

Helaian Data Keselamatan

Safety data sheet

Mukasurat (Page): 1/29

BASF Helaian Data Keselamatan (BASF Safety data sheet)

Tarikh / Disemak (Date / Revised): 14.04.2023

Versi (Version): 2.1

Produk (Product): **Vitamin A-Palmitate 1.7 Mio IU/G stabilized with BHT**

(30041041/SDS_GEN_MY/MS)

Tarikh cetakan (Date of print): 20.10.2025

1. Pengenalan bahan kimia dan pembekal

Vitamin A-Palmitate 1.7 Mio IU/G stabilized with BHT

Kegunaan: Bahan tambah makanan haiwan, bahan tambah makanan, kandungan kosmetik

Syarikat:

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2. Pengenalan Bahaya

Pengelasan bahan dan campuran:
Pemb. 1B (bayi belum lahir)
Akuatik Kronik 3

Bagi pengelasan yang tidak ditulis dengan penuh dalam bahagian ini, teks lengkap boleh didapati di bahagian 16.

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Unsur label dan pernyataan berjaga-jaga:

Piktogram:

Kata Isyarat:
bahaya

Pernyataan Bahaya:

H360D

Boleh menjejaskan bayi belum lahir.

H412

Memudaratkan kepada hidupan akuatik dengan kesan yang berpanjangan.

Pernyataan Berjaga-jaga (Pencegahan):

P280

Pakai sarung tangan perlindungan, pakaian perlindungan dan perlindungan mata atau perlindungan muka.

P201

Dapatkan arahan khas sebelum menggunakan produk.

P273

Elakkan pelepasan bahan ke persekitaran.

P202

Jangan kendalikan sehingga semua langkah keselamatan telah dibaca dan difahami.

Pernyataan Berjaga-jaga (Tindak Balas):

JIKI terdedah atau terkena bahan: Hubungi PUSAT RACUN atau pakar perubatan.

Pernyataan Berjaga-jaga (Penyimpanan):

P405

Simpan di tempat berkunci.

Pernyataan Berjaga-jaga (Pelupusan):

P501

Buangkan kandungan dan bekas ke tempat pengumpulan bahan sisa merbahaya atau khas.

Bahaya lain yang tidak menyebabkan pengelasan:

Apabila tersebar halus pada bahan berliang, swapencucuhan mungkin berlaku. Risiko tergelincir yang tinggi disebabkan oleh kebocoran/tumpahan produk.

3. Komposisi dan Maklumat Mengenai Ramuan Bahan Kimia

Keadaan kimia

Retinil Palmitat

distabilkan dengan: 2,6-di-tert-butyl-p-kresol

Ramuan berbahaya

Retinil Palmitat

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Bahan/kumpulan bahan yang dinyatakan boleh dibebaskan jika berlaku kebakaran. Evolusi wasap/kabus.

Peralatan perlindungan khusus:

Gunakan alat pernafasan serba lengkap dan pakaian pelindung kimia.

Maklumat lanjut:

Jika berlaku kebakaran, gas/wap toksik mungkin terbebas. Sejukkan bekas yang berbahaya dengan semburan air. Kumpul air pemadam api yang tercemar secara berasingan, jangan biarkan ia mengalir ke dalam sistem pembetung atau efluen. Lupuskan sisa kebakaran dan air pemadam api yang tercemar menurut peraturan rasmi. Jangan semburkan air terus ke arah api, produk akan mengapung dan boleh

6. Langkah-Langkah Pelepasan Tidak Sengaja

Perlindungan diri, kelengkapan pelindung dan tatacara kecemasan:

Gunakan pakaian pelindung diri. Maklumat berhubung dengan langkah pencegahan diri lihat bahagian 8. Pastikan pengalihudaraan yang mencukupi. Jangan bernafaskan wap/semburan. Elakkan dari bersentuhan dengan kulit, mata dan pakaian.

Langkah berjaga-jaga untuk alam sekitar:

Jangan lepaskan ke dalam parit/air permukaan/air tanah. Hubungi pihak berkuasa jika berlaku tumpahan produk ke saluran air atau sistem pembetungan.

Kaedah pembersihan atau penyerapan:

Bagi sejumlah kecil: Kutip dengan bahap penyerap yang sesuai. Jangan gunakan habuk gergaji atau bahan boleh terbakar yang lain sebagai penyerap semasa pencucian.

Bagi sejumlah besar: Bina benteng tumpahan. Pam produk.

Lupuskan bahan yang diserap mengikut peraturan. Lap tumpahan dengan penyerap tidak mudah terbakar (contohnya: vermikulit, pengesat tumpahan). Kain/kain pencuci/penjerap yang kotor dan Silika boleh menyala sendiri dan perlu dibasahkan dengan air serta dilupuskan menggunakan cara yang selamat.

Maklumat tambahan: Risiko tergelincir yang tinggi disebabkan oleh kebocoran/tumpahan produk.

Tekstil / kain pembersih yang kotor diperbuat daripada serat semulajadi (misalnya berasal dari bulu tulen atau dari kapas tulen) adalah mampu menyala dan tidak harus diguna dan/atau harus dibuang melalui cara yang selamat.

7. Pengendalian dan Penyimpanan

Pengendalian

Elakkan pembentukan aerosol. Pastikan tidak ada produk terhablur di dalam bekas sebelum digunakan. Mesin pemproses mestilah dipasang dengan pengalihudaraan ekzos setempat. Pakai pakaian perlindungan dan perlindungan mata/muka yang sesuai. Elakkan dari bersentuhan dengan kulit, mata dan pakaian. Pastikan bekas tertutup rapat.

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Perlindungan terhadap kebakaran dan letupan:

Bahaya pencucuhan sendiri apabila kawasan permukaan yang luas dihasilkan Kain/kain pencuci/penjerap yang kotor dan Silika boleh menyala sendiri dan perlu dibasahkan dengan air serta dilupuskan menggunakan cara yang selamat.

Ambil langkah berjaga-jaga terhadap luahan statik. Jauhkan dari semua sumber pencucuhan: haba, percikan api, nyalaan terbuka.

Penyimpanan

Asingkan daripada pengoksida.

Maklumat lanjut tentang keadaan penyimpanan: Pastikan bekas tertutup rapat dan kering; simpan di tempat yang dingin. Lindungi daripada udara. Lindungi daripada kesan cahaya. Simpan dalam nitrogen

8. Kawalan pendedahan dan perlindungan diri

Komponen dengan parameter kawalan tempat kerja

2,6-di-tert-butyl-p-kresol, 128-37-0;

Nilai TWA 2 mg/m³ (ACGIHTLV), Pecahan dan wap boleh sedut

Nilai TWA 10 mg/m³ (OEL (Peraturan USECHH Malaysia))

Peralatan perlindungan peribadi

Perlindungan pernafasan:

Perlindungan pernafasan jika berlaku pelepasan wap/aerosol. Penapis zarah kecekapan tinggi bagi zarah pepejal dan cecair (contohnya EN 143 atau 149, Jenis P3 atau FFP3).

