

Helaian Data Keselamatan menurut P.U.(A) 310/2013

Tarikh cetak 30.10.2017

Disemak semula pada 30.10.2017

1 Pengenalan bahan kimia dan pembekal

Nama dagang: 245 Lead-free Alloy Solder Wire
Kegunaan yang disarankan bagi bahan dan sekatan penggunaan Flux Memateri

Penggunaan bahan/sediaan Pateri berteras fluks

Perincian pembekal risalah data keselamatan
Pengilang/Pembekal:

Kester Inc.
800 West Thorndale Avenue
Itasca, IL 60143 USA
Tel (630) 616-4000

ITW Specialty Materials (Suzhou) Co., Ltd.
Heng Qiao Road
Wujiang Economic Development Zone
Suzhou, Jiangsu 215200 China
Tel +86 512 82060808

Kester GmbH
Ganghofer Strasse 45
D-82216 Gernlinden Germany
Tel +49 (0) 8142 4885 0

Maklumat lanjut dapat diperoleh daripada: Product Compliance: EHS_Kester@kester.com

Nombor telefon kecemasan:

CHEMTREC 24-Hour Emergency Response Telephone Number : (800) 424-9300

CHEMTREC 24-Hour Emergency Response (Outside US & Canada) Telephone Number : (703) 527-3887

2 Pengenalan bahaya

Pengelasan bahan atau campuran



Pem. Kulit 1 H317 Boleh menyebabkan tindak balas alahan kulit.

Melabelkan unsur

Unsur label GHS Produk ini dikelaskan dan dilabelkan menurut Sistem Terharmoni Global (GHS).

Piktogram hazard



GHS07

Perkataan isyarat Amaran

Komponen pelabelan yang menentukan bahaya:

Modified Rosin

Pernyataan hazard

H317 Boleh menyebabkan tindak balas alahan kulit.

Pernyataan langkah perlindungan

P261 Elakkan daripada tersedut habuk/wasap/gas/kabus/wap/semburan.

P280 Pakai sarung tangan pelindung.

P302+P352 JIKA TERKENA KULIT: Cuci dengan air yang banyak.

P501 Lupuskan kandungan/bekas menurut peraturan tempatan/wilayah/kebangsaan/antarabangsa.

(Bersambung ke halaman 2)

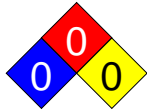
Helaian Data Keselamatan menurut P.U.(A) 310/2013

Tarikh cetak 30.10.2017

Disemak semula pada 30.10.2017

Nama dagang: 245 Lead-free Alloy Solder Wire

**Sistem pengelasan:
NFPA ratings (Scale 0 - 4)**



Health = 0
Fire = 0
Reactivity = 0

Bahaya lain

Keputusan penilaian PBT dan vPvB

PBT: Tidak berkenaan

vPvB: Tidak berkenaan

(Sambungan halaman 1)

3 Komposisi dan maklumat mengenai ramuan bahan kimia berbahaya

Keterangan: Campuran bahan disenaraikan di bawah bersama dengan bahan tambah tidak berbahaya.

Komponen berbahaya :

CAS: 7440-31-5	TIN (Sn)		85-100%
Trade Secret	Modified Rosin	⚠ Pem. Kulit 1, H317	3-5%
CAS: 7440-22-4	SILVER (Ag)		0-5%
CAS: 7440-36-0	ANTIMONY (Sb)		0-3%

4 Langkah-langkah pertolongan cemas

Keterangan langkah pertolongan cemas

Jika tersedut: Berikan udara bersih, hubungi doktor jika terdapat aduan.

Jika terkena kulit: Segera basuh dengan air dan sabun serta bilas bersih-bersih.

Jika terkena mata: Bilas mata sambil membukanya di bawah air yang mengalir selama beberapa minit.

Jika tertelan: Segera dapatkan nasihat perubatan.

Maklumat untuk doktor:

Gejala dan kesan paling penting, akut dan lewat Tiada maklumat lanjut yang diperoleh.

Arahan bagi apa-apa rawatan perubatan dan rawatan khas yang diperlukan Tiada maklumat lanjut yang diperoleh.

