absence of signs of marked maternal toxicity, and included markedly reduced mean foetal body weights and a higher number of foetuses with skeletal malformations, variations and retardations (similar to the effects noted in the above studies). The NOAEL for developmental toxicity was reported to be 130 mg/kg bw/day.

Based on the proportion of 2-EH formed on hydrolysis of the smallest (2-ethylhexyl nonanoate) and the largest (2-ethylhexyl (Z)-13-docosenoate) esters in this group, equivalent doses of the esters required to reach the level of toxicity reported for 2-EH (NOAEL of 130 mg/kg bw/day), range from 270-450 mg/kg bw/day.

## Risk Characterisation

### Critical Health Effects

The critical health effects for risk characterisation relate to the uncertainty as to the possibility of developmental effects related to metabolism to 2-EH.

### Public Risk Characterisation

Currently, there are no restrictions in Australia on using these chemicals in cosmetics or domestic products.

Although use of the chemicals in cosmetic or domestic products in Australia is not known, the majority of chemicals in this group are reported to be used in cosmetic and domestic products overseas, that are potentially available for consumer use in Australia.

Considering the range of domestic, cosmetic and personal care products that may contain these chemicals, the main route of public exposure is expected to be through the skin and incidental inhalation exposure from products applied as sprays or aerosols, with the only available information on concentration of use for 2-ethylhexyl hydroxystearate (CAS No. 29383-26-4), with a reported use concentration range of 5 - 10 % in a skin cream/moisturising product (HPD).

Although the public could be exposed to the chemicals through potential cosmetic and domestic uses, given the high NOAEL values derived from studies on 2-EH, the chemicals are not expected to pose a risk to public health. Esters of the stronger reproductive toxin, 2-ethylhexanoic acid (2-EHA; CAS No. 149-57-5), were limited to 5 % (as 2-EHA), and so similar concentrations of esters of 2-EH are expected to present a low risk.

Quantitative considerations related to exposure to the stronger reproductive toxin, 2-EHA, from 2-EHA esters, led to these being controlled by scheduling in the *Poisons Standard—the Standard for the Uniform Scheduling of Medicines and Poisons* (SUSMP) (NICNAS b; SUSMP, 2016). Therefore, similar risk calculations for 2-EH esters should be undertaken as a Tier III assessment.

### Occupational Risk Characterisation

During product formulation, exposure to these chemicals may occur, particularly where manual or open processes are used. These could include transfer and blending activities, quality control analysis, and cleaning and maintaining equipment. Worker exposure to the chemicals at lower concentrations could also occur while using formulated products containing the chemicals. The level and route of exposure will vary depending on the method of application and work practices employed.

## NICNAS Recommendation

The chemicals are recommended for Tier III assessment to examine any quantitative data to identify if an unacceptable risk of exposure exists from manufactured and/or imported products containing the chemicals.

## Regulatory Control

## References

Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)] Third edition. Accessed at [http://www.safeworkaustralia.gov.au/sites/SWA/about/Publications/Documents/258/ApprovedCriteria\\_Classifying\\_Hazardous\\_Substances\\_NOHSC1008-2004\\_PDF.pdf](http://www.safeworkaustralia.gov.au/sites/SWA/about/Publications/Documents/258/ApprovedCriteria_Classifying_Hazardous_Substances_NOHSC1008-2004_PDF.pdf)

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REACH a. Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) dossier for 2-ethylhexyl laurate (CAS No. 20292-08-4). Accessed May 2016 at <http://echa.europa.eu/web/guest/information-onchemicals/registered-substances>

REACH b. REACH dossier for 2-ethylhexyl palmitate (CAS No. 29806-73-3). Accessed May 2016 at <http://echa.europa.eu/web/guest/information-onchemicals/registered-substances>

REACH c. REACH dossier for 2-ethylhexyl cocoate (CAS No. 92044-87-6). Accessed May 2016 at <http://echa.europa.eu/web/guest/information-onchemicals/registered-substances>

REACH d. REACH dossier for 2-ethylhexyl stearate (CAS No. 22047-49-0). Accessed May 2016 at <http://echa.europa.eu/web/guest/information-onchemicals/registered-substances>

REACH e. REACH dossier for 2-ethylhexyl oleate (CAS No. 26399-02-0). Accessed May 2016 at <http://echa.europa.eu/web/guest/information-onchemicals/registered-substances>

REACH f. REACH dossier for fatty acids, C16-18, 2-ethylhexyl esters (CAS No. 91031-48-0). Accessed May 2016 at <http://echa.europa.eu/web/guest/information-onchemicals/registered-substances>