Perlindungan tangan:

Sarung tangan kalis kimia yang sesuai (EN ISO 374-1) jika terkena secara langsung yang berpanjangan (Disyorkan: Indeks pelindung 6, sama dengan masa penelapan > 480 minit mengikut EN ISO 374-1): Misalnya getah nitril (0.4 mm), getah kloroprena (0.5 mm), polivinilklorida (0.7 mm) dan lainnya.

Nota tambahan : Spesifikasi adalah berdasarkan ujian –ujian, data penerbitan dan maklumat dari pengeluar sarung tangan atau diambil yang serupa secara analogi. Oleh sebab banyak keadaan yang perlu dipertimbangkan (misalnya suhu), perlulah diambil kira, bahawa secara praktikalnya tempoh penggunaan sarung tangan pelindung kimia mungkin lebih pendek daripada tempoh penelapan yang ditentukan menurut ujian.

Arahan penggunaan pengilang hendaklah dipatuhi kerana jenisnya yang pelbagai.

Perlindungan mata:

Kaca mata keselamatan dengan pelindung sisi (gogal berbingkai) (contohnya EN 166)

Perlindungan badan:

Perlindungan badan mesti dipilih bergantung kepada aktiviti dan pendedahan, contohnya apron, kasut perlindungan, pakaian perlindungan bahan kimia (Berdasarkan DIN-EN 465)

Langkah kebersihan dan keselamatan am:

Wanita di awal kehamilan tidak boleh sama sekali terdedah kepada bahan. Dalam apa keadaan sekalipun, produk tidak boleh terkena kulit wanita Kendalikan mengikut amalan kesihatan dan keselamatan industri yang baik. Memakai pakaian kerja yang tertutup diperlukan sebagai tambahan

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kepada kelengkapan perlindungan diri yang dinyatakan. Elakkan daripada bersentuhan dengan kulit. Jangan makan, minum, merokok atau menggunakan tembakau di tempat kerja. Tangan dan/atau muka hendaklah dibasuh sebelum rehat dan setelah tamat waktu bekerja. Simpan pakaian kerja secara berasingan.

9. Sifat Fizikal dan Kimia

Bentuk:	minyak, separa terhablur	
Warna:	kekuningan	
Bau:	Tidak boleh digunakan	
Ambang bau:	Tidak ditentukan disebabkan oleh bahaya kesihatan yang mungkin melalui penyedutan.	
nilai pH:	bahan/campuran adalah tidak terlarutkan (dalam air)	
takat lebur:	dianggarkan 26 °C	
takat didih:	Penguraian bahan / produk tidak ditentukan.	
Takat kilat:	194 °C	(ISO 2719, cawan tertutup)
Tahap penyejatan:	sedikit sahaja	
Kemudahbakaran (pepejal/gas):	tidak mudah terbakar	(diterbitkan daripada takat kilat)
Had letupan bawah:	Untuk cecair tiada kaitan untuk pengelasan dan pelabelan., Had letupan bawah mungkin 5 - 15 °C dibawah takat kilat.	
Had letupan atas:	Untuk cecair tiada kaitan untuk pengelasan dan pelabelan.	
Suhu pencucuhan:	261 °C	(DIN EN 14522)
Penguraian terma:	>= 170 °C tindakbalas memecut-sendiri	(DSC (DIN 51007))
Kebolehan swapemanasan sendiri:	tidak berkenaan, produk ialah cecair	
Bahaya letupan:	Berdasarkan struktur kimia tiada petunjuk ciri-ciri mudah meletup.	
Sifat yang menggalakkan kebakaran:	Berdasarkan sifat strukturnya produk ini tidak diklasifikasikan sebagai pengoksida.	
Tekanan Wap:	(20 °C) sedikit sahaja	

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Kepekatan:	921.1 kg/m ³ (20 °C)	(piknometer)
ketumpatan relatif:	0.9211 (20 °C)	(piknometer)
Ketumpatan wap relatif (udara):	> 1 (20 °C) Lebih berat daripada udara	(anggaran)
Keterlarutan dalam air:	tidak terlarut	
Keterlarutan (kualitatif) pelarut:	pelarut organik terlarut	
Pekali petakan n-oktanol/air (log Pow):	tidak berkenaan untuk campuran	
Tegangan permukaan:	Kajian secara teknikalnya tidak boleh dijalankan.	
Kelikatan, dinamik:	44 mPa.s (60 °C)	
Kelikatan, kinematik:	Tiada data diperoleh.	

10. Kestabilan dan Kereaktifan

Keadaan yang perlu dielakkan:

Suhu: > 60 °C

Sikap tidak mempedulikan keadaan yang telah disebutkan boleh menyebabkan tindakbalas penguraian yang tidak diingini. Elakkan cahaya Lihat MSDS bahagian 7 - Pengendalian dan Penyimpanan.

Penguraian terma: ≥ 170 °C (DSC (DIN 51007))
tindakbalas memecut-sendiri

Bahan yang perlu dielakkan:

agen pengoksida

Kakisan kepada logam: Tiada kesan mengakis pada logam

Tindak balas berbahaya:

Penyalan diri mungkin boleh berlaku apabila disebarkan secara halus di atas permukaan mudah terbakar dalam persekitaran berudara.

Bahan penguraian berbahaya:

Tiada produk penguraian yang berbahaya jika disimpan dan dikendalikan seperti yang ditetapkan/dinyatakan.

Kereaktifan:

Tiada produk penguraian yang berbahaya jika disimpan dan dikendalikan seperti yang ditetapkan/dinyatakan.

Kestabilan kimia:

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Produk adalah stabil jika disimpan dan dikendalikan sebagaimana

11. Maklumat Toksikologi

Ketoksikan akut

Penilaian ketoksikan akut:

Tidak toksik selepas sekali ditelan.

Kerengsaan

Penilaian kesan merengsa:

Tidak merengsakan mata. Boleh menyebabkan sedikit kerengsaan pada kulit.

Maklumat tentang : Retinil Palmitat

Data eksperimen/dikira:

Kakisan/Kerengsaan kulit arnab: Merengsa (Ujian BASF)

Kakisan/Kerengsaan kulit arnab: merengsa sedikit (Garis panduan OECD 404)

Maklumat tentang : Retinil Palmitat

Data eksperimen/dikira:

Kerosakkan/kerengsaan mata yang serius arnab: tidak merengsa (Garis panduan OECD 405)

Pemekaan pernafasan/kulit

Penilaian pemekaan:

Kesan pemekaan kulit tidak diperhatikan dalam kajian haiwan.