5 Langkah-langkah pemadaman kebakaran

Bahan pemadam api

Agen pemadam yang sesuai:

CO₂, serbuk atau semburan air. Padam kebakaran besar dengan semburan air atau busa rintangan alkohol.

Bahaya khusus yang timbul daripada bahan atau campuran

Jika berlaku kebakaran, yang berikut mungkin dilepaskan:

Karbon monoksida (CO)

Karbon dioksida (CO₂)

Aldehyd alifatik

Panduan kepada pemadam kebakaran

Kelengkapan perlindungan: Tiada langkah khusus diperlukan.

6 Langkah-langkah pelepasan tidak sengaja

Langkah perlindungan diri, kelengkapan pelindung dan prosedur kecemasan Pastikan pengalihudaraan mencukupi.

Langkah perlindungan alam sekitar: Jangan biarkannya memasuki pembentung/air permukaan atau tanah.

(Bersambung ke halaman 3)

Nama dagang: 245 Lead-free Alloy Solder Wire

(Sambungan halaman 2)

Kaedah dan bahan untuk pembendungan dan pembersihan:

Lupuskan bahan tercemar sebagai sisa mengikut perkara 13.

Pateri lebur akan menjadi pejal apabila sejuk dan boleh dikikis. Berhati-hati supaya tidak tersedut wasap jika tunu gas digunakan untuk memotong kepingan besar.

Rujukan ke bahagian lain

Lihat Bahagian 7 untuk maklumat pengendalian yang selamat.

Lihat Bahagian 8 untuk maklumat kelengkapan perlindungan diri.

Lihat Bahagian 13 untuk maklumat pelupusan.

7 Pengendalian dan penyimpanan

Pengendalian:

Langkah perlindungan untuk pengendalian selamat Elakkan pembentukan debu.

Maklumat kebakaran dan perlindungan daripada letupan: Tiada langkah berjaga-jaga yang khusus diperlukan.

Keadaan untuk penyimpanan selamat, termasuk apa-apa ketakserasian

Penyimpanan:

Keperluan yang mesti dipenuhi oleh bilik stor dan ruang simpanan. Simpan di tempat sejuk.

Maklumat penyimpanan di dalam satu tempat penyimpanan yang biasa: Tidak diperlukan.

Maklumat lanjut tentang syarat penyimpanan:

Simpan di tempat yang kering.

Exposure to sulfur or to high humidity will tarnish the solder surface.

Kegunaan akhir yang khusus Tiada maklumat lanjut yang diperoleh.

8 Kawalan pendedahan dan perlindungan diri

Maklumat tambahan tentang reka bentuk kemudahan teknikal: Tiada maklumat lanjut, lihat perkara 7.

Parameter kawalan

Ramuan dengan nilai had yang memerlukan pemantauan di tempat kerja:

CAS: 7440-31-5 TIN (Sn)

PEL	Nilai jangka panjang: 2 mg/m ³ sebagai Sn
-----	--

CAS: 7440-22-4 SILVER (Ag)

PEL	Nilai jangka panjang: 0.1* 0.01** mg/m ³ *Logum **Sebatian terlarutkan, sebagai Ag
-----	--

CAS: 7440-36-0 ANTIMONY (Sb)

PEL	Nilai jangka panjang: 0.5 mg/m ³ sebagai Sb
-----	--

Kawalan pendedahan

Kelengkapan perlindungan diri:

Langkah perlindungan dan kebersihan am:

Langkah berjaga-jaga yang biasa hendaklah diikuti apabila mengendalikan bahan kimia.

Jauhkan daripada makanan, minuman dan makanan haiwan.

Segera tanggalkan semua pakaian yang tercemar dan kotor.

Basuh tangan sebelum berhenti rehat dan apabila kerja selesai.

Perlindungan pernafasan:

Tidak diperlukan jika bilik mempunyai pengalihudaraan yang baik.

Gunakan alat perlindungan pernafasan yang sesuai jika pengalihudaraan tidak mencukupi.