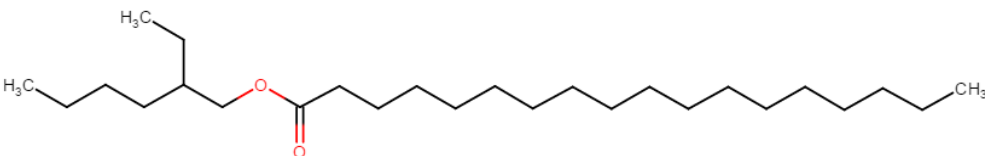
REACH g. REACH dossier for fatty acids C8-C16, 2-ethylhexyl esters (CAS No. 135800-37-2). Accessed May 2016 at <http://echa.europa.eu/web/guest/information-onchemicals/registered-substances>

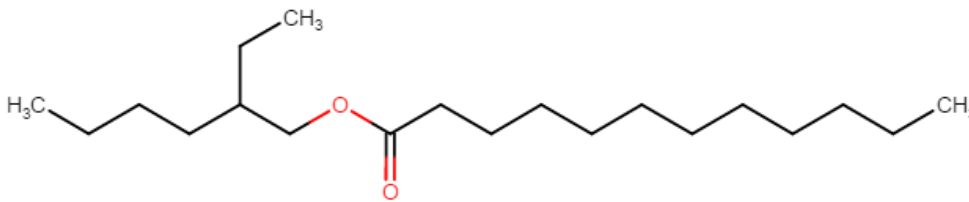
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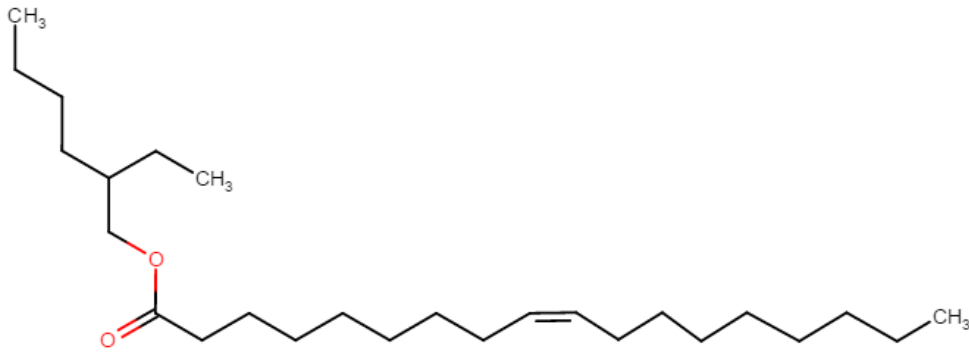
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Last Update 01 July 2016

## Chemical Identities

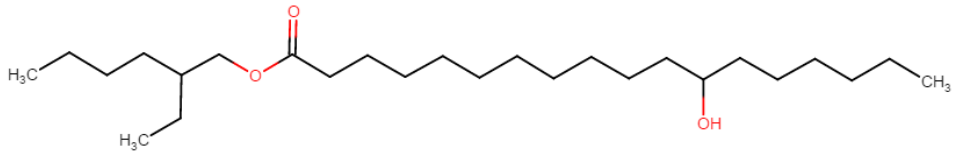
Chemical Name in the Inventory and Synonyms	<b>Octadecanoic acid, 2-ethylhexyl ester</b> octyl stearate 2-ethylhexyl octadecanoate 2-ethylhexyl stearate ethylhexyl stearate
CAS Number	22047-49-0
Structural Formula	
Molecular Formula	C26H52O2
Molecular Weight	396.7

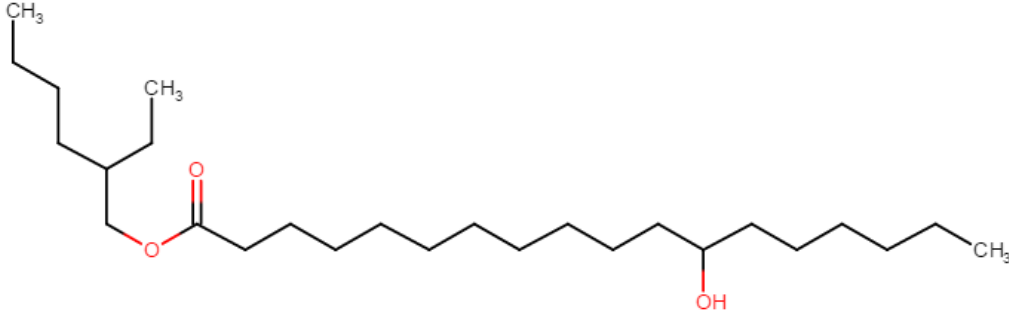
Chemical Name in the Inventory and Synonyms	<b>Dodecanoic acid, 2-ethylhexyl ester</b> 2-ethylhexyl laurate octyl laurate 2-ethylhexyl dodecanoate ethylhexyl laurate
CAS Number	20292-08-4
Structural Formula	
Molecular Formula	C <sub>20</sub> H <sub>40</sub> O <sub>2</sub>
Molecular Weight	312.5