Maklumat tentang : Retinil Palmitat

Data eksperimen/dikira:

Ujian pemaksimum tikus kasturi marmut: Tidak memeka (Garis panduan OECD 406)

Kemutagenan sel germa

Penilaian kemutagenan:

Berdasarkan data yang ada, kriteria pengelasan tidak dipenuhi.

Maklumat tentang : Retinil Palmitat

Penilaian kemutagenan:

Dalam sebahagian besar ujian yang dijalankan (bakteria/mikroorganisma/kultur sel), kesan mutagen tidak ditemui. Kesan mutagen juga tidak ditemui dalam hasil cerakin in vivo. Produk belum diuji sepenuhnya. Pernyataan diambil sebahagiannya daripada produk yang mempunyai struktur dan komposisi yang sama.

Kekarsinogenan

Penilaian kekarsinogenan:

Berdasarkan data yang ada, kriteria pengelasan tidak dipenuhi.

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Penilaian kekarsinogenan:

Keputusan dari sejumlah kajian jangka panjang kekarsinogenan dan ujian jangka pendek ada didapati. Setelah mengambil kira semua maklumat tersebut, tidak ada tanda yang menunjukkan bahan ini sendiri adalah karsinogen. Data penulisan.

Ketoksikan pembiakan

Penilaian ketoksikan pembiakan:

Berdasarkan data yang ada, kriteria pengelasan tidak dipenuhi.

Maklumat tentang : Retinil Palmitat

Penilaian ketoksikan pembiakan:

Tiada data yang boleh dipercayai diperoleh tentang ketoksikan pembiakan.

Ketoksikan perkembangan

Penilaian keteratogenan:

Boleh memudaratkan bayi belum lahir.

Data eksperimen/dikira:

Maklumat tentang : Retinil Palmitat

Penilaian keteratogenan:

Boleh memudaratkan bayi belum lahir.

Ketoksikan khusus organ sasaran (sekali pendedahan):

Penilaian sekali STOT:

Berdasarkan data yang ada, kriteria pengelasan tidak dipenuhi.

Ketoksikan dos berulang dan Ketoksikan organ sasaran tertentu (pendedahan berulang)

Penilaian ketoksikan dos berulang:

Berdasarkan data yang ada, kriteria pengelasan tidak dipenuhi.

Bahaya penyedutan

Tiada data diperoleh.

Maklumat lain yang berkaitan dengan ketoksikan

Produk belum diuji. Penyataan tentang toksikologi diambil daripada ciri setiap komponen.

12. Maklumat Ekologi

Keekotoksikan

Penilaian ketoksikan akuatik:

Memudaratkan kepada hidupan akuatik dengan kesan yang berpanjangan.

Memudaratkan kepada organisma akuatik, boleh menyebabkan kesan buruk jangka panjang kepada alam sekitar akuatik.

Maklumat tentang : 2,6-di-tert-butil-p-kresol

Ketoksikan kepada ikan:

LC0 (96 h) \geq 0.57 mg/l, Brachydanio rerio (OECD 203; ISO 7346; 84/449/EEC, C.1, semistatik)

Penyataan kesan toksik berkaitan dengan kepekatan yang ditentukan secara analisis. Ujian kepekatan had sahaja (ujian HAD).

Maklumat tentang : Retinil Palmitat

Ketoksikan kepada ikan:

LC50 (96 h) $>$ 10,000 mg/l, Leuciscus idus (DIN 38412 Bahagian 15, statik)

Perincian kesan toksik berkaitan dengan kepekatan nominal. Produk belum diuji. Penyataan diambil daripada bahan/produk yang mempunyai struktur dan komposisi yang sama.

Maklumat tentang : 2,6-di-tert-butil-p-kresol

Invertebrat air:

EC0 (48 h) 0.48 mg/l, Daphnia magna (Garis panduan OECD 202, Bahagian 1, statik)

Penyataan kesan toksik berkaitan dengan kepekatan yang ditentukan secara analisis.

Maklumat tentang : Retinil Palmitat

Invertebrat air:

EC50 (48 h) $>$ 100 mg/l, Daphnia magna (Ujian saringan, statik)

Perincian kesan toksik berkaitan dengan kepekatan nominal. Produk belum diuji. Penyataan diambil daripada bahan/produk yang mempunyai struktur dan komposisi yang sama.

Maklumat tentang : 2,6-di-tert-butil-p-kresol

Tumbuhan akuatik:

EC50 (72 h) $>$ 0.40 mg/l (kadar pertumbuhan), Scenedesmus subspicatus (Garis panduan 92/69/EEC, C.3, statik)

Penyataan kesan toksik berkaitan dengan kepekatan yang ditentukan secara analisis.

Maklumat tentang : Retinil Palmitat

Tumbuhan akuatik:

EC50 (72 h) 152.94 mg/l (kadar pertumbuhan), Scenedesmus subspicatus (DIN 38412 Bahagian 9, statik)

Keterlarutan produk adalah rendah dalam medium ujian. Larutan akueus disediakan dengan pelarut telah diuji.

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Maklumat tentang : 2,6-di-tert-butyl-p-kresol

Mikroorganisma/Kesan ke atas enap cemar diaktifkan:

EC0 (3 h) 1,000 mg/l, Enap cemar diaktifkan (DIN EN ISO 8192-OECD 209-88/302/EEC,P. C, aerobik)

Maklumat tentang : Retinil Palmitat

Mikroorganisma/Kesan ke atas enap cemar diaktifkan:

EC20 (30 min) > 1,000 mg/l, Enap cemar diaktifkan, domestik (DIN EN ISO 8192-OECD 209-88/302/EEC,P. C, aerobik)

Maklumat tentang : 2,6-di-tert-butyl-p-kresol

Ketoksikan kronik kepada invertebrata akuatik:

Tiada kesan kepekatan yang diperhatikan (21 hari), 0.316 mg/l, Daphnia magna (Garis panduan OECD 202, Bahagian 2, semistatik)

Perincian kesan toksik berkaitan dengan kepekatan nominal.

Maklumat tentang : Retinil Palmitat

Ketoksikan kronik kepada invertebrata akuatik:

Kajian secara saintifiknya tidak wajar.

Mobiliti

Penilaian pengangkutan di antara bahagian di persekitaran:

Bahan tidak akan menyejat ke atmosfera daripada permukaan air

Penjerapan kepada fasa tanah pejal dijangka

Maklumat tentang : 2,6-di-tert-butyl-p-kresol

Penilaian pengangkutan di antara bahagian di persekitaran:

Bahan tidak akan menyejat ke atmosfera daripada permukaan air

Penjerapan kepada fasa tanah pejal dijangka

Maklumat tentang : Retinil Palmitat

Penilaian pengangkutan di antara bahagian di persekitaran:

Bahan tidak akan menyejat ke atmosfera daripada permukaan air

Penjerapan kepada fasa tanah pejal dijangka

Keterusan dan boleh keterdegradasikan

Penilaian biodegradasi dan penyingkiran (H₂O):

Tidak mudah terbiodegradasikan (oleh kriteria OECD).

