

# HELAIAN DATA KESELAMATAN SAFETY DATA SHEET



Tarikh keluaran 18 Disember 2025 Versi 1.05  
Date of issue 18 December 2025 Version 1.05

## Bahagian 1: Pengenalan bahan kimia berbahaya dan pembekal

Pengecam produk : SIGMA ECOFLEET 290 REDBROWN  
Kod Produk : 000010023130  
Cara pengenalpastian yang lain : 00331470; 00482022  
Jenis Produk : Cecair.

### Kegunaan relevan yang dikenal pasti bagi zat atau campuran serta kegunaan yang tidak dinasihatkan

Kegunaan Produk : Antifouling products  
Aplikasi profesional, Guna dengan Menyembur.

| Dinasihatkan tidak digunakan pada | Sebab |
|-----------------------------------|-------|
| Tidak berkenaan.                  |       |

Butir-butir pembekal : PPG Performance Coatings (M) Sdn. Bhd.  
No 3, Jalan 205, P.O.Box 388,  
46700 Petaling Jaya,  
Selangor Darul Ehsan, Malaysia

Nombor telefon kecemasan : CHEMTREC +(60)-327884561 (CCN 17704)  
Titik hubungan : Tel: +603 7787 7881  
PMC.Safety@PPG.com

## Section 1. Identification of the hazardous chemical and of the supplier

Product name : SIGMA ECOFLEET 290 REDBROWN  
Product code : 000010023130  
Other means of identification : 00331470; 00482022  
Product type : Liquid.

### Relevant identified uses of the substance or mixture and uses advised against

Product use : Antifouling products  
Professional applications, Used by spraying.

| Uses advised against | Reason |
|----------------------|--------|
| Not applicable.      |        |

Supplier's details : PPG Performance Coatings (M) Sdn. Bhd.  
No 3, Jalan 205, P.O.Box 388,  
46700 Petaling Jaya,  
Selangor Darul Ehsan, Malaysia

Emergency phone: : CHEMTREC +(60)-327884561 (CCN 17704)  
Contact person : Tel: +603 7787 7881  
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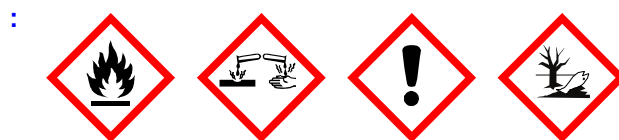
## Bahagian 2: Pengenalan bahaya

### Klasifikasi bahan atau campuran

- : CECAIR MUDAH TERBAKAR - Kategori 3
- : KETOKSIKAN AKUT (oral) - Kategori 4
- : RENGSAAN KULIT - Kategori 2
- : KEROSAKAN MATA YANG TERUK - Kategori 1
- : PEMEKAAN KULIT - Kategori 1
- : BERBAHAYA KEPADA PERSEKITARAN AKUATIK - BAHAYA AKUT - Kategori 1
- : BERBAHAYA KEPADA PERSEKITARAN AKUATIK - BAHAYA KRONIK - Kategori 1
- : Peratus campuran yang mengandungi bahan-bahan yang tidak diketahui tahap ketoksikan oral akutnya: 8.2 %
- : Peratus campuran yang mengandungi bahan-bahan yang tidak diketahui bahayanya terhadap persekitaran akuatik: 14.2 %

### Unsur label GHS

#### Piktogram bahaya



#### Kata isyarat

- : Bahaya

#### Pernyataan bahaya

- : Cecair dan wap mudah terbakar.
- : Memudaratkan jika tertelan.
- : Menyebabkan kerengsaan kulit.
- : Boleh menyebabkan tindak balas alahan kulit.
- : Menyebabkan kerosakan mata yang serius.
- : Sangat toksik kepada hidupan akuatik dengan kesan kekal berpanjangan.

### Pernyataan berjaga-jaga

#### Pencegahan

- : Pakai sarung tangan perlindungan. Pakai pelindung mata atau muka. Jauhkan daripada haba, permukaan panas, percikan api, nyalaan terbuka dan sumber nyalaan yang lain. Dilarang merokok. Gunakan kelengkapan elektrik/pengalihudaraan/pencahayaan yang tahan letupan. Gunakan hanya alat yang tidak mengeluarkan percikan api. Berhati-hati untuk mengelakkan nyahcas statik. Elakkan pelepasan bahan ke persekitaran. Elakkan daripada tersedut wap. Jangan makan, minum atau merokok semasa menggunakan produk ini. Basuh sebersih-bersihnya selepas mengendalikan bahan.

#### Tindakan

- : Pungut kumpul tumpahan. JIKA TERKENA KULIT: Basuh dengan air yang banyak. Jika berlaku kerengsaan kulit atau ruam: Dapatkan nasihat atau rawatan perubatan. Tanggalkan pakaian tercemar dan basuh sebelum menggunakannya semula. Tanggalkan pakaian yang tercemar sebelum menggunakannya semula. JIKA TERKENA MATA: Bilas berhati-hati dengan air selama beberapa minit. Tanggalkan kanta lekap, jika ada dan dapat dilakukan dengan mudah. Teruskan membilas. Segera hubungi PUSAT RACUN atau doktor.

#### Penyimpanan

- : Simpan di tempat yang dialihudarkan dengan baik. Simpan di tempat dingin.

#### Pelupusan

- : Lupuskan kandungan dan bekas mengikut semua peraturan tempatan, serantau, nasional dan antarabangsa.

### Bahaya lain yang tidak menyebabkan ia diklasifikasikan

- : Terkena kulit secara berpanjangan atau berulang boleh mengeringkan kulit dan menyebabkan kerengsaan.

## Section 2. Hazards identification

## Section 2. Hazards identification

### Classification of the substance or mixture

- : FLAMMABLE LIQUIDS - Category 3
- ACUTE TOXICITY (oral) - Category 4
- SKIN IRRITATION - Category 2
- SERIOUS EYE DAMAGE - Category 1
- SKIN SENSITISATION - Category 1
- HAZARDOUS TO THE AQUATIC ENVIRONMENT - ACUTE HAZARD - Category 1
- HAZARDOUS TO THE AQUATIC ENVIRONMENT - CHRONIC HAZARD - Category 1
- Percentage of the mixture consisting of ingredient(s) of unknown acute oral toxicity: 8.2%
- Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 14.2%

### GHS label elements

#### Hazard pictograms



#### Signal word

: Danger

#### Hazard statements

- : Flammable liquid and vapour.
- Harmful if swallowed.
- Causes skin irritation.
- May cause an allergic skin reaction.
- Causes serious eye damage.
- Very toxic to aquatic life with long lasting effects.

### Precautionary statements

#### Prevention

- : Wear protective gloves. Wear eye or face protection. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating or lighting equipment. Use non-sparking tools. Take action to prevent static discharges. Avoid release to the environment. Avoid breathing vapour. Do not eat, drink or smoke when using this product. Wash thoroughly after handling.

#### Response

- : Collect spillage. IF ON SKIN: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice or attention. Take off contaminated clothing and wash before reuse. Wash contaminated clothing before reuse. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.

#### Storage

- : Store in a well-ventilated place. Keep cool.

#### Disposal

- : Dispose of contents and container in accordance with all local, regional, national and international regulations.

### Other hazards which do not result in classification

- : Prolonged or repeated contact may dry skin and cause irritation.

## Bahagian 3: Komposisi dan maklumat mengenai ramuan bahan kimia berbahaya

### Bahan/Penyediaan

: Campuran

### Nombor CAS/pengenali pasti lain

#### Nombor CAS

: Tidak berkenaan.

#### Nombor EC

: Campuran.

Bahagian 3: Komposisi dan maklumat mengenai ramuan bahan kimia berbahaya

| Nama Ramuan                                                  | %           | Nombor CAS  |
|--------------------------------------------------------------|-------------|-------------|
| dicopper oxide                                               | ≥10 - ≤30   | 1317-39-1   |
| Hasil penguraian kimpalan haba pateri teras rosin            | ≥10 - ≤30   | 8050-09-7   |
| zink oksida                                                  | ≥10 - ≤30   | 1314-13-2   |
| 4-metilpentan-2-on                                           | ≥5.0 - ≤9.8 | 108-10-1    |
| Solvent naphtha (petroleum), light aromatic                  | ≥5.0 - ≤10  | 64742-95-6  |
| 1,2,4-trimethylbenzene                                       | ≥3.0 - ≤5.0 | 95-63-6     |
| Propane, 1-(ethenyloxy)-2-methyl-, polymer with chloroethene | ≥3.0 - ≤5.0 | 25154-85-2  |
| zineb (ISO)                                                  | ≥1.0 - ≤4.9 | 12122-67-7  |
| xilena                                                       | ≥1.0 - ≤3.0 | 1330-20-7   |
| 12-hydroxyoctadecanoic acid, reaction products with          | ≤1.2        | 220926-97-6 |
| 1,3-benzenedimethanamine and hexamethylenediamine            |             |             |
| copper oxide                                                 | ≤1.0        | 1317-38-0   |
| tembaga                                                      | <1.0        | 7440-50-8   |
| zinc sulphide                                                | <1.0        | 1314-98-3   |

sub-kod mewakili bahan-bahan tanpa nombor CAS yang terdaftar.