(Bersambung ke halaman 4)

Nama dagang: 245 Lead-free Alloy Solder Wire

(Sambungan halaman 3)

Perlindungan tangan:



Sarung tangan pelindung.

Bahan sarung tangan

Sarung tangan kain
Getah nitril, NBR
Getah asli, NR

Jangka masa penyerapan bahan sarung tangan

Waktu kemunculan yang tepat hendaklah diperoleh pengeluar sarung tangan pelindung dan hendaklah dipatuhi.

Perlindungan mata:



Kaca keselamatan

9 Sifat fizikal dan kimia

Maklumat tentang ciri fizik dan kimia

Maklumat Am

Rupa:

Bentuk: pepejal

Warna: Kelabu

Bau: Lembut

Nilai pH: Tidak berkenaan

Perubahan pada keadaan

Takat lebur/takat beku >100 °C (>212 °F)

Takat didih awal dan julat didih Tidak ditentukan.

Tidak ditentukan

Takat kilat: Tidak berkenaan

Kemudahbakaran (pepejal, gas) Tidak ditentukan.

Suhu pengautocucuhan Produk tidak tercucuh sendiri

Bahaya letupan: Produk tidak ada bahaya letupan.

Tekanan wap: Tidak berkenaan

Ketumpatan: Tidak ditentukan.

Ketumpatan wap Tidak berkenaan

Keterlarutan dalam / Keterlarutcampuran dengan

Air: Tidak larut.

Kandungan pelarut:

Pelarut organik: 0.2 %

Kandungan pepejal: 99.9 %

Maklumat lain Tiadak maklumat lanjut yang diperoleh.

Nama dagang: 245 Lead-free Alloy Solder Wire

(Sambungan halaman 4)

10 Kestabilan dan kereaktifan

Kereaktifan Tiada maklumat lanjut yang diperolehi.

Kestabilan kimia

Penguraian terma/keadaan yang perlu dielakkan: Tiada penguraian jika digunakan mengikut spesifikasi.

Kemungkinan tindak balas berbahaya Tiada tindak balas berbahaya yang diketahui.

Keadaan yang perlu dielakkan Tiada maklumat lanjut yang diperolehi.

Bahan tidak serasi: Tiada maklumat lanjut yang diperolehi.

Produk penguraian yang berbahaya:

Karbon monoksida dan karbon dioksida

"Apabila dipanaskan pada suhu pematerian, pelarut tersejat dan bahan organik boleh didegradasikan menggunakan arus udara panas untuk membebaskan aldehyd alifatik dan asid."

11 Maklumat toksikologi

Maklumat tentang kesan toksikologi

Ketoksikan akut:

Nilai LD/LC50 yang berkaitan untuk pengelasan:

Modified Rosin

Oral	LD50	>4,000 mg/kg (Rat)
Derma	LD50	>2,500 mg/kg (rabbit)

Kesan kerengsaan primer:

Kakisan atau kerengsaan kulit Tiada kesan merengsa.

Kerosakan atau kerengsaan mata yang serius Kesan merengsa.

Pemekaan pernafasan / kulit

Pemekaan mungkin berlaku melalui penyedutan.

Pemekaan mungkin berlaku jika terkena kulit.

Maklumat tambahan toksikologi:

Produk menunjukkan bahaya berikut mengikut kaedah pengiraan Garis Panduan Pengelasan Am EU bagi Sediaan seperti yang dikeluarkan dalam versi terbaru:

Memudaratkan

Perengsa

12 Maklumat ekologi

Ketoksikan

Ketoksikan akuatik: Tiada maklumat lanjut yang diperolehi.

Keterusan dan keterdegradasikan Tiada maklumat lanjut yang diperolehi.

Kelakuan dalam sistem alam sekitar:

Potensi bioakumulatif Tiada maklumat lanjut yang diperolehi.

Mobiliti di dalam tanah Tiada maklumat lanjut yang diperolehi.

Maklumat tambahan ekologi:

Nota am:

Jangan biarkan produk yang tidak dicairkan atau dalam kuantiti yang banyak memasuki air tanah, saluran air atau sistem pembetungan.