Maklumat tentang : 2,6-di-tert-butyl-p-kresol

Maklumat penyingkiran:

4.5 % BOD bagi ThOD (28 hari) (OECD 301C; ISO 9408; 92/69/EEC, C.4-F) (aerobik, Enap cemar diaktifkan)

Maklumat tentang : Retinil Palmitat

Maklumat penyingkiran:

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40 - 50 % BOD bagi ThOD (28 hari) (OECD 301F; ISO 9408; 92/69/EEC, C.4-D) (aerobik, Enap cemar diaktifkan, domestik)

Potensi Biotumpukan

Penilaian potensi bioakumulasi:

Produk mengandungi komponen yang berpotensi untuk biopengumpulan.

Maklumat tentang : 2,6-di-tert-butyl-p-kresol

Potensi Biotumpukan:

Faktor Kebiopekatan: 330 - 1,800 (28 hari), Cyprinus carpio (Garispanduan OECD 305 C)

Faktor Kebiopekatan: 230 - 2,500 (56 hari), Cyprinus carpio (Garispanduan OECD 305 C)

Maklumat tentang : Retinil Palmitat

Potensi Biotumpukan:

Tiada akumulasi yang ketara dalam organisma dijangka hasil daripada pekali pengagihan n-oktanol/air (log Pow).

Maklumat tambahan

Nasihat ekotoksikologi lain:

Produk belum diuji. Penyataan diambil daripada ciri setiap komponen.

13. Maklumat Pelupusan

Patuhi keperluan undang-undang negara dan tempatan.

14. Maklumat Pengangkutan

Pengangkutan domestik:

Tidak dikelaskan sebagai berbahaya di bawah peraturan pengangkutan

Pengangkutan laut

IMDG

Tidak dikelaskan sebagai berbahaya di bawah peraturan pengangkutan

Pengangkutan udara

IATA/ICAO

Tidak dikelaskan sebagai berbahaya di bawah peraturan pengangkutan

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(30041041/SDS_GEN_MY/MS)

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Pengangkutan secara pukal menurut Lampiran II MARPOL dan IBC

Peraturan:	Tidak dinilai
Penghantaran yang diluluskan:	Tidak dinilai
Nama pencemaran:	Tidak dinilai
Kategori pencemaran:	Tidak dinilai
Jenis Kapal:	Tidak dinilai

15. Maklumat Pengawalseliaan

Peraturan-Peraturan Keselamatan dan Kesihatan Pekerjaan (Pengelasan, Pelabelan dan Helaian Data Keselamatan Bahan kimia Berbahaya) 2013
Akta OSHA 1994 dan peraturan berkaitan
Akta Kualiti Alam Sekeliling 1974

Maklumat tentang peraturan-peraturan tidak meliputi kesemuanya. Peraturan-peraturan lain mungkin dikenakan kepada bahan ini.

Peraturan lain

Jika maklumat peraturan lain yang berkenaan tidak dinyatakan dibahagian lain didalam risalah data keselamatan ini, ianya akan dinyatakan bahagian ini.

16. Maklumat lain

Tarikh Penyediaan / Tarikh Penyemakan: 14.04.2023

Sumber Maklumat dan Rujukan :

SDS ini disediakan dengan menggunakan data dan maklumat tersimpan di dalam sistem berasaskan IT dalaman kami dan dibekalkan oleh pembekal perkhidmatan syarikat kami.

Singkatan Petunjuk:

ATE - Anggaran Ketoksikan Akut

GHS - Sistem Terharmoni Global

IATA / ICAO - Persatuan Pengangkutan Udara Antarabangsa / Organisasi Penerbangan Awam Antarabangsa

IBC - Kontena Pukal Pertengahan

IMDG - Barangan Merbahaya Kelautan Antarabangsa

LC - Kepekatan Maut

LD - Dos Maut

OECD - Organisasi Untuk Kerjasama dan Pembangunan Ekonomi

OEL - Had Pendedahan Pekerjaan

OSHA - Akta Keselamatan dan Kesihatan Pekerjaan

STOT - Ketoksikan Organ Sasaran Khusus

Sebarang tujuan penggunaan lain hendaklah dibincangkan dengan pengeluar. Kadar perlindungan keselamatan untuk pekerjaan yang berkenaan hendaklah dipatuhi.

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Teks penuh pengelasan, simbol bahaya dan pernyataan bahaya, jika dinyatakan dalam seksyen 2 atau 3:

Bhn. Ltp. T. Stab.	Bahan letup tidak stabil
Bhn. Ltp. 1.1	Bahan letup divisyen 1.1
Bhn. Ltp. 1.2	Bahan letup divisyen 1.2
Bhn. Ltp. 1.3	Bahan letup divisyen 1.3
Bhn. Ltp. 1.4	Bahan letup divisyen 1.4
Bhn. Ltp. 1.5	Bahan letup divisyen 1.5
Bhn. Ltp. 1.6	Bahan letup divisyen 1.6
Gas M. Bkr 1	Gas mudah terbakar kategori 1
Gas M. Bkr 2	Gas mudah terbakar kategori 2
Aerosol M. Bkr1	Aerosol mudah terbakar kategori 1
Aerosol M. Bkr 2	Aerosol mudah terbakar kategori 2
Cec. M. Bkr 1	Cecair mudah terbakar kategori 1
Cec. M. Bkr 2	Cecair mudah terbakar kategori 2
Cec. M. Bkr 3	Cecair mudah terbakar kategori 3
Pep. M. Bkr 1	Pepejal mudah terbakar kategori 1
Pep. M. Bkr 2	Pepejal mudah terbakar kategori 2
Gas Oks. 1	Gas mengoksida kategori 1
Cec. Oks. 1	Cecair mengoksida kategori 1
Cec. Oks. 2	Cecair mengoksida kategori 2
Cec. Oks. 3	Cecair mengoksida kategori 3
Pep. Oks. 1	Pepejal mengoksida kategori 1
Pep. Oks. 2	Pepejal mengoksida kategori 2
Pep. Oks. 3	Pepejal mengoksida kategori 3
Gas Tkn.	Gas di bawah tekanan
Swareak. A	Bahan kimia swareaktif jenis A
Swareak. B	Bahan kimia swareaktif jenis B
Swareak. CD	Bahan kimia swareaktif jenis C dan D
Swareak. EF	Bahan kimia swareaktif jenis E dan F
Swareak. G	Bahan kimia swareaktif jenis G
Cec. Pir. 1	Cecair piroforik kategori 1
Pep. Pir. 1	Pepejal piroforik kategori 1
Swapanas. 1	Bahan kimia swapanasan kategori 1
Swapanas. 2	Bahan kimia swapanasan kategori 2
Tdk. Bls. Air 1	Bahan kimia yang, jika terkena air, membebaskan gas mudah terbakar kategori 1
Tdk. Bls. Air 2	Bahan kimia yang, jika terkena air, membebaskan gas mudah terbakar kategori 2
Tdk. Bls. Air 3	Bahan kimia yang, jika terkena air, membebaskan gas mudah terbakar kategori 3
Peroks. Org. A	Peroksida organik jenis A
Peroks. Org. B	Peroksida organik jenis B
Peroks. Org. CD	Peroksida organik jenis C and D
Peroks. Org. EF	Peroksida organik jenis E and F
Peroks. Org. G	Peroksida organik jenis G
Kakis. Log. 1	Mengakis logam kategori 1
Toks. Akut 1	Ketoksikan akut kategori 1
Toks. Akut 2	Ketoksikan akut kategori 2
Toks. Akut 3	Ketoksikan akut kategori 3
Toks. Akut 4	Ketoksikan akut kategori 4
Kks. Kulit 1A	Kakisan atau kerengsaan kulit kategori 1A
Kks. Kulit 1B	Kakisan atau kerengsaan kulit kategori 1B