Tidak ada ramuan tambahan, setakat yang diketahui pembekal dan dalam pemekatan yang boleh didapati, diklasifikasikan sebagai berbahaya kepada kesihatan atau persekitaran sehingga perlu dilaporkan dalam seksyen ini.

Had pendedahan pekerjaan, jika tersedia, disenaraikan dalam seksyen 8.

Section 3. Composition and information of the ingredients of the hazardous chemical

Substance/mixture : Mixture

CAS number/other identifiers

CAS number : Not applicable.

EC number : Mixture.

| Ingredient name                                              | %           | CAS number  |
|--------------------------------------------------------------|-------------|-------------|
| dicopper oxide                                               | ≥10 - ≤30   | 1317-39-1   |
| rosin                                                        | ≥10 - ≤30   | 8050-09-7   |
| Zinc oxide                                                   | ≥10 - ≤30   | 1314-13-2   |
| 4-Methylpentan-2-one                                         | ≥5.0 - ≤9.8 | 108-10-1    |
| Solvent naphtha (petroleum), light aromatic                  | ≥5.0 - ≤10  | 64742-95-6  |
| 1,2,4-trimethylbenzene                                       | ≥3.0 - ≤5.0 | 95-63-6     |
| Propane, 1-(ethenyloxy)-2-methyl-, polymer with chloroethene | ≥3.0 - ≤5.0 | 25154-85-2  |
| zineb (ISO)                                                  | ≥1.0 - ≤4.9 | 12122-67-7  |
| Xylene                                                       | ≥1.0 - ≤3.0 | 1330-20-7   |
| 12-hydroxyoctadecanoic acid, reaction products with          | ≤1.2        | 220926-97-6 |
| 1,3-benzenedimethanamine and hexamethylenediamine            |             |             |
| copper oxide                                                 | ≤1.0        | 1317-38-0   |
| copper                                                       | <1.0        | 7440-50-8   |
| zinc sulphide                                                | <1.0        | 1314-98-3   |

SUB codes represent substances without registered CAS Numbers.

There are no ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

## Bahagian 4: Langkah-langkah pertolongan cemas

### Perihalan langkah pertolongan cemas yang perlu

- Sentuhan mata** : Periksa jika memakai kanta mata dan keluarkan jika ada. Segera cuci dengan air yang banyak selama 15 minit dengan kelopak mata terbuka. Dapatkan rawatan perubatan segera.
- Penyedutan** : Pindah ke kawasan udara segar. Biarkan orang tersebut hangat dan berehat. Jika tidak bernafas, jika bernafas tak menentu atau henti pernafasan berlaku, berikan pernafasan pemulihan atau oksigen oleh kakitangan terlatih.
- Sentuhan kulit** : Tanggalkan pakaian dan kasut yang tercemar. Cuci kulit sehingga bersih dengan sabun dan air atau gunakan pencuci kulit yang dibenarkan. Jangan guna pelarut atau pencair.
- Pengingesan** : Jika tertelan, dapatkan nasihat perubatan segera dan tunjukkan bekas atau label tersebut. Biarkan orang tersebut hangat dan berehat. JANGAN paksa muntah.

### Simptom/kesan paling penting, akut dan tertunda

#### Kesan Kesihatan Akut Berpotensi

- Sentuhan mata** : Menyebabkan kerosakan mata yang serius.
- Penyedutan** : Tiada kesan yang penting atau bahaya kritikal yang diketahui.
- Sentuhan kulit** : Menyebabkan kerengsaan kulit. Mungurangkan lemak dalam kulit. Boleh menyebabkan tindak balas alahan kulit.
- Pengingesan** : Memudaratkan jika tertelan.

#### Gejala-gejala/tanda-tanda lampau terdedah

- Sentuhan mata** : Gejala yang teruk boleh termasuk yang berikut:  
sakit  
berair  
kemerahan
- Penyedutan** : Tiada data spesifik.
- Sentuhan kulit** : Gejala yang teruk boleh termasuk yang berikut:  
kesakitan atau kerengsaan  
kemerahan  
kering  
pecah-pecah  
perepuhan boleh berlaku
- Pengingesan** : Gejala yang teruk boleh termasuk yang berikut:  
kesakitan perut

### Tanda rawatan perubatan segera dan rawatan khas diperlukan, jika perlu

- Nota kepada doktor** : Sekiranya tersedut hasil penguraian ketika kebakaran, gejala mungkin tertangguh. Orang yang mengalami dedahan mungkin perlu diletakkan di bawah pengawasan perubatan selama 48 jam.
- Rawatan spesifik** : Tiada rawatan spesifik.
- Perlindungan untuk pemberi pertolongan cemas** : Jangan lakukan sebarang tindakan yang membabitkan risiko peribadi atau tanpa latihan yang sewajarnya. Jika disyaki wasap masih ada, penyelamat hendaklah memakai pelindung (topeng) yang sesuai atau menggunakan peralatan pernafasan swalengkap. Berkemungkinan merbahaya kepada orang yang memberi bantuan pernafasan mulut-ke-mulut. Basuh pakaian yang tercemar dengan teliti menggunakan air sebelum menanggalkannya, atau pakai sarung tangan.

Lihat Maklumat Toksikologi (Seksyen 11)

## Section 4. First aid measures

### Description of necessary first aid measures

## Section 4. First aid measures

- Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Seek immediate medical attention.
- Inhalation** : Remove to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel.
- Skin contact** : Remove contaminated clothing and shoes. Wash skin thoroughly with soap and water or use recognised skin cleanser. Do NOT use solvents or thinners.
- Ingestion** : If swallowed, seek medical advice immediately and show the container or label. Keep person warm and at rest. Do NOT induce vomiting.

### Most important symptoms/effects, acute and delayed

#### Potential acute health effects

- Eye contact** : Causes serious eye damage.
- Inhalation** : No known significant effects or critical hazards.
- Skin contact** : Causes skin irritation. Defatting to the skin. May cause an allergic skin reaction.
- Ingestion** : Harmful if swallowed.

#### Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:  
pain  
watering  
redness
- Inhalation** : No specific data.
- Skin contact** : Adverse symptoms may include the following:  
pain or irritation  
redness  
dryness  
cracking  
blistering may occur
- Ingestion** : Adverse symptoms may include the following:  
stomach pains

### Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

## Bahagian 5: Langkah-langkah pemadaman kebakaran

**Kod Hazchem** : •3Y

#### Media pemadam kebakaran

- Media pemadam yang sesuai** : Guna bahan kimia kering, CO<sub>2</sub>, semburan air (kabut) atau busa.
- Media pemadam yang tidak sesuai** : Jangan guna jet air.

## Bahagian 5: Langkah-langkah pemadaman kebakaran

|                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Bahaya khusus yang timbul daripada bahan kimia ini</b> | : Cecair dan wap mudah terbakar. Larian ke pembetung boleh menyebabkan bahaya kebakaran atau letupan. Ketika kebakaran atau jika dipanaskan, peningkatan tekanan akan berlaku dan bekas boleh pecah, dengan risiko letupan selepas itu. Bahan ini sangat toksik pada hidupan akuia dengan kesan yang berkekalan. Air pemadaman kebakaran yang tercemar dengan bahan ini mesti dibendung dan dielakkan daripada memasuki jalan air, pembetung atau longkang. |
| <b>Hasil penguraian terma yang berbahaya</b>              | : Produk penguraian mungkin termasuk bahan berikut:<br>karbon oksida<br>nitrogen oksida<br>sulfur oksida<br>sebatian berhalogen<br>oksida logam                                                                                                                                                                                                                                                                                                             |
| <b>Tindakan perlindungan khas untuk ahli bomba</b>        | : Kosongkan kawasan serta-merta dengan mengeluarkan semua orang daripada kawasan sekeliling jika kebakaran berlaku. Jangan lakukan sebarang tindakan yang membabitkan risiko peribadi atau tanpa latihan yang sewajarnya. Alih bekas daripada kawasan kebakaran jika ini boleh dilakukan tanpa risiko. Guna semburan air untuk menyejukkan bekas yang terdedah kepada api.                                                                                  |
| <b>Alat perlindungan khas untuk ahli bomba</b>            | : Ahli bomba perlulah memakai peralatan perlindungan bersesuaian dan peralatan pernafasan serba lengkap dengan penutup muka penuh dalam operasi mod tekanan positif.                                                                                                                                                                                                                                                                                        |

## Section 5. Firefighting measures

|                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Hazchem code</b>                                   | : •3Y                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b><u>Extinguishing media</u></b>                     |                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Suitable extinguishing media</b>                   | : Use dry chemical, CO <sub>2</sub> , water spray (fog) or foam.                                                                                                                                                                                                                                                                                                                                                          |
| <b>Unsuitable extinguishing media</b>                 | : Do not use water jet.                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Specific hazards arising from the chemical</b>     | : Flammable liquid and vapour. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. This material is very toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain. |
| <b>Hazardous thermal decomposition products</b>       | : Decomposition products may include the following materials:<br>carbon oxides<br>nitrogen oxides<br>sulfur oxides<br>halogenated compounds<br>metal oxide/oxides                                                                                                                                                                                                                                                         |
| <b>Special protective actions for fire-fighters</b>   | : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.                                                                                                      |
| <b>Special protective equipment for fire-fighters</b> | : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.                                                                                                                                                                                                                                                     |