Bahaya kepada air minuman walaupun dalam amat sedikit produk kebocoran yang memasuki tanah

Keputusan penilaian PBT dan vPvB

PBT: Tidak berkenaan

vPvB: Tidak berkenaan

(Bersambung ke halaman 6)

Helaian Data Keselamatan

menurut P.U.(A) 310/2013

Tarikh cetak 30.10.2017

Disemak semula pada 30.10.2017

Nama dagang: 245 Lead-free Alloy Solder Wire**Kesan buruk yang lain** Tiadak maklumat lanjut yang diperolehi.

(Sambungan halaman 5)

13 Maklumat pelupusan

Kaedah rawatan sisa**Syor:**

Tidak boleh dilupuskan bersama dengan sampah isi rumah. Jangan biarkan produk memasuki sistem pembentungan.

Pembungkusan yang tidak bersih:**Syor:** Pelupusan mestilah dijalankan menurut peraturan rasmi

14 Maklumat pengangkutan

Nombor UN

ADR, ADN, IMDG, IATA Tidak sah

Nama penghantaran UN yang betul

ADR, ADN, IMDG, IATA Tidak sah

pengangkutan kelas bahaya**ADR, ADN, IMDG, IATA**

Kelas Tidak sah

Kumpulan pembungkusan

ADR, IMDG, IATA Tidak sah

Hazard persekitaran: Tidak berkenaan**Langkah perlindungan khas untuk pengguna** Tidak berkenaan**Pengangkutan dalam pukal menurut Lampiran II**

MARPOL73/78 dan Kod IBC Tidak berkenaan

"Peraturan Model" UN: Tidak sah

15 Maklumat pengawalseliaan

Peraturan/undang-undang keselamatan, kesihatan dan persekitaran khusus untuk bahan atau campuran tersebut

All ingredients are listed on the following Government Inventories:

China: Inventory of Existing Chemical Substances in China (IECSC)

Korea: Korea Existing Chemicals List (ECL)

Europe: European Inventory of Existing Commercial Chemical Substances (EINECS)

Japan: Inventory of Existing and New Chemical Substances (ENCS)

Philippines: Philippine Inventory of Chemicals and Chemical Substances (PICCS)

USA: TSCA (Toxic Substances Control Act) TSCA Inventory of Chemical Substances

Unsur label GHS Produk ini dikelaskan dan dilabelkan menurut Sistem Terharmoni Global (GHS).**Piktogram hazard**

GHS07

Perkataan isyarat Amaran**Komponen pelabelan yang menentukan bahaya:**

Modified Rosin

(Bersambung ke halaman 7)

Helaian Data Keselamatan menurut P.U.(A) 310/2013

Tarikh cetak 30.10.2017

Disemak semula pada 30.10.2017

Nama dagang: 245 Lead-free Alloy Solder Wire

(Sambungan halaman 6)

Pernyataan hazard

H317 Boleh menyebabkan tindak balas alahan kulit.

Pernyataan langkah perlindungan

P261 Elakkan daripada tersedut habuk/wasap/gas/kabus/wap/semburan.

P280 Pakai sarung tangan pelindung.

P302+P352 JIKA TERKENA KULIT: Cuci dengan air yang banyak.

P501 Lupuskan kandungan/bekas menurut peraturan tempatan/wilayah/kebangsaan/antarabangsa.

Penilaian keselamatan bahan kimia: Penilaian Keselamatan Bahan Kimia belum dilakukan.**16 Maklumat lain**

"Maklumat yang terkandung dalam dokumen ini adalah berdasarkan data yang dianggap tepat dan diberikan semata-mata untuk makluman, pertimbangan dan penyiasatan. Kester tidak memberikan apa-apa waranti, tidak membuat apa-apa pernyataan dan tidak bertanggungjawab terhadap ketepatan, lengkapnya atau kesesuaian data ini untuk apa-apa kegunaan membeli. Data dalam Risalah Data Keselamatan Bahan ini hanya berkaitan dengan produk ini dan tidak berkaitan dengan penggunaan apa-apa bahan lain atau apa-apa proses. Semua produk kimia hendaklah digunakan hanya oleh, atau di bawah arahan, kakitangan yang layak dari segi teknikal yang mengetahui tentang bahaya yang terlibat dan perlunya perhatian yang sewajarnya semasa pengendalian.