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Kks. Kulit 1C	Kakisan atau kerengsaan kulit kategori 1C
Kreng. Kulit 2	Kakisan atau kerengsaan kulit kategori 2
Kros. Mata 1	Kerosakan mata atau kerengsaan mata yang serius kategori 1
Kreng. Mata 2	Kerosakan mata atau kerengsaan mata yang serius kategori 2
Pem. Naf. 1	Pemekaan pernafasan kategori 1
Pem. Kulit 1	Pemekaan kulit kategori 1
Muta. 1A	Kemutagenan sel germa kategori 1A
Muta. 1B	Kemutagenan sel germa kategori 1B
Muta. 2	Kemutagenan sel germa kategori 2
Kars. 1A	Kekarsinogenan kategori 1A
Kars. 1B	Kekarsinogenan kategori 1B
Kars. 2	Kekarsinogenan kategori 2
Pemb. 1A	Ketoksikan pembiakan kategori 1A
Pemb. 1B	Ketoksikan pembiakan kategori 1B
Pemb. 2	Ketoksikan pembiakan kategori 2
Laktasi	Kesan ke atas atau melalui penyusuan
STOT SE 1	Ketoksikan organ sasaran khusus - pendedahan tunggal kategori 1
STOT SE 2	Ketoksikan organ sasaran khusus - pendedahan tunggal kategori 2
STOT SE 3	Ketoksikan organ sasaran khusus - pendedahan tunggal kategori 3
STOT RE 1	Ketoksikan organ sasaran khusus - pendedahan berulang kategori 1
STOT RE 2	Ketoksikan organ sasaran khusus - pendedahan berulang kategori 2
Bhy. Asp.	Bahaya aspirasi kategori 1
Akuatik Akut 1	Berbahaya kepada persekitaran akuatik – bahaya akut kategori 1
Akuatik Kronik 1	Berbahaya kepada persekitaran akuatik – bahaya kronik kategori 1
Akuatik Kronik 2	Berbahaya kepada persekitaran akuatik – bahaya kronik kategori 2
Akuatik Kronik 3	Berbahaya kepada persekitaran akuatik – bahaya kronik kategori 3
Akuatik Kronik 4	Berbahaya kepada persekitaran akuatik – bahaya kronik kategori 4
Ozon	Berbahaya bagi lapisan ozon kategori 1

Garis menegak pada margin sebelah kiri tangan menunjukkan pindaan dari versi sebelumnya.

Data yang terdapat dalam risalah data keselamatan ini adalah berdasarkan pengetahuan dan pengalaman kami, dan menerangkan tentang produk yang berkaitan dengan keperluan keselamatan sahaja. Data tidak menyatakan ciri produk (spesifikasi produk). Data dalam risalah data keselamatan ini juga tidak menyatakan apa-apa ciri khusus atau kesesuaian produk yang dipersetujui untuk apa-apa tujuan tertentu. Penerima produk bertanggungjawab untuk memastikan bahawa apa-apa hak pemilikan serta undang-undang dan perundangan sedia ada dipatuhi.

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1. Identification of the chemical and of the supplier

Vitamin A-Palmitate 1.7 Mio IU/G stabilized with BHT

Use: feed additive(s), food additive(s), cosmetic ingredient

Company:

BASF (Malaysia) Sdn Bhd
Lot 19.02 Level 19, 1 Powerhouse
No 1 Persiaran Bandar Utama
47800 Petaling Jaya
Selangor D.E, MALAYSIA
Telephone: +60 3 7612 1888
Telefax number: +60 3 7612 1777

Emergency information:

National emergency number:

+603 7612 1999

International emergency number:

Telephone: +49 180 2273-112

2. Hazard identification

Classification of the substance and mixture:

Repr. 1B (unborn child)

Aquatic Chronic 3

For the classifications not written out in full in this section the full text can be found in section 16.

Label elements and precautionary statement:

Pictogram:



Signal Word:

Danger

Hazard Statement:

H360D

May damage the unborn child.

H412

Harmful to aquatic life with long lasting effects.

Precautionary Statements (Prevention):

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P280 Wear protective gloves, protective clothing and eye protection or face protection.

P201 Obtain special instructions before use.

P273 Avoid release to the environment.

P202 Do not handle until all safety precautions have been read and understood.

Precautionary Statements (Response):

P308 + P311 IF exposed or concerned: Call a POISON CENTER or physician.

Precautionary Statements (Storage):

P405 Store locked up.

Precautionary Statements (Disposal):

P501 Dispose of contents and container to hazardous or special waste collection point.

Other hazards which do not result in classification:

When finely distributed on porose material, self-ignition is possible. High risk of slipping due to leakage/spillage of product.

3. Composition/information on ingredients

Chemical nature

retinyl palmitate

stabilized with: 2,6-di-tert-butyl-p-cresol

Hazardous ingredients

retinyl palmitate

Content (W/W): $\geq 75\%$ - $\leq 100\%$	Repr. 1B (unborn child)
CAS Number: 79-81-2	Aquatic Chronic 4

2,6-di-tert-butyl-p-cresol

Content (W/W): $\geq 1\%$ - $< 3\%$	Aquatic Acute 1
CAS Number: 128-37-0	Aquatic Chronic 1
	M-factor chronic: 1

For the classifications not written out in full in this section the full text can be found in section 16.

4. First-Aid Measures

General advice:

First aid personnel should pay attention to their own safety. If the patient is likely to become unconscious, place and transport in stable sideways position (recovery position). Immediately remove contaminated clothing.

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If inhaled:

Keep patient calm, remove to fresh air, seek medical attention.

On skin contact:

Immediately wash thoroughly with soap and water, seek medical attention.

On contact with eyes:

Wash affected eyes for at least 15 minutes under running water with eyelids held open.