## Bahagian 6: Langkah-langkah pelepasan tidak sengaja

### Langkah berjaga-jaga peribadi, peralatan pelindung dan prosedur kecemasan

- Untuk kakitangan bukan kecemasan** : Jangan lakukan sebarang tindakan yang membabitkan risiko peribadi atau tanpa latihan yang sewajarnya. Kosongkan kawasan persekitaran. Halang kakitangan tidak berkaitan dan tidak dilindungi daripada masuk. Jangan sentuh atau jalan melalui bahan tertumpah. Tutup semua sumber pencucuhan. Tiada menyala, merokok atau nyalaan di kawasan bahaya. Jangan menyedut wap atau kabus. Sediakan ventilasi yang mencukupi. Pakai alat pernafasan yang sesuai apabila ventilasi tidak mencukupi. Pakai peralatan perlindungan diri yang sesuai.
- Untuk pasukan tindak balas kecemasan** : Jika pakaian khas diperlukan bagi mengendalikan tumpahan, perhatikan apa jua maklumat dalam Seksyen 8 tentang bahan yang sesuai dan tidak sesuai. Lihat juga maklumat dalam bahagian "Untuk kakitangan bukan kecemasan".
- Peringatan alam sekitar** : Elakkan penyebaran bahan tertumpah dan aliran dan bersentuh dengan tanah, jalan air, longkang dan pembetung. Beritahu pihak berkuasa yang berkaitan jika produk menyebabkan pencemaran persekitaran (pembetung, aliran air, tanah atau udara). Bahan mencemar air. Boleh memudaratkan alam sekitar jika terlepas dalam jumlah yang banyak. Pungut kumpul tumpahan.

### Kaedah dan bahan bagi pembendungan dan pembersihan

- Tumpahan kecil** : Hentikan kebocoran jika tidak berisiko. Alih bekas daripada kawasan tumpahan. Gunakan alat kalis percikan dan peralatan kalis letupan. Cairkan dengan air dan seka bersih jika terlarut air. Sebagai alternatif, atau jika tidak terlarut air, serap dengan bahan kering yang lengai dan isikan dalam bekas pelupusan bahan buangan yang wajar. Buang melalui kontraktor pelupusan sisa yang berlesen.
- Tumpahan besar** : Hentikan kebocoran jika tidak berisiko. Alih bekas daripada kawasan tumpahan. Gunakan alat kalis percikan dan peralatan kalis letupan. Pendekatan lepas dari arah angin bertiup jauh dari kamu, bukan ke arah kamu. Cegah kemasukan ke dalam pembetung, aliran air, basemen atau ruang terbatas. Siram tumpahan ke dalam loji perawatan efluen atau teruskan seperti berikut. Bendung dan kumpul tumpahan dengan bahan serap tidak mampu bakar seperti pasir, tanah, vermikulit dan tanah diatom, dan letakkan dalam bekas untuk pembuangan mengikut peraturan tempatan (lihat Seksyen 13). Buang melalui kontraktor pelupusan sisa yang berlesen. Bahan penyerap yang tercemar boleh mendatangkan bahaya yang sama seperti produk tertumpah. Nota: Lihat Seksyen 1 untuk maklumat hubungan kecemasan dan Seksyen 13 untuk pelupusan sisa.

## Section 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

- Environmental precautions** : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.





Section 7. Handling and storage

- Protective measures

: Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Advice on general occupational hygiene

: Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
- Conditions for safe storage, including any incompatibilities

: Store between the following temperatures: 0 to 35°C (32 to 95°F). Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidising materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Bahagian 8: Kawalan pendedahan dan perlindungan diri

Parameter kawalan  
Had Pendedahan Pekerjaan

|                                                                                                 |                                                                                                                                                                               |
|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  copper oxide | <b>Jadual I USECHH 2000 (Malaysia, 4/2000)<br/>[Kuprum (Wasap)]</b><br>Purata berpemberat lapan jam 8 jam: 0.2 mg/m³. Borang: wasap.                                          |
| Hasil penguraian kimpalan haba pateri teras rosin                                               | <b>Jadual I USECHH 2000 (Malaysia, 4/2000)<br/>Pemeka.</b>                                                                                                                    |
| Zink oksida                                                                                     | <b>Jadual I USECHH 2000 (Malaysia, 4/2000)</b><br>Purata berpemberat lapan jam 8 jam: 10 mg/m³. Borang: habuk.<br>Purata berpemberat lapan jam 8 jam: 5 mg/m³. Borang: wasap. |
| Metil isobutil keton                                                                            | <b>Jadual I USECHH 2000 (Malaysia, 4/2000)</b><br>Purata berpemberat lapan jam 8 jam: 50 ppm.<br>Purata berpemberat lapan jam 8 jam: 205 mg/m³.                               |
| 1,2,4-trimethylbenzene                                                                          | <b>Jadual I USECHH 2000 (Malaysia, 4/2000)<br/>[Trimetil benzena]</b><br>Purata berpemberat lapan jam 8 jam: 25 ppm.<br>Purata berpemberat lapan jam 8 jam: 123 mg/m³.        |
| zineb (ISO)                                                                                     | <b>DFG MAC-values list (Jerman, 7/2024)<br/>[Zinc and its inorganic compounds]</b><br>Develop C.                                                                              |

Bahagian 8: Kawalan pendedahan dan perlindungan diri

|                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                       | <p>PEAK 15 minit: 0.4 mg/m<sup>3</sup> 4 kali per syif [Interval: 1 hour]. Borang: nisbah ternafas.</p> <p>TWA 8 jam: 2 mg/m<sup>3</sup>. Borang: pecahan tersedutkan.</p> <p>TWA 8 jam: 0.1 mg/m<sup>3</sup>. Borang: nisbah ternafas.</p> <p>PEAK 15 minit: 4 mg/m<sup>3</sup> 4 kali per syif [Interval: 1 hour]. Borang: pecahan tersedutkan.</p>                                                                                                         |
| xylene                                                                                                | <p><b>Jadual I USECHH 2000 (Malaysia, 4/2000) [Xilena]</b></p> <p>Purata berpemberat lapan jam 8 jam: 434 mg/m<sup>3</sup>.</p> <p>Purata berpemberat lapan jam 8 jam: 100 ppm.</p>                                                                                                                                                                                                                                                                           |
| 12-hydroxyoctadecanoic acid, reaction products with 1,3-benzenedimethanamine and hexamethylenediamine | <p><b>ACGIH TLV (Amerika Syarikat)</b></p> <p>TWA: 10 mg/m<sup>3</sup>. Borang: Boleh sedut particle.</p> <p>TWA: 3 mg/m<sup>3</sup> (inhalable dust). Borang: Ternafas particle.</p>                                                                                                                                                                                                                                                                         |
| copper oxide                                                                                          | <p><b>Jadual I USECHH 2000 (Malaysia, 4/2000) [Kuprum (Wasap)]</b></p> <p>Purata berpemberat lapan jam 8 jam: 0.2 mg/m<sup>3</sup>. Borang: wasap.</p>                                                                                                                                                                                                                                                                                                        |
| tembaga                                                                                               | <p><b>Jadual I USECHH 2000 (Malaysia, 4/2000) [Kuprum (Habuk dan kabus)]</b></p> <p>Purata berpemberat lapan jam 8 jam: 1 mg/m<sup>3</sup> (sebagai Cu). Borang: habuk dan kabus.</p> <p><b>Jadual I USECHH 2000 (Malaysia, 4/2000) [Kuprum (Wasap)]</b></p> <p>Purata berpemberat lapan jam 8 jam: 0.2 mg/m<sup>3</sup>. Borang: wasap.</p>                                                                                                                  |
| zinc sulphide                                                                                         | <p><b>DFG MAC-values list (Jerman, 7/2024) [Zinc and its inorganic compounds]</b></p> <p>Develop C.</p> <p>PEAK 15 minit: 0.4 mg/m<sup>3</sup> 4 kali per syif [Interval: 1 hour]. Borang: nisbah ternafas.</p> <p>TWA 8 jam: 2 mg/m<sup>3</sup>. Borang: pecahan tersedutkan.</p> <p>TWA 8 jam: 0.1 mg/m<sup>3</sup>. Borang: nisbah ternafas.</p> <p>PEAK 15 minit: 4 mg/m<sup>3</sup> 4 kali per syif [Interval: 1 hour]. Borang: pecahan tersedutkan.</p> |

- Langkah pemantauan yang disyorkan

: Rujukan harus dibuat atas piawai pemantauan yang berkenaan. Rujukan kepada dokumen panduan negara bagi kaedah penentuan zat berbahaya juga dikehendaki.
- Kawalan kejuruteraan yang wajar

: Guna hanya dengan ventilasi mencukupi. Guna penutup proses, pengalihudaraan ekzos setempat atau kawalan kejuruteraan lain untuk memastikan pekerja hanya terdedah kepada bahan cemar bawaan udara di bawah apa-apa had yang dicadangkan atau had statutori. Kawalan kejuruteraan juga perlu memastikan kepekatan gas, wap atau debu di bawah sebarang had bahan letupan yang lebih rendah. Guna peralatan ventilasi kalis letupan.