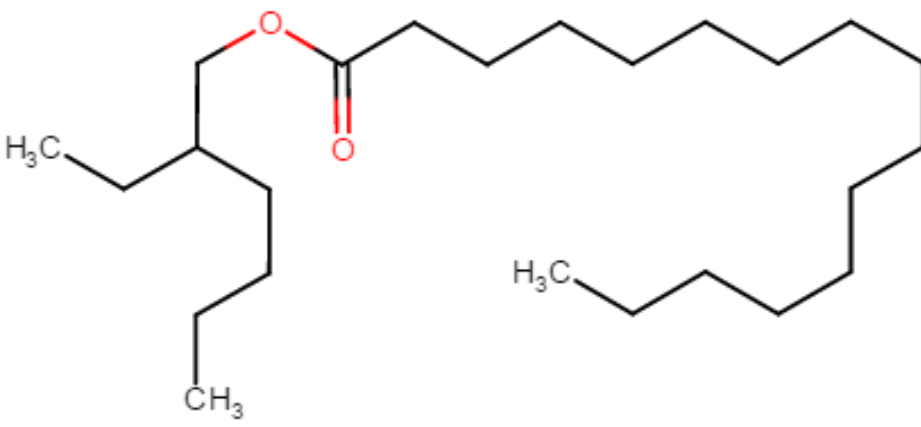
Chemical Name in the Inventory and Synonyms	<b>9-Octadecenoic acid, 2-ethylhexyl ester, (Z)-</b> 2-ethylhexyl oleate oleic acid, 2-ethylhexyl ester 2-ethylhexyl 9-octadecenoate ethylhexyl oleate
CAS Number	26399-02-0
Structural Formula	
Molecular Formula	C <sub>26</sub> H <sub>50</sub> O <sub>2</sub>
Molecular Weight	394.7

Chemical Name in the Inventory and Synonyms	<b>Octadecanoic acid, hydroxy-, 2-ethylhexyl ester</b> 2-ethylhexyl hydroxystearate ethylhexyl hydroxystearate octyl hydroxystearate
CAS Number	29383-26-4
Structural Formula	

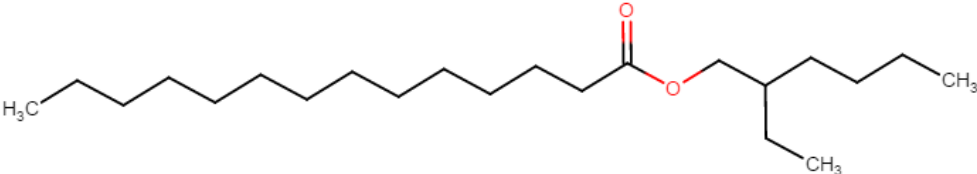


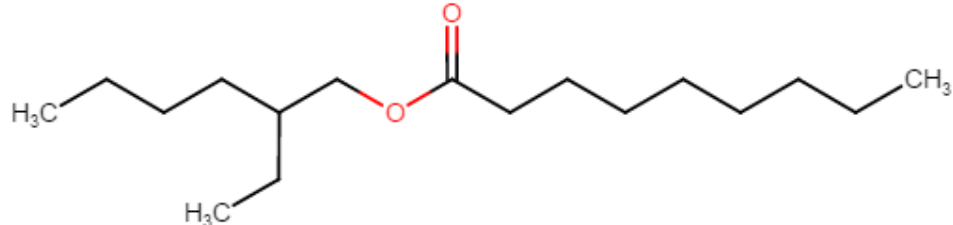
	
Molecular Formula	C <sub>26</sub> H <sub>52</sub> O <sub>3</sub>
Molecular Weight	412.7

Chemical Name in the Inventory and Synonyms	<b>Octadecanoic acid, 12-hydroxy-, 2-ethylhexyl ester</b> 2-ethylhexyl 12-hydroxystearate ethylhexyl hydroxystearate
CAS Number	29710-25-6
Structural Formula	
Molecular Formula	C <sub>26</sub> H <sub>52</sub> O <sub>3</sub>
Molecular Weight	412.7

Chemical Name in the Inventory and Synonyms	<b>Hexadecanoic acid, 2-ethylhexyl ester</b> 2-ethylhexyl palmitate ethylhexyl palmitate octyl palmitate
CAS Number	29806-73-3
Structural Formula	