On ingestion:

Immediately rinse mouth and then drink 200-300 ml of water, seek medical attention.

Note to physician:

Symptoms: Information, i.e. additional information on symptoms and effects may be included in the GHS labeling phrases available in Section 2 and in the Toxicological assessments available in Section 11., (Further) symptoms and / or effects are not known so far

Note to physician:

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

5. Fire-Fighting Measures

Suitable extinguishing media:

water spray, foam, dry powder, carbon dioxide

Unsuitable extinguishing media for safety reasons:

water jet

Specific hazards:

carbon oxides, harmful vapours

The substances/groups of substances mentioned can be released in case of fire. Evolution of fumes/fog.

Special protective equipment:

Wear self-contained breathing apparatus and chemical-protective clothing.

Further information:

In case of combustion evolution of toxic gases/vapours possible. Cool endangered containers with water-spray. Collect contaminated extinguishing water separately, do not allow to reach sewage or effluent systems. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations. Do not spray water directly on fire, product will float and could be reignited on surface of water.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures:

Use personal protective clothing. Information regarding personal protective measures, see section 8. Ensure adequate ventilation. Do not breathe vapour/spray. Avoid contact with the skin, eyes and clothing.

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Environmental precautions:

Do not discharge into drains/surface waters/groundwater. Inform authorities in the event of product spillage to water courses or sewage systems.

Methods for cleaning up or taking up:

For small amounts: Pick up with suitable absorbent material. Do not use saw-dust or other combustible substances as an absorbant during cleanup.

For large amounts: Dike spillage. Pump off product.

Dispose of absorbed material in accordance with regulations. Mop up spills with non-flammable adsorbents (e.g. vermiculite, spill mats). Soiled textiles / cleaning rags / adsorbents and Silica are capable of self ignition and should be wetted with water and must be disposed of in a safe manner.

Additional information: High risk of slipping due to leakage/spillage of product. Soiled textiles/cleaning rags made of natural fibres (e.g. of pure wool or of pure cotton) are capable of ignition and should not be used and/or must be disposed of in a safe manner.

7. Handling and Storage

Handling

Avoid aerosol formation. Ensure that there is no crystallized product in the container before use. Processing machines must be fitted with local exhaust ventilation. Wear suitable protective clothing and eye/face protection. Avoid contact with the skin, eyes and clothing. Keep container tightly sealed.

Protection against fire and explosion:

Risk of self-ignition when a large surface area is produced due to fine dispersion. Soiled textiles / cleaning rags / adsorbents and Silica are capable of self ignition and should be wetted with water and must be disposed of in a safe manner. Take precautionary measures against static discharges. Avoid all sources of ignition: heat, sparks, open flame.

Storage

Segregate from oxidants.

Further information on storage conditions: Keep container tightly closed and dry; store in a cool place. Protect from air. Protect from the effects of light. Keep under nitrogen.

8. Exposure controls and personal protection

Components with occupational exposure limits

2,6-di-tert-butyl-p-cresol, 128-37-0;

TWA value 2 mg/m³ (ACGIHTLV), Inhalable fraction and vapor

TWA value 10 mg/m³ (OEL (MY))

Personal protective equipment

Respiratory protection:

Respiratory protection in case of vapour/aerosol release. Particle filter with high efficiency for solid and liquid particles (e.g. EN 143 or 149, Type P3 or FFP3).

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Hand protection:

Suitable chemical resistant safety gloves (EN ISO 374-1) also with prolonged, direct contact (Recommended: Protective index 6, corresponding > 480 minutes of permeation time according to EN ISO 374-1): E.g. nitrile rubber (0.4 mm), chloroprene rubber (0.5 mm), butyl rubber (0.7 mm) etc. Supplementary note: The specifications are based on tests, literature data and information of glove manufacturers or are derived from similar substances by analogy. Due to many conditions (e.g. temperature) it must be considered, that the practical usage of a chemical-protective glove in practice may be much shorter than the permeation time determined through testing. Manufacturer's directions for use should be observed because of great diversity of types.

Eye protection:

Safety glasses with side-shields (frame goggles) (e.g. EN 166)

Body protection:

Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes or EN ISO 13982 in case of dust).

General safety and hygiene measures:

Females in early pregnancy must never be exposed to the substance. Under no circumstances should the product come into contact with the skin of pregnant women or be inhaled by them. Handle in accordance with good industrial hygiene and safety practice. Wearing of closed work clothing is required additionally to the stated personal protection equipment. Avoid contact with skin. No eating, drinking, smoking or tobacco use at the place of work. Hands and/or face should be washed before breaks and at the end of the shift. Store work clothing separately.

9. Physical and Chemical Properties

Form:	oil, partially crystallized	
Colour:	yellowish	
Odour:	not applicable	
Odour threshold:	Not determined due to potential health hazard by inhalation.	
pH value:	substance/mixture is non-soluble (in water)	
Melting point:	approx. 26 °C	
Boiling point:	The substance / product decomposes therefore not determined.	
Flash point:	194 °C	(ISO 2719, closed cup)
Evaporation rate:	negligible	
Flammability (solid/gas):	hardly combustible	(derived from flash point)

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Lower explosion limit:	For liquids not relevant for classification and labelling., The lower explosion point may be 5 - 15 °C below the flash point.	
Upper explosion limit:	For liquids not relevant for classification and labelling.	
Ignition temperature:	261 °C	(DIN EN 14522)
Thermal decomposition:	>= 170 °C self-accelerating reaction	(DSC (DIN 51007))
Self heating ability:	not applicable, the product is a liquid	
Explosion hazard:	Based on the chemical structure there is no indication of explosive properties.	
Fire promoting properties:	Based on its structural properties the product is not classified as oxidizing.	
Vapour pressure:	(20 °C) negligible	
Density:	921.1 kg/m3 (20 °C)	(pycnometer)
Relative density:	0.9211 (20 °C)	(pycnometer)
Relative vapour density (air):	> 1 (20 °C) Heavier than air.	(estimated)
Solubility in water:	insoluble	
Solubility (qualitative) solvent(s):	organic solvents soluble	
Partitioning coefficient n-octanol/water (log Pow):	not applicable for mixtures	
Surface tension:	Study technically not feasible.	
Viscosity, dynamic:	44 mPa.s (60 °C)	
Viscosity, kinematic:	No data available.	

10. Stability and Reactivity

Conditions to avoid:

Temperature: > 60 °C

Disregard of the conditions mentioned may result in undesirable decomposition reactions. Avoid light. See SDS section 7 - Handling and storage.

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Thermal decomposition: $\geq 170\text{ }^{\circ}\text{C}$ (DSC (DIN 51007))
self-accelerating reaction

Substances to avoid:
oxidizing agents

Corrosion to metals: No corrosive effect on metal.

Hazardous reactions:
Self-ignition is possible when finely distributed on flammable surfaces in the presence of air.