## Bahagian 8: Kawalan pendedahan dan perlindungan diri

**Kawalan pendedahan alam sekitar** : Pengeluaran daripada pengudaraan atau peralatan proses kerja hendaklah diperiksa untuk memastikan ianya mematuhi keperluan perundangan perlindungan alam sekitar. Bagi sesetengah kes, penyental wasap, penuras atau pengubahsuaian kejuruteraan terhadap peralatan proses adalah perlu bagi mengurangkan pengeluaran ke tahap yang dibenarkan.

### Langkah-langkah perlindungan individu

- Langkah-langkah kebersihan** : Basuh kedua tangan, lengan dan muka sehingga bersih setelah mengendalikan produk kimia, sebelum makan, merokok dan menggunakan tandas dan pada akhir waktu kerja. Teknik yang sesuai harus digunakan apabila menanggalkan pakaian yang mungkin tercemar. Pakaian kerja yang tercemar tidak boleh dibawa keluar dari tempat kerja. Basuh pakaian tercemar sebelum memakai semula. Pastikan tempat mencuci mata dan pancuran air keselamatan berdekatan dengan lokasi tempat kerja.
- Perlindungan mata/muka** : gogal percikan bahan kimia dan perisai penuh muka.
- Perlindungan kulit**
- Perlindungan tangan** : Sarung tangan kedap penentang bahan kimia, yang mematuhi piawaian yang diluluskan hendaklah dipakai pada setiap masa apabila mengendalikan produk kimia jika penilaian risiko menunjukkan ini adalah perlu. Dengan mempertimbangkan parameter yang ditetapkan oleh pengilang sarung tangan, pastikan semasa digunakan bahawa sarung tangan masih mengekalkan ciri-ciri perlindungannya. Harus diperhatikan bahawa jangka masa hingga terobos untuk mana-mana bahan sarung tangan mungkin berbeza mengikut pengilang sarung tangan. Bagi kes campuran, yang terdiri daripada beberapa zat, jangka masa perlindungan sarung tangan tidak dapat dianggarkan dengan tepat.
- sarung tangan** : getah butil
- Perlindungan tubuh** : Peralatan perlindungan peribadi untuk badan perlu dipilih berdasarkan tugas yang dilakukan dan risiko yang terlibat dan perlulah diluluskan oleh pakar sebelum mengendalikan produk ini. Jika ada risiko nyalaan daripada elektrik statik, pakai pakaian pelindung anti statik. Bagi perlindungan terbesar daripada nyahcas statik, pakaian harus termasuk baju senyawa anti statik, but dan sarung tangan.
- Perlindungan kulit yang lain** : Kasut yang wajar dan apa jua langkah tambahan bagi perlindungan kulit harus dipilih berdasarkan tugas yang dilakukan dan risiko yang terbabit, dan harus diluluskan oleh seorang pakar sebelum mengendalikan produk ini.
- Perlindungan respiratori** : Berdasarkan bahaya dan kemungkinan pendedahan, pilih respirator yang memenuhi standard atau pensijilan yang sewajarnya. Respirator harus digunakan mengikut program pelindung pernafasan bagi memastikan pemakaian dan latihan yang betul, serta aspek penggunaan lain yang penting.

## Section 8. Exposure controls/personal protection

### Control parameters

#### Occupational exposure limits

 dicopper oxide

rosin

zinc oxide

4-methylpentan-2-one

**Schedule I USECHH 2000 (Malaysia, 4/2000) [Copper (Fume)]**

TWA 8 hours: 0.2 mg/m<sup>3</sup>. Form: Fume.

**Schedule I USECHH 2000 (Malaysia, 4/2000) Sensitiser.**

**Schedule I USECHH 2000 (Malaysia, 4/2000)**

TWA 8 hours: 10 mg/m<sup>3</sup>. Form: Dust.

TWA 8 hours: 5 mg/m<sup>3</sup>. Form: Fume.

**Schedule I USECHH 2000 (Malaysia, 4/2000)**

TWA 8 hours: 50 ppm.

Section 8. Exposure controls/personal protection

|                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1,2,4-trimethylbenzene                                                                                | TWA 8 hours: 205 mg/m³.<br><b>Schedule I USECHH 2000 (Malaysia, 4/2000) [Trimethyl benzene]</b><br>TWA 8 hours: 25 ppm.<br>TWA 8 hours: 123 mg/m³.                                                                                                                                                                                                                                                |
| zineb (ISO)                                                                                           | <b>DFG MAC-values list (Germany, 7/2024) [Zinc and its inorganic compounds]</b><br>Develop C.<br>PEAK 15 minutes: 0.4 mg/m³ 4 times per shift [Interval: 1 hour]. Form: respirable fraction.<br>TWA 8 hours: 2 mg/m³. Form: inhalable fraction.<br>TWA 8 hours: 0.1 mg/m³. Form: respirable fraction.<br>PEAK 15 minutes: 4 mg/m³ 4 times per shift [Interval: 1 hour]. Form: inhalable fraction. |
| xylene                                                                                                | <b>Schedule I USECHH 2000 (Malaysia, 4/2000) [Xylene]</b><br>TWA 8 hours: 434 mg/m³.<br>TWA 8 hours: 100 ppm.                                                                                                                                                                                                                                                                                     |
| 12-hydroxyoctadecanoic acid, reaction products with 1,3-benzenedimethanamine and hexamethylenediamine | <b>ACGIH TLV (United States)</b><br>TWA: 10 mg/m³. Form: Inhalable particle.<br>TWA: 3 mg/m³ (inhalable dust). Form: Respirable particle.                                                                                                                                                                                                                                                         |
| copper oxide                                                                                          | <b>Schedule I USECHH 2000 (Malaysia, 4/2000) [Copper (Fume)]</b><br>TWA 8 hours: 0.2 mg/m³. Form: Fume.                                                                                                                                                                                                                                                                                           |
| copper                                                                                                | <b>Schedule I USECHH 2000 (Malaysia, 4/2000) [Copper (Dusts and mists)]</b><br>TWA 8 hours: 1 mg/m³ (as Cu). Form: Dusts and mists.<br><b>Schedule I USECHH 2000 (Malaysia, 4/2000) [Copper (Fume)]</b><br>TWA 8 hours: 0.2 mg/m³. Form: Fume.                                                                                                                                                    |
| zinc sulphide                                                                                         | <b>DFG MAC-values list (Germany, 7/2024) [Zinc and its inorganic compounds]</b><br>Develop C.<br>PEAK 15 minutes: 0.4 mg/m³ 4 times per shift [Interval: 1 hour]. Form: respirable fraction.<br>TWA 8 hours: 2 mg/m³. Form: inhalable fraction.<br>TWA 8 hours: 0.1 mg/m³. Form: respirable fraction.<br>PEAK 15 minutes: 4 mg/m³ 4 times per shift [Interval: 1 hour]. Form: inhalable fraction. |

**Recommended monitoring procedures** : Reference should be made to appropriate monitoring standards. Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

## Section 8. Exposure controls/personal protection

### Appropriate engineering controls

- : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

### Environmental exposure controls

- : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

### Individual protection measures

#### Hygiene measures

- : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

#### Eye/face protection

- : Chemical splash goggles and face shield.

#### Skin protection

##### Hand protection

- : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

##### Gloves

- : butyl rubber

##### Body protection

- : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

##### Other skin protection

- : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

##### Respiratory protection

- : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

## Bahagian 9: Sifat fizikal dan kimia

### Rupa

#### Keadaan fizikal

- : Cecair.

#### Warna

- : Merah keperangan.

#### Bau

- : Aromatik.

#### Ambang Bau

- : Tidak tersedia.

#### pH

- : Tidak berkenaan.

#### Takat Lebur

- : Tidak tersedia.

#### Takat Didih

- : >37.78°C (>100°F)

#### Takat kilat

- : Cawan tertutup: 31°C (87.8°F)

#### Kadar Penyejatan

- : Tidak tersedia.