Molecular Formula	C <sub>24</sub> H <sub>48</sub> O <sub>2</sub>
Molecular Weight	368.6

Chemical Name in the Inventory and Synonyms	<b>2-Ethylhexyl myristate</b> Bernel Ester 2014 octyl myristate
CAS Number	29806-75-5
Structural Formula	
Molecular Formula	C <sub>22</sub> H <sub>44</sub> O <sub>2</sub>
Molecular Weight	340.6

Chemical Name in the Inventory and Synonyms	<b>Nonanoic acid, 2-ethylhexyl ester</b> 2-ethylhexyl pelargonate octyl pelargonate ethylhexyl pelargonate 2-ethylhexyl nonanoate
CAS Number	59587-44-9
Structural Formula	
Molecular Formula	C <sub>17</sub> H <sub>34</sub> O <sub>2</sub>
Molecular Weight	270.5

Chemical Name in the Inventory and Synonyms	<b>Fatty acids, tallow, 2-ethylhexyl ester</b> tallow fatty acid, 2-ethylhexyl ester
CAS Number	68648-21-5

Structural Formula	<h1>No Structural Diagram Available</h1>
Molecular Formula	Unspecified
Molecular Weight	

Chemical Name in the Inventory and Synonyms	<b>Isononanoic acid, 2-ethylhexyl ester</b> ethylhexyl isononanoate 2-ethylhexyl isononanoate
CAS Number	71566-49-9
Structural Formula	
Molecular Formula	C17H34O2
Molecular Weight	270.5

Chemical Name in the Inventory and Synonyms	<b>Fatty acids, C14-18, 2-ethylhexyl esters</b>
CAS Number	91031-47-9
Structural Formula	

**No Structural  
Diagram Available**

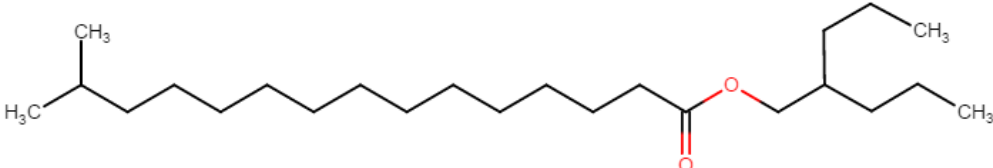
Molecular Formula	Unspecified
Molecular Weight	

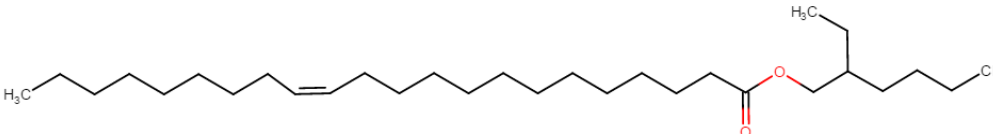
Chemical Name in the Inventory and Synonyms	<b>Fatty acids, C16-18, 2-ethylhexyl esters</b>
CAS Number	91031-48-0
Structural Formula	<b>No Structural Diagram Available</b>
Molecular Formula	Unspecified
Molecular Weight	

Chemical Name in the Inventory and Synonyms	<b>Fatty acids, coco, 2-ethylhexyl esters</b> coconut fatty acids, 2-ethylhexyl ester 2-ethylhexyl cocoate octyl cocoate ethylhexyl cocoate
CAS Number	92044-87-6
Structural Formula	

# No Structural Diagram Available

Molecular Formula	Unspecified
Molecular Weight	

Chemical Name in the Inventory and Synonyms	<b>Isohexadecanoic acid, 2-ethylhexyl ester</b> ethylhexyl isopalmitate ethylhexyl isohexadecanoate
CAS Number	93843-32-4
Structural Formula	
Molecular Formula	C24H48O2
Molecular Weight	368.6

Chemical Name in the Inventory and Synonyms	<b>13-Docosenoic acid, 2-ethylhexyl ester, (Z)-</b> erucic acid, 2-ethylhexyl ester 2-ethylhexyl (Z)-13-docosenoate 2-ethylhexyl (Z)-docos-13-enoate 2-octyl (Z)-13-docosenoate 13-docosenoic acid, 2-ethylhexyl ester, (z)-
CAS Number	94094-62-9
Structural Formula	
Molecular Formula	C30H58O2
Molecular Weight	450.786

Chemical Name in the Inventory and Synonyms	<b>Fatty acids, C8-C16, 2-ethyl hexyl esters</b>
CAS Number	135800-37-2
Structural Formula	<b>No Structural Diagram Available</b>
Molecular Formula	Not specified
Molecular Weight	

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