Hazardous decomposition products:
No hazardous decomposition products if stored and handled as prescribed/indicated.

Reactivity:
No hazardous reactions if stored and handled as prescribed/indicated.

Chemical stability:
The product is stable if stored and handled as prescribed/indicated.

11. Toxicological Information

Acute toxicity

Assessment of acute toxicity:
Virtually nontoxic after a single ingestion.

Irritation

Assessment of irritating effects:
Not irritating to the eyes. May cause slight irritation to the skin.

Information on: retinyl palmitate
Experimental/calculated data:
Skin corrosion/irritation rabbit: Irritant. (BASF-Test)

Skin corrosion/irritation rabbit: Slightly irritating. (OECD Guideline 404)

Information on: retinyl palmitate
Experimental/calculated data:
Serious eye damage/irritation rabbit: non-irritant (OECD Guideline 405)

Respiratory/Skin sensitization

Assessment of sensitization:
Skin sensitizing effects were not observed in animal studies.

Information on: retinyl palmitate
Experimental/calculated data:

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Guinea pig maximization test guinea pig: Non-sensitizing. (OECD Guideline 406)

Germ cell mutagenicity

Assessment of mutagenicity:

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

Information on: retinyl palmitate

Assessment of mutagenicity:

In the majority of tests performed (bacteria/microorganisms/cell cultures) a mutagenic effect was not found. A mutagenic effect was also not observed in in-vivo assays. The product has not been fully tested. The statements have been derived in parts from products of a similar structure or composition.

Carcinogenicity

Assessment of carcinogenicity:

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

Information on: retinyl palmitate

Assessment of carcinogenicity:

Results from a number of long-term carcinogenicity studies and short-term tests are available. Taking into account all of the information, there is no indication that the substance itself is carcinogenic.

Literature data.

Reproductive toxicity

Assessment of reproduction toxicity:

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

Information on: retinyl palmitate

Assessment of reproduction toxicity:

No reliable data are available concerning reproduction toxicity.

Developmental toxicity

Assessment of teratogenicity:

May cause harm to the unborn child.

Experimental/calculated data:

Information on: retinyl palmitate

Assessment of teratogenicity:

May cause harm to the unborn child.

Specific target organ toxicity (single exposure):

Assessment of STOT single:

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

Repeated dose toxicity and Specific target organ toxicity (repeated exposure)

Assessment of repeated dose toxicity:

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

Aspiration hazard

No data available.

Other relevant toxicity information

The product has not been tested. The statements on toxicology have been derived from the properties of the individual components.

12. Ecological Information

Ecotoxicity

Assessment of aquatic toxicity:

Harmful to aquatic life with long lasting effects.

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Information on: 2,6-di-tert-butyl-p-cresol

Toxicity to fish:

LC0 (96 h) \geq 0.57 mg/l, Brachydanio rerio (OECD 203; ISO 7346; 84/449/EEC, C.1, semistatic)

The statement of the toxic effect relates to the analytically determined concentration. Limit concentration test only (LIMIT test).

Information on: retinyl palmitate

Toxicity to fish:

LC50 (96 h) $>$ 10,000 mg/l, Leuciscus idus (DIN 38412 Part 15, static)

The details of the toxic effect relate to the nominal concentration. The product has not been tested.

The statement has been derived from substances/products of a similar structure or composition.

Information on: 2,6-di-tert-butyl-p-cresol

Aquatic invertebrates:

EC0 (48 h) 0.48 mg/l, Daphnia magna (OECD Guideline 202, part 1, static)

The statement of the toxic effect relates to the analytically determined concentration.

Information on: retinyl palmitate

Aquatic invertebrates:

EC50 (48 h) $>$ 100 mg/l, Daphnia magna (Screening test, static)

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The details of the toxic effect relate to the nominal concentration. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Information on: 2,6-di-tert-butyl-p-cresol

Aquatic plants:

EC50 (72 h) > 0.40 mg/l (growth rate), *Scenedesmus subspicatus* (Guideline 92/69/EEC, C.3, static)

The statement of the toxic effect relates to the analytically determined concentration.

Information on: retinyl palmitate

Aquatic plants:

EC50 (72 h) 152.94 mg/l (growth rate), *Scenedesmus subspicatus* (DIN 38412 Part 9, static)

The product has low solubility in the test medium. An aqueous solution prepared with solubilizers has been tested.

Information on: 2,6-di-tert-butyl-p-cresol

Microorganisms/Effect on activated sludge:

EC0 (3 h) 1,000 mg/l, activated sludge (DIN EN ISO 8192-OECD 209-88/302/EEC, P. C, aerobic)

Information on: retinyl palmitate

Microorganisms/Effect on activated sludge:

EC20 (30 min) > 1,000 mg/l, activated sludge, domestic (DIN EN ISO 8192-OECD 209-88/302/EEC, P. C, aerobic)

Information on: 2,6-di-tert-butyl-p-cresol

Chronic toxicity to aquatic invertebrates:

No observed effect concentration (21 d), 0.316 mg/l, *Daphnia magna* (OECD Guideline 202, part 2, semistatic)

The details of the toxic effect relate to the nominal concentration.

Information on: retinyl palmitate

Chronic toxicity to aquatic invertebrates:

Study scientifically not justified.

Mobility

Assessment transport between environmental compartments:

The substance will not evaporate into the atmosphere from the water surface.

Adsorption to solid soil phase is expected.

Information on: 2,6-di-tert-butyl-p-cresol

Assessment transport between environmental compartments:

The substance will not evaporate into the atmosphere from the water surface.

Adsorption to solid soil phase is expected.

Information on: retinyl palmitate

Assessment transport between environmental compartments:

The substance will not evaporate into the atmosphere from the water surface.

Adsorption to solid soil phase is expected.

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Persistence and degradability

Assessment biodegradation and elimination (H₂O):

Not readily biodegradable (by OECD criteria).

Information on: 2,6-di-tert-butyl-p-cresol

Elimination information:

4.5 % BOD of the ThOD (28 d) (OECD 301C; ISO 9408; 92/69/EEC, C.4-F) (aerobic, activated sludge)

Information on: retinyl palmitate

Elimination information:

40 - 50 % BOD of the ThOD (28 d) (OECD 301F; ISO 9408; 92/69/EEC, C.4-D) (aerobic, activated sludge, domestic)

Bioaccumulation potential

Assessment bioaccumulation potential:

The product contains components with potential for bioaccumulation

Information on: 2,6-di-tert-butyl-p-cresol

Bioaccumulation potential:

Bioconcentration factor: 330 - 1,800 (28 d), Cyprinus carpio (OECD Guideline 305 C)

Bioconcentration factor: 230 - 2,500 (56 d), Cyprinus carpio (OECD Guideline 305 C)

Information on: retinyl palmitate

Bioaccumulation potential:

No significant accumulation in organisms is expected as a result of the distribution coefficient of n-octanol/water (log Pow).