## Bahagian 9: Sifat fizikal dan kimia

**Kemudahbakaran (pepejal, gas)** : Tidak tersedia.

**Had mudah meletup (mudah menyala) bawah dan atas** : Tidak tersedia.

**Tekanan Wap** : Tidak tersedia.

**Ketumpatan Wap** : Tidak tersedia.

**Ketumpatan bandingan** : 1.68

**Keterlarutan** :

| Media     | Keputusan   |
|-----------|-------------|
| air sejuk | Tidak larut |

**Pekali sekatan: n-oktanol/air** : Tidak bekenaan.

**Suhu pengautocucuhan** : Tidak tersedia.

**Suhu penguraian** : Tidak tersedia.

**Kelikatan** : Dinamik (suhu bilik): Tidak tersedia.  
Kinematik (suhu bilik): Tidak tersedia.  
Kinematik (40°C): >21 mm<sup>2</sup>/s

## Section 9. Physical and chemical properties

### Appearance

**Physical state** : Liquid.

**Colour** : Brownish-red.

**Odour** : Aromatic.

**Odour threshold** : Not available.

**pH** : Not applicable.

**Melting point** : Not available.

**Boiling point** : >37.78°C (>100°F)

**Flash point** : Closed cup: 31°C (87.8°F)

**Evaporation rate** : Not available.

**Flammability (solid, gas)** : Not available.

**Lower and upper explosive (flammable) limits** : Not available.

**Vapour pressure** : Not available.

**Vapour density** : Not available.

**Relative density** : 1.68

**Solubility(ies)** :

| Media      | Result      |
|------------|-------------|
| cold water | Not soluble |

**Partition coefficient: n-octanol/water** : Not applicable.

**Auto-ignition temperature** : Not available.

**Decomposition temperature** : Not available.

**Viscosity** : Dynamic (room temperature): Not available.  
Kinematic (room temperature): Not available.  
Kinematic (40°C): >21 mm<sup>2</sup>/s



Bahagian 10: Kestabilan dan kereaktifan

- Kereaktifan

: Tiada data ujian khusus berkaitan dengan kereaktifan bagi produk ini atau ramuannya.
- Kestabilan bahan

: Produk ini stabil.
- Kemungkinan berlakunya tindak balas berbahaya

: Dalam keadaan penyimpanan dan penggunaan yang normal, tindak balas berbahaya tidak akan terjadi.
- Keadaan yang perlu dielak

: Apabila terdedah kepada suhu tinggi, boleh mengeluarkan hasil penguraian berbahaya.
- Bahan tidak serasi

: Jauhkan daripada bahan berikut untuk mencegah tindakbalas eksotermik kuat: agen pengoksidaan, alkali kuat, asid kuat.
- Produk penguraian berbahaya

: Bergantung pada keadaan, produk pereputan mungkin termasuk bahan berikut: karbon oksida nitrogen oksida sulfur oksida sebatian berhalogen oksida logam

Section 10. Stability and reactivity

- Reactivity

: No specific test data related to reactivity available for this product or its ingredients.
- Chemical stability

: The product is stable.
- Possibility of hazardous reactions

: Under normal conditions of storage and use, hazardous reactions will not occur.
- Conditions to avoid

: When exposed to high temperatures may produce hazardous decomposition products.
- Incompatible materials

: Keep away from the following materials to prevent strong exothermic reactions: oxidising agents, strong alkalis, strong acids.
- Hazardous decomposition products

: Depending on conditions, decomposition products may include the following materials: carbon oxides nitrogen oxides sulfur oxides halogenated compounds metal oxide/oxides

Bahagian 11: Maklumat toksikologi

Maklumat tentang kesan toksikologi

Ketoksikan akut

| Nama produk/bahan                                                                                                                                                           | Keputusan                      | Spesis | Dos         | Pendedahan |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------|-------------|------------|
|  Copper oxide<br><br>Hasil penguraian kimpalan haba pateri teras rosin<br><br>zink oksida | LC50 Penyedutan Debu dan Kabus | Tikus  | 3.34 mg/l   | 4 jam      |
|                                                                                                                                                                             | LD50 Kulit                     | Tikus  | >2000 mg/kg | -          |
|                                                                                                                                                                             | LD50 Oral                      | Tikus  | 500 mg/kg   | -          |
|                                                                                                                                                                             | LD50 Kulit                     | Tikus  | >2000 mg/kg | -          |
|                                                                                                                                                                             | LD50 Oral                      | Tikus  | 7600 mg/kg  | -          |
|                                                                                                                                                                             | LC50 Penyedutan Debu dan Kabus | Tikus  | >5700 mg/m³ | 4 jam      |
|                                                                                                                                                                             | LD50 Kulit                     | Tikus  | >2000 mg/kg | -          |
|                                                                                                                                                                             | LD50 Oral                      | Tikus  | >5000 mg/kg | -          |

**Bahagian 11: Maklumat toksikologi**

|                                                                                                                |                                   |       |                         |       |
|----------------------------------------------------------------------------------------------------------------|-----------------------------------|-------|-------------------------|-------|
| 4-metilpentan-2-on                                                                                             | LC50 Penyedutan Wap               | Tikus | 11 mg/l                 | 4 jam |
|                                                                                                                | LD50 Kulit                        | Arnab | >5000 mg/kg             | -     |
| Solvent naphtha (petroleum),<br>light aromatic                                                                 | LD50 Oral                         | Tikus | 2.08 g/kg               | -     |
|                                                                                                                | LD50 Kulit                        | Arnab | 3.48 g/kg               | -     |
| 1,2,4-trimethylbenzene                                                                                         | LD50 Oral                         | Tikus | 8400 mg/kg              | -     |
|                                                                                                                | LC50 Penyedutan Wap               | Tikus | 18000 mg/m <sup>3</sup> | 4 jam |
|                                                                                                                | LD50 Oral                         | Tikus | 5 g/kg                  | -     |
| zineb (ISO)                                                                                                    | LD50 Oral                         | Tikus | >2000 mg/kg             | -     |
| xilena                                                                                                         | LD50 Kulit                        | Arnab | 1.7 g/kg                | -     |
|                                                                                                                | LD50 Oral                         | Tikus | 4.3 g/kg                | -     |
| 12-hydroxyoctadecanoic<br>acid, reaction products with<br>1,3-benzenedimethanamine<br>and hexamethylenediamine | LC50 Penyedutan Debu dan<br>Kabus | Tikus | 3.56 mg/l               | 4 jam |
|                                                                                                                | LD50 Kulit                        | Tikus | >2000 mg/kg             | -     |
|                                                                                                                | LD50 Oral                         | Tikus | >2000 mg/kg             | -     |
| copper oxide                                                                                                   | LD50 Oral                         | Tikus | >2000 mg/kg             | -     |
| tembaga                                                                                                        | LC50 Penyedutan Debu dan<br>Kabus | Tikus | >5.11 mg/l              | 4 jam |

**Kesimpulan/Ringkasan** : Tiada data tentang campuran itu sendiri.

**Kerengsaan/Kakisan**

| Nama produk/bahan | Keputusan                | Spesis | Skor | Pendedahan    | Pencerapan |
|-------------------|--------------------------|--------|------|---------------|------------|
| xilena            | Kulit - Iritan sederhana | Arnab  | -    | 24 jam 500 mg | -          |

**Kesimpulan/Ringkasan**

**Kulit** : Tiada data tentang campuran itu sendiri.

**Mata** : Tiada data tentang campuran itu sendiri.

**Pernafasan** : Tiada data tentang campuran itu sendiri.

**Pemekaan**

| Nama produk/bahan | Laluan pendedahan | Spesis | Keputusan |
|-------------------|-------------------|--------|-----------|
| zineb (ISO)       | kulit             | argus  | Memeka    |

**Kesimpulan/Ringkasan**

**Kulit** : Tiada data tentang campuran itu sendiri.

**Pernafasan** : Tiada data tentang campuran itu sendiri.

**Mutagenisiti**

**Kesimpulan/Ringkasan** : Tiada data tentang campuran itu sendiri.

**Karsinogenisiti**

**Kesimpulan/Ringkasan** : Tiada data tentang campuran itu sendiri.

**Toksisiti reproduktif**

**Kesimpulan/Ringkasan** : Tiada data tentang campuran itu sendiri.

**Keteratogenikan**

**Kesimpulan/Ringkasan** : Tiada data tentang campuran itu sendiri.

**Ketoksikan organ sasaran khusus (pendedahan tunggal)**

**Bahagian 11: Maklumat toksikologi**

| Nama                                        | Kategori   | Laluan pendedahan | Organ Sasaran                 |
|---------------------------------------------|------------|-------------------|-------------------------------|
| 4-metilpentan-2-on                          | Kategori 3 | -                 | Kerengsaan saluran pernafasan |
| Solvent naphtha (petroleum), light aromatic | Kategori 3 | -                 | Kesan narkotik                |
| 1,2,4-trimethylbenzene                      | Kategori 3 | -                 | Kerengsaan saluran pernafasan |
| zineb (ISO)                                 | Kategori 3 | -                 | Kerengsaan saluran pernafasan |

**Ketoksikan organ sasaran khusus (pededahan berulang)**

| Nama                                                                                                  | Kategori   | Laluan pendedahan | Organ Sasaran |
|-------------------------------------------------------------------------------------------------------|------------|-------------------|---------------|
| 12-hydroxyoctadecanoic acid, reaction products with 1,3-benzenedimethanamine and hexamethylenediamine | Kategori 2 | penyedutan        | paru-paru     |

**Bahaya penyedutan**

| Nama                                        | Keputusan                    |
|---------------------------------------------|------------------------------|
| Solvent naphtha (petroleum), light aromatic | BAHAYA ASPIRASI - Kategori 1 |

**Maklumat tentang laluan pendedahan yang berkemungkinan** : Tidak tersedia.

**Kesan Kesihatan Akut Berpotensi**

- Sentuhan mata** : Menyebabkan kerosakan mata yang serius.
- Penyedutan** : Tiada kesan yang penting atau bahaya kritikal yang diketahui.
- Sentuhan kulit** : Menyebabkan kerengsaan kulit. Mungurangkan lemak dalam kulit. Boleh menyebabkan tindak balas alahan kulit.
- Pengingesan** : Memudaratkan jika tertelan.

**Gejala yang berkaitan dengan ciri fizikal, kimia dan toksikologi**

- Sentuhan mata** : Gejala yang teruk boleh termasuk yang berikut:  
sakit  
berair  
kemerahan
- Penyedutan** : Tiada data spesifik.
- Sentuhan kulit** : Gejala yang teruk boleh termasuk yang berikut:  
kesakitan atau kerengsaan  
kemerahan  
kering  
pecah-pecah  
perepuhan boleh berlaku
- Pengingesan** : Gejala yang teruk boleh termasuk yang berikut:  
kesakitan perut

**Kesan tertunda dan serta merta, dan juga kesan kronik akibat pendedahan jangka pendek dan panjang****Pendedahan jangka pendek**

- Kesan serta merta yang berpotensi** : Tiada data tentang campuran itu sendiri.
- Kesan tertunda yang berpotensi** : Tiada data tentang campuran itu sendiri.

## Bahagian 11: Maklumat toksikologi

### Pendedahan jangka panjang

**Kesan serta merta yang berpotensi** : Tiada data tentang campuran itu sendiri.

**Kesan tertunda yang berpotensi** : Tiada data tentang campuran itu sendiri.

### Kesan Kesihatan Kronik Berpotensi

**Am** : Terkena kulit secara berpanjangan dan berulang boleh menyahlemak kulit dan menyebabkan kerengsaan, pecah-pecah dan/atau dermatitis. Sebaik sahaja menjadi peka, tindak balas alahan yang teruk boleh berlaku apabila selepas itu terdedah kepada bahan kepada paras yang sangat rendah.

**Karsinogenisiti** : Tiada kesan yang penting atau bahaya kritikal yang diketahui.

**Mutagenisiti** : Tiada kesan yang penting atau bahaya kritikal yang diketahui.

**Toksisiti reproduktif** : Tiada kesan yang penting atau bahaya kritikal yang diketahui.

### Ukuran ketoksikan secara angka

#### Anggaran ketoksikan akut

| Laluan                       | Nilai ATE      |
|------------------------------|----------------|
| Oral                         | 1787.15 mg/kg  |
| Kulit                        | 78869.62 mg/kg |
| Penyedutan (wap)             | 57.17 mg/l     |
| Penyedutan (habuk dan kabus) | 5.79 mg/l      |

### Maklumat lain

Terkena kulit secara berpanjangan atau berulang boleh mengeringkan kulit dan menyebabkan kerengsaan. Mengempelas dan mengisar debu mungkin berbahaya jika tersedut. Pendedahan berulang kepada kepekatan wap yang tinggi boleh mengakibatkan kerengsaan sistem pernafasan dan kerosakan otak dan sistem saraf yang kekal. Penyedutan kepekatan wap/aerosol melebihi had pendedahan disyorkan akibatkan sakit kepala, mengantuk dan mual, dan boleh membawa kepada pingsan. Elakkan tersentuh kulit dan pakaian.

## Section 11. Toxicological information

### Information on toxicological effects

#### Acute toxicity

| Product/ingredient name                     | Result                          | Species | Dose                    | Exposure |
|---------------------------------------------|---------------------------------|---------|-------------------------|----------|
| Copper oxide                                | LC50 Inhalation Dusts and mists | Rat     | 3.34 mg/l               | 4 hours  |
|                                             | LD50 Dermal                     | Rat     | >2000 mg/kg             | -        |
|                                             | LD50 Oral                       | Rat     | 500 mg/kg               | -        |
| rosin                                       | LD50 Dermal                     | Rat     | >2000 mg/kg             | -        |
|                                             | LD50 Oral                       | Rat     | 7600 mg/kg              | -        |
| Zinc oxide                                  | LC50 Inhalation Dusts and mists | Rat     | >5700 mg/m <sup>3</sup> | 4 hours  |
|                                             | LD50 Dermal                     | Rat     | >2000 mg/kg             | -        |
|                                             | LD50 Oral                       | Rat     | >5000 mg/kg             | -        |
| 4-Methylpentan-2-one                        | LC50 Inhalation Vapour          | Rat     | 11 mg/l                 | 4 hours  |
|                                             | LD50 Dermal                     | Rabbit  | >5000 mg/kg             | -        |
|                                             | LD50 Oral                       | Rat     | 2.08 g/kg               | -        |
| Solvent naphtha (petroleum), light aromatic | LD50 Dermal                     | Rabbit  | 3.48 g/kg               | -        |
|                                             | LD50 Oral                       | Rat     | 8400 mg/kg              | -        |
| 1,2,4-trimethylbenzene                      | LC50 Inhalation Vapour          | Rat     | 18000 mg/m <sup>3</sup> | 4 hours  |
|                                             | LD50 Oral                       | Rat     | 5 g/kg                  | -        |
|                                             | LD50 Oral                       | Rat     | >2000 mg/kg             | -        |
| zineb (ISO)                                 | LD50 Oral                       | Rat     | >2000 mg/kg             | -        |
| Xylene                                      | LD50 Dermal                     | Rabbit  | 1.7 g/kg                | -        |

## Section 11. Toxicological information

|                                                                                                       |                                 |     |             |         |
|-------------------------------------------------------------------------------------------------------|---------------------------------|-----|-------------|---------|
| 12-hydroxyoctadecanoic acid, reaction products with 1,3-benzenedimethanamine and hexamethylenediamine | LD50 Oral                       | Rat | 4.3 g/kg    | -       |
|                                                                                                       | LC50 Inhalation Dusts and mists | Rat | 3.56 mg/l   | 4 hours |
| copper oxide<br>copper                                                                                | LD50 Dermal                     | Rat | >2000 mg/kg | -       |
|                                                                                                       | LD50 Oral                       | Rat | >2000 mg/kg | -       |
|                                                                                                       | LD50 Oral                       | Rat | >2000 mg/kg | -       |
|                                                                                                       | LC50 Inhalation Dusts and mists | Rat | >5.11 mg/l  | 4 hours |

**Conclusion/Summary** : There are no data available on the mixture itself.

### Irritation/Corrosion

| Product/ingredient name | Result                   | Species | Score | Exposure        | Observation |
|-------------------------|--------------------------|---------|-------|-----------------|-------------|
| Xylene                  | Skin - Moderate irritant | Rabbit  | -     | 24 hours 500 mg | -           |

### Conclusion/Summary

**Skin** : There are no data available on the mixture itself.

**Eyes** : There are no data available on the mixture itself.

**Respiratory** : There are no data available on the mixture itself.

### Sensitisation

| Product/ingredient name | Route of exposure | Species    | Result      |
|-------------------------|-------------------|------------|-------------|
| zineb (ISO)             | skin              | Guinea pig | Sensitising |

### Conclusion/Summary

**Skin** : There are no data available on the mixture itself.

**Respiratory** : There are no data available on the mixture itself.

### Mutagenicity

Not available.

**Conclusion/Summary** : There are no data available on the mixture itself.

### Carcinogenicity

Not available.

**Conclusion/Summary** : There are no data available on the mixture itself.

### Reproductive toxicity

Not available.

**Conclusion/Summary** : There are no data available on the mixture itself.

### Teratogenicity

Not available.

**Conclusion/Summary** : There are no data available on the mixture itself.

### Specific target organ toxicity (single exposure)

| Name                                        | Category   | Route of exposure | Target organs                |
|---------------------------------------------|------------|-------------------|------------------------------|
| 4-Methylpentan-2-one                        | Category 3 | -                 | Respiratory tract irritation |
| Solvent naphtha (petroleum), light aromatic | Category 3 | -                 | Narcotic effects             |
| 1,2,4-trimethylbenzene                      | Category 3 | -                 | Respiratory tract irritation |
| zineb (ISO)                                 | Category 3 | -                 | Respiratory tract irritation |

## Section 11. Toxicological information

### Specific target organ toxicity (repeated exposure)

| Name                                                                                                  | Category   | Route of exposure | Target organs |
|-------------------------------------------------------------------------------------------------------|------------|-------------------|---------------|
| 12-hydroxyoctadecanoic acid, reaction products with 1,3-benzenedimethanamine and hexamethylenediamine | Category 2 | inhalation        | lungs         |

### Aspiration hazard

| Name                                        | Result                         |
|---------------------------------------------|--------------------------------|
| Solvent naphtha (petroleum), light aromatic | ASPIRATION HAZARD - Category 1 |

**Information on likely routes of exposure** : Not available.

### Potential acute health effects

**Eye contact** : Causes serious eye damage.  
**Inhalation** : No known significant effects or critical hazards.  
**Skin contact** : Causes skin irritation. Defatting to the skin. May cause an allergic skin reaction.  
**Ingestion** : Harmful if swallowed.