Additional information

Other ecotoxicological advice:

The product has not been tested. The statement has been derived from the properties of the individual components.

13. Disposal Information

Observe national and local legal requirements.

14. Transportation Information

Domestic transport:

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Not classified as a dangerous good under transport regulations

Sea transport

IMDG

Not classified as a dangerous good under transport regulations

Air transport

IATA/ICAO

Not classified as a dangerous good under transport regulations

Transport in bulk according to Annex II of MARPOL and the IBC Code

Regulation:	Not evaluated
Shipment approved:	Not evaluated
Pollution name:	Not evaluated
Pollution category:	Not evaluated
Ship Type:	Not evaluated

15. Regulatory Information

Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013
OSHA 1994 and relevant regulations
Environmental Quality Act, 1974

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

Other regulations

If other regulatory information applies that is not already provided elsewhere in this safety data sheet, then it is described in this subsection.

16. Other Information

Date of Preparation / Date of Revision: 14.04.2023

Information Source and References:

This SDS is prepared using data and information saved in our internal IT-based system and supplied by our company's service providers.

Key Abbreviations:

ATE - Acute Toxicity Estimates

GHS - Globally Harmonized System

IATA / ICAO - International Air Transport Association / International Civil Aviation Organization

IBC - Intermediate Bulk Container

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IMDG - International Maritime Dangerous Goods

LC - Lethal Concentration

LD - Lethal Dose

OECD - Organisation for Economic Co-operation and Development

OEL - Occupational Exposure Limit

OSHA - Occupational Safety and Health Act

STOT - Specific Target Organ Toxicity

Any other intended applications should be discussed with the manufacturer. Corresponding occupational protection measurements must be followed.

Full text of classifications, hazard symbols and hazard statements, if mentioned in section 2 or 3:

Unst. Expl.	Unstable explosives
Expl. 1.1	Explosives division 1.1
Expl. 1.2	Explosives division 1.2
Expl. 1.3	Explosives division 1.3
Expl. 1.4	Explosives division 1.4
Expl. 1.5	Explosives division 1.5
Expl. 1.6	Explosives division 1.6
Flam. Gas 1	Flammable gases category 1
Flam. Gas 2	Flammable gases category 2
Flam. Aerosol 1	Flammable aerosols category 1
Flam. Aerosol 2	Flammable aerosols category 2
Flam. Liq. 1	Flammable liquids category 1
Flam. Liq. 2	Flammable liquids category 2
Flam. Liq. 3	Flammable liquids category 3
Flam. Sol. 1	Flammable solids category 1
Flam. Sol. 2	Flammable solids category 2
Ox. Gas 1	Oxidizing gases category 1
Ox. Liq. 1	Oxidizing liquids category 1
Ox. Liq. 2	Oxidizing liquids category 2
Ox. Liq. 3	Oxidizing liquids category 3
Ox. Sol. 1	Oxidizing solids category 1
Ox. Sol. 2	Oxidizing solids category 2
Ox. Sol. 3	Oxidizing solids category 3
Press. Gas	Gases under pressure
Self-react. A	Self-reactive chemicals type A
Self-react. B	Self-reactive chemicals type B
Self-react. CD	Self-reactive chemicals type C and D
Self-react. EF	Self-reactive chemicals type E and F
Self-react. G	Self-reactive chemicals type G
Pyr. Liq. 1	Pyrophoric liquids category 1
Pyr. Sol. 1	Pyrophoric solids category 1
Self-heat. 1	Self-heating chemicals category 1
Self-heat. 2	Self-heating chemicals category 2
Water-react. 1	Chemicals which, if in contact with water, emits flammable gases category 1
Water-react. 2	Chemicals which, if in contact with water, emits flammable gases category 2
Water-react. 3	Chemicals which, if in contact with water, emits flammable gases category 3
Org. Perox. A	Organic peroxides type A

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Org. Perox. B	Organic peroxides type B
Org. Perox. CD	Organic peroxides type C and D
Org. Perox. EF	Organic peroxides type E and F
Org. Perox. G	Organic peroxides type G
Met. Corr. 1	Corrosive to metals category 1
Acute Tox. 1	Acute toxicity category 1
Acute Tox. 2	Acute toxicity category 2
Acute Tox. 3	Acute toxicity category 3
Acute Tox. 4	Acute toxicity category 4
Skin Corr. 1A	Skin corrosion or irritation category 1A
Skin Corr. 1B	Skin corrosion or irritation category 1B
Skin Corr. 1C	Skin corrosion or irritation category 1C
Skin Irrit. 2	Skin corrosion or irritation category 2
Eye Dam. 1	Serious eye damage or eye irritation category 1
Eye Irrit. 2	Serious eye damage or eye irritation category 2
Resp. Sens. 1	Respiratory sensitization category 1
Skin Sens. 1	Skin sensitization category 1
Muta. 1A	Germ cell mutagenicity category 1A
Muta. 1B	Germ cell mutagenicity category 1B
Muta. 2	Germ cell mutagenicity category 2
Carc. 1A	Carcinogenicity category 1A
Carc. 1B	Carcinogenicity category 1B
Carc. 2	Carcinogenicity category 2
Repr. 1A	Reproductive toxicity category 1A
Repr. 1B	Reproductive toxicity category 1B
Repr. 2	Reproductive toxicity category 2
Lact.	Effect on or via lactation
STOT SE 1	Specific target organ toxicity – single exposure category 1
STOT SE 2	Specific target organ toxicity – single exposure category 2
STOT SE 3	Specific target organ toxicity – single exposure category 3
STOT RE 1	Specific target organ toxicity – repeated exposure category 1
STOT RE 2	Specific target organ toxicity – repeated exposure category 2
Asp. Haz.	Aspiration hazard category 1
Aquatic Acute 1	Hazardous to the aquatic environment – acute hazard category 1
Aquatic Chronic 1	Hazardous to the aquatic environment – chronic hazard category 1
Aquatic Chronic 2	Hazardous to the aquatic environment – chronic hazard category 2
Aquatic Chronic 3	Hazardous to the aquatic environment – chronic hazard category 3
Aquatic Chronic 4	Hazardous to the aquatic environment – chronic hazard category 4
Ozone	Hazardous to the ozone layer category 1

Vertical lines in the left hand margin indicate an amendment from the previous version.

The data contained in this safety data sheet are based on our current knowledge and experience and describe the product only with regard to safety requirements. This safety data sheet is neither a Certificate of Analysis (CoA) nor technical data sheet and shall not be mistaken for a specification agreement. Identified uses in this safety data sheet do neither represent an agreement on the corresponding contractual quality of the substance/mixture nor a contractually designated use. It is the responsibility of the recipient of the product to ensure any proprietary rights and existing laws and legislation are observed.