### Symptoms related to the physical, chemical and toxicological characteristics

**Eye contact** : Adverse symptoms may include the following:  
 pain  
 watering  
 redness  
**Inhalation** : No specific data.  
**Skin contact** : Adverse symptoms may include the following:  
 pain or irritation  
 redness  
 dryness  
 cracking  
 blistering may occur  
**Ingestion** : Adverse symptoms may include the following:  
 stomach pains

### Delayed and immediate effects as well as chronic effects from short and long-term exposure

#### Short term exposure

**Potential immediate effects** : There are no data available on the mixture itself.  
**Potential delayed effects** : There are no data available on the mixture itself.

#### Long term exposure

**Potential immediate effects** : There are no data available on the mixture itself.  
**Potential delayed effects** : There are no data available on the mixture itself.

### Potential chronic health effects

**General** : Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.  
**Carcinogenicity** : No known significant effects or critical hazards.  
**Mutagenicity** : No known significant effects or critical hazards.  
**Reproductive toxicity** : No known significant effects or critical hazards.

## Section 11. Toxicological information

### Numerical measures of toxicity

#### Acute toxicity estimates

| Route                        | ATE value      |
|------------------------------|----------------|
| Oral                         | 1787.15 mg/kg  |
| Dermal                       | 78869.62 mg/kg |
| Inhalation (vapours)         | 57.17 mg/l     |
| Inhalation (dusts and mists) | 5.79 mg/l      |

#### Other information

:

Prolonged or repeated contact may dry skin and cause irritation. Sanding and grinding dusts may be harmful if inhaled. Repeated exposure to high vapor concentrations may cause irritation of the respiratory system and permanent brain and nervous system damage. Inhalation of vapour/aerosol concentrations above the recommended exposure limits causes headaches, drowsiness and nausea and may lead to unconsciousness or death. Avoid contact with skin and clothing.

## Bahagian 12: Maklumat ekologi

### Ketoksikan

| Nama produk/bahan                                                                                                                                                                      | Keputusan                                                                                            | Spesis                                                                                                                                                     | Pendedahan                           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| dicopper oxide<br>zink oksida                                                                                                                                                          | LC50 0.003 mg/l<br>Akut EC50 0.17 mg/l<br>Akut EC50 0.481 mg/l Air tawar                             | Ikan<br>Alga<br>Dafnia - <i>Daphnia magna</i> -<br>Neonat                                                                                                  | 96 jam<br>72 jam<br>48 jam           |
| 4-metilpentan-2-on<br>Solvent naphtha (petroleum),<br>light aromatic<br>12-hydroxyoctadecanoic<br>acid, reaction products with<br>1,3-benzenedimethanamine<br>and hexamethylenediamine | Kronik NOEC 0.017 mg/l Air tawar<br>Akut LC50 >179 mg/l<br>Akut LC50 8.2 mg/l<br>Akut EC50 >100 mg/l | Alga<br>Ikan<br>Ikan<br>Alga - <i>Pseudokirchneriella<br/>subcapitata (microalgae)</i>                                                                     | 72 jam<br>96 jam<br>96 jam<br>72 jam |
|                                                                                                                                                                                        | Akut EC50 >100 mg/l<br>Akut LC50 >100 mg/l<br>Kronik NOEC 100 mg/l<br>Kronik NOEC ≥50 mg/l           | Dafnia - <i>Daphnia magna</i> (Water<br>flea)<br>Ikan - <i>Oncorhynchus mykiss</i><br>(rainbow trout)<br>Alga - <i>Pseudokirchneriella<br/>subcapitata</i> | 48 jam<br>96 jam<br>72 jam           |
| tembaga                                                                                                                                                                                | Akut LC50 810 ppb<br>Kronik EC10 8.1 µg/l                                                            | Dafnia - <i>Daphnia magna</i> (Water<br>flea)<br>Ikan<br>Dafnia - <i>Daphnia magna</i> -<br>Neonat                                                         | 21 hari<br>96 jam<br>21 hari         |

### Kegigihan dan degradasi

| Nama produk/bahan                                                                                              | Ujian                                                            | Keputusan                        | Dos | Inokulum |
|----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|----------------------------------|-----|----------|
| 4-metilpentan-2-on                                                                                             | OECD 301F                                                        | 83 % - Dengan mudah - 28<br>hari | -   | -        |
| 12-hydroxyoctadecanoic<br>acid, reaction products with<br>1,3-benzenedimethanamine<br>and hexamethylenediamine | OECD 301D<br>Biodegradabiliti<br>Sedia – Ujian<br>Botol Tertutup | 9 % - Tidak mudah - 29 hari      | -   | -        |



Bahagian 12: Maklumat ekologi

| Nama produk/bahan            | Separuh hayat Akuatik | Fotolisis | Sifat biorosot               |
|------------------------------|-----------------------|-----------|------------------------------|
| 4-metilpentan-2-on<br>xilena | -<br>-                | -<br>-    | Dengan mudah<br>Dengan mudah |

Potensi bioakumulasi

| Nama produk/bahan                                                                                              | LogP <sub>ow</sub> | BCF             | Berpotensi |
|----------------------------------------------------------------------------------------------------------------|--------------------|-----------------|------------|
| Hasil penguraian kimpalan<br>haba pateri teras rosin                                                           | 1.9 hingga 7.7     | -               | Tinggi     |
| 4-metilpentan-2-on                                                                                             | 1.9                | -               | Rendah     |
| 1,2,4-trimethylbenzene                                                                                         | 3.63               | 120.23          | Rendah     |
| zineb (ISO)                                                                                                    | 1.3                | -               | Rendah     |
| xilena                                                                                                         | 3.12               | 7.4 hingga 18.5 | Rendah     |
| 12-hydroxyoctadecanoic<br>acid, reaction products with<br>1,3-benzenedimethanamine<br>and hexamethylenediamine | >6                 | -               | Tinggi     |

Mobiliti tanah

Pekali Sekatan Tanah/Air : Tidak tersedia.

Kesan-kesan buruk lain : Tiada kesan yang penting atau bahaya kritikal yang diketahui.

Section 12. Ecological information

Toxicity

| Product/ingredient name                                                                                                                                                                                                                                            | Result                              | Species                                                         | Exposure |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------------------------------------------------|----------|
| dicopper oxide<br>Zinc oxide<br><br>4-Methylpentan-2-one<br>Solvent naphtha (petroleum),<br>light aromatic<br>12-hydroxyoctadecanoic<br>acid, reaction products with<br>1,3-benzenedimethanamine<br>and hexamethylenediamine<br><br><br><br><br><br><br><br>copper | LC50 0.003 mg/l                     | Fish                                                            | 96 hours |
|                                                                                                                                                                                                                                                                    | Acute EC50 0.17 mg/l                | Algae                                                           | 72 hours |
|                                                                                                                                                                                                                                                                    | Acute EC50 0.481 mg/l Fresh water   | Daphnia - <i>Daphnia magna</i> -<br>Neonate                     | 48 hours |
|                                                                                                                                                                                                                                                                    | Chronic NOEC 0.017 mg/l Fresh water | Algae                                                           | 72 hours |
|                                                                                                                                                                                                                                                                    | Acute LC50 >179 mg/l                | Fish                                                            | 96 hours |
|                                                                                                                                                                                                                                                                    | Acute LC50 8.2 mg/l                 | Fish                                                            | 96 hours |
|                                                                                                                                                                                                                                                                    | Acute EC50 >100 mg/l                | Algae - <i>Pseudokirchneriella<br/>subcapitata (microalgae)</i> | 72 hours |
|                                                                                                                                                                                                                                                                    | Acute EC50 >100 mg/l                | Daphnia - <i>Daphnia magna</i><br>(Water flea)                  | 48 hours |
|                                                                                                                                                                                                                                                                    | Acute LC50 >100 mg/l                | Fish - <i>Oncorhynchus mykiss</i><br>(rainbow trout)            | 96 hours |
|                                                                                                                                                                                                                                                                    | Chronic NOEC 100 mg/l               | Algae - <i>Pseudokirchneriella<br/>subcapitata</i>              | 72 hours |
|                                                                                                                                                                                                                                                                    | Chronic NOEC ≥50 mg/l               | Daphnia - <i>Daphnia magna</i><br>(Water flea)                  | 21 days  |
|                                                                                                                                                                                                                                                                    | Acute LC50 810 ppb                  | Fish                                                            | 96 hours |
|                                                                                                                                                                                                                                                                    | Chronic EC10 8.1 µg/l               | Daphnia - <i>Daphnia magna</i> -<br>Neonate                     | 21 days  |

Persistence and degradability

## Section 12. Ecological information

| Product/ingredient name                                                                                                       | Test                                                          | Result                                                  | Dose   | Inoculum |
|-------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------|--------|----------|
| 4-Methylpentan-2-one<br>12-hydroxyoctadecanoic acid, reaction products with 1,3-benzenedimethanamine and hexamethylenediamine | OECD 301F<br>OECD Ready Biodegradability - Closed Bottle Test | 83 % - Readily - 28 days<br>9 % - Not readily - 29 days | -<br>- | -<br>-   |

| Product/ingredient name        | Aquatic half-life | Photolysis | Biodegradability   |
|--------------------------------|-------------------|------------|--------------------|
| 4-Methylpentan-2-one<br>Xylene | -<br>-            | -<br>-     | Readily<br>Readily |

**Bioaccumulative potential**

| Product/ingredient name                                                                               | LogP <sub>ow</sub> | BCF         | Potential |
|-------------------------------------------------------------------------------------------------------|--------------------|-------------|-----------|
| Posin                                                                                                 | 1.9 to 7.7         | -           | High      |
| 4-Methylpentan-2-one                                                                                  | 1.9                | -           | Low       |
| 1,2,4-trimethylbenzene                                                                                | 3.63               | 120.23      | Low       |
| zineb (ISO)                                                                                           | 1.3                | -           | Low       |
| Xylene                                                                                                | 3.12               | 7.4 to 18.5 | Low       |
| 12-hydroxyoctadecanoic acid, reaction products with 1,3-benzenedimethanamine and hexamethylenediamine | >6                 | -           | High      |

**Mobility in soil**

**Soil/water partition coefficient** : Not available.

**Other adverse effects** : No known significant effects or critical hazards.

## Bahagian 13: Maklumat pelupusan

**Kaedah pelupusan** : Penghasilan sisa perlulah dielakkan atau diminimumkan sekiranya boleh. Pelupusan produk ini, larutan dan sebarang produk sampingan perlulah pada setiap masa mematuhi keperluan perlindungan alam sekitar dan perundangan pelupusan sisa dan sebarang keperluan pihak berkuasa serantau tempatan. Pembuangan lebihan dan hasilan yang tidak boleh dikitar semula melalui kontraktor pelupusan sisa yang berlesen. Bahan buangan tidak harus dibuang secara tidak dirawat ke pembentung kecuali patuh sepenuhnya kepada keperluan semua pihak berkuasa dengan kuasa undang-undang. Bungkusuan buangan harus diktarkan semula. Penunuan atau kambus tanah hanya harus dipertimbangkan apabila tidak mungkin dikitar semula. Bahan ini dan bekasnya hendaklah dilupuskan dengan cara yang selamat. Hati-hati apabila mengendalikan bekas yang telah dikosongkan tetapi belum dibersihkan atau dibilas. Bekas atau pelapik kosong mungkin mengandungi sisa-sisa produk. Wap daripada sisa produk mungkin menghasilkan atmosfera sangat mudah menyala atau mudah meletup dalam bekasnya. Jangan potong, kimpal atau canai bekas yang telah digunakan kecuali telah dibersihkan bahagian dalamnya dengan rapi. Elakkan penyebaran bahan tertumpah dan aliran dan bersentuh dengan tanah, jalan air, longkang dan pemetung.

## Section 13. Disposal information

## Section 13. Disposal information

### Disposal methods

: The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapour from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

## Bahagian 14: Maklumat pengangkutan

|                           | UN                                                            | IMDG   | IATA                                                               |
|---------------------------|---------------------------------------------------------------|--------|--------------------------------------------------------------------|
| Nombor UN                 | UN1263                                                        | UN1263 | UN1263                                                             |
| Nama penghantaran sah PBB | PAINT                                                         | PAINT  | PAINT                                                              |
| Kelas bahaya pengangkutan | 3                                                             | 3      | 3                                                                  |
| Kumpulan Pembungkusan     | III                                                           | III    | III                                                                |
| Bahaya Alam Sekitar       | Ya. Tanda bahan berbahaya pada alam sekitar tidak diperlukan. | Yes.   | Yes. The environmentally hazardous substance mark is not required. |

### Maklumat Tambahan

UN : Tiada dikenalpasti.

IMDG : The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.

IATA : Tanda zat berbahaya kepada alam sekitar mungkin kelihatan jika dikehendaki oleh peraturan pengangkutan lain.

### Langkah pencegahan istimewa untuk pengguna

: "Pengangkutan dalam premis pemilik:" sentiasa mengangkut dalam bekas bertutup yang tegak dan selamat. Pastikan orang yang mengangkut produk tahu apa yang perlu dilakukan sekiranya berlaku kemalangan atau tumpahan.

### Angkut secara pukal menurut alatan IMO

: Tidak berkenaan.

## Section 14. Transport information

## Section 14. Transport information

|                            | UN                                                                 | IMDG   | IATA                                                               |
|----------------------------|--------------------------------------------------------------------|--------|--------------------------------------------------------------------|
| UN number                  | UN1263                                                             | UN1263 | UN1263                                                             |
| UN proper shipping name    | PAINT                                                              | PAINT  | PAINT                                                              |
| Transport hazard class(es) | 3                                                                  | 3      | 3                                                                  |
| Packing group              | III                                                                | III    | III                                                                |
| Environmental hazards      | Yes. The environmentally hazardous substance mark is not required. | Yes.   | Yes. The environmentally hazardous substance mark is not required. |

### Additional information

UN : None identified.

IMDG : The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.

IATA : The environmentally hazardous substance mark may appear if required by other transportation regulations.

**Special precautions for user** : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

**Transport in bulk according to IMO instruments** : Not applicable.

## Bahagian 15: Maklumat pengawalseliaan

### Peraturan Antarabangsa

#### Bahan Kimia Jadual I, II & III Senarai Konvensyen Senjata Kimia

Tidak tersenarai.

#### Protokol Montreal

Tidak tersenarai.

#### Konvensyen Stockholm tentang zat pencemar organik gigih

Tidak tersenarai.

#### Protokol UNECE Aarhus tentang POP dan Logam Berat

Tidak tersenarai.

## Section 15. Regulatory information

### International regulations

#### Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

#### Montreal Protocol

Not listed.

#### Stockholm Convention on Persistent Organic Pollutants

Section 15. Regulatory information

Not listed.

[UNECE Aarhus Protocol on POPs and Heavy Metals](#)

Not listed.

Bahagian 16: Maklumat lain

[Sejarah](#)

Tarikh keluaran/Tarikh semakan : 18 Disember 2025

Tarikh Keluaran Terdahulu : 12/5/2025

Versi : 1.05

EHS

Petunjuk untuk Singkatan : ATE = Anggaran Keracunan Teruk  
BCF = Faktor Biokepekatan  
GHS = Sistem Global Berharmoni bagi Pengelasan dan Pelabelan Kimia  
IATA = Persatuan Pengangkutan Udara Antarabangsa  
IBC = Bekas Pukul Sederhana  
IMDG = Barang-barang Berbahaya Laut Antarabangsa  
LogPow = Logaritma pekali sekatan bagi oktanol/air  
MARPOL = Persidangan Antarabangsa bagi Pencegahan Pencemaran Daripada Kapal-kapal, 1973 seperti yang diubah oleh Protokol 1978. ("Marpol" = pencemaran laut)  
UN = Pertubuhan Bangsa-bangsa Bersatu

Rujukan : Tidak tersedia.

Menunjukkan maklumat yang telah berubah daripada versi isu terdahulu.

[Penafian](#)

Maklumat yang terkandung dalam risalah data ini berdasarkan maklumat saintifik dan maklumat teknikal terkini. Maklumat ini bertujuan untuk memberikan penekanan terhadap aspek kesihatan dan keselamatan bagi produk yang dihasilkan oleh PPG, dan untuk mengesyorkan langkah berjaga-jaga untuk penyimpanan dan pengendalian produk. Tiada waranti atau jaminan diberikan berkenaan dengan sifat produk. Pihak PPG tidak akan menanggung keatas apa-apa kegagalan untuk mematuhi langkah berjaga-jaga seperti yang dinyatakan dalam risalah data keselamatan ini atau bagi apa-apa penyalahgunaan.

Section 16. Other information

[History](#)

Date of issue/Date of revision : 18 December 2025

Date of previous issue : 12/5/2025

Version : 1.05

EHS

Key to abbreviations : ATE = Acute Toxicity Estimate  
BCF = Bioconcentration Factor  
GHS = Globally Harmonized System of Classification and Labelling of Chemicals  
IATA = International Air Transport Association  
IBC = Intermediate Bulk Container  
IMDG = International Maritime Dangerous Goods  
LogPow = logarithm of the octanol/water partition coefficient  
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)  
UN = United Nations

References : Not available.

## Section 16. Other information

Indicates information that has changed from previously issued version.

### Disclaimer

The information contained in this data sheet is based on present scientific and technical knowledge. The purpose of this information is to draw attention to the health and safety aspects concerning the products supplied by PPG, and to recommend precautionary measures for the storage and handling of the products. No warranty or guarantee is given in respect of the properties of the products. No liability can be accepted for any failure to observe the precautionary measures described in this data sheet or for any misuse of the products.