Jabatan yang mengeluarkan SDS: Product Compliance / EHS Department**Hubungi:**

EHS_Kester@kester.com

Branch Manager (Malaysia only) Tel : 04-6414633

Singkatan dan akronim:

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organisation

ICAO-TI: Technical Instructions by the "International Civil Aviation Organisation" (ICAO)

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

Pem. Kulit 1: Pemekaan kulit – Kategori 1

*** Data dibandingkan mengikut versi terdahulu yang diubah suai**

Safety Data Sheet

according to P.U.(A) 310/2013

Printing Date: 30.10.2017

Version number 3

Revision: 30.10.2017

1 Identification of the hazardous chemical and of the supplier

Trade name: 245 Lead-free Alloy Solder Wire
Recommended use of the chemical and restrictions on use Flux Memateri

Penggunaan bahan/sediaan Flux cored solder

Details of the supplier of the safety data sheet

Manufacturer/Supplier:

Kester Inc.
800 West Thorndale Avenue
Itasca, IL 60143
Tel 00+1 + 630 616 4000

ITW Specialty Materials (Suzhou) Co., Ltd.
Hengqiao Road, Wujiang Economic Development Zone
Suzhou, Jiangsu Province, China 215200
Tel +86 512 82060807

Kester GmbH
Ganghofer Strasse 45
D-82216 Gernlinden Germany
Tel +49 (0) 8142 4785 0

Further information obtainable from: Product Compliance: EHS_Kester@kester.com

Emergency telephone number:

CHEMTREC 24-Hour Emergency Response Telephone Number : (800) 424-9300
CHEMTREC 24-Hour Emergency Response (Outside US & Canada) Telephone Number : (703) 527-3887

2 Hazard identification

Classification of the substance or mixture



Skin Sens. 1 H317 May cause allergic skin reaction.

Label elements

GHS label elements The product is classified and labelled according to the Globally Harmonised System (GHS).

Hazard pictograms



GHS07

Signal word Warning

Hazard-determining components of labelling:

Modified Rosin

Hazard statements

H317 May cause allergic skin reaction.

Precautionary statements

P261 Avoid breathing dust/fume/ gas/mist/vapours/spray.

P280 Wear protective gloves.

P302+P352 IF ON SKIN: Wash with plenty of water.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

(Continued on page 2)

Safety Data Sheet

according to P.U.(A) 310/2013

Printing Date: 30.10.2017

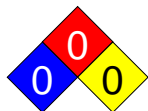
Version number 3

Revision: 30.10.2017

Trade name: 245 Lead-free Alloy Solder Wire

(Continued from page 1)

Classification system:
NFPA ratings (scale 0 - 4)



Health = 0
 Fire = 0
 Reactivity = 0

Other hazards

Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

3 Composition and information of the ingredients of the hazardous chemical

Description: Mixture of substances listed below with nonhazardous additions.

Chemical components:

CAS: 7440-31-5	TIN (Sn)		85-100%
Trade Secret	Modified Rosin	⚠ Skin Sens. 1, H317	3-5%
CAS: 7440-22-4	SILVER (Ag)		0-5%
CAS: 7440-36-0	ANTIMONY (Sb)		0-3%

4 First-aid measures

Description of first aid measures

After inhalation: Supply fresh air; consult doctor in case of complaints.

After skin contact: Immediately wash with water and soap and rinse thoroughly.

After eye contact: Rinse opened eye for several minutes under running water.

After swallowing: Seek immediate medical advice.

Information for doctor:

Most important symptoms and effects, both acute and delayed No further relevant information available.

Indication of any immediate medical attention and special treatment needed No further relevant information available.

5 Fire-fighting measures

Extinguishing media

Suitable extinguishing agents: CO₂, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

Special hazards arising from the substance or mixture

In case of fire, the following can be released:

Carbon monoxide (CO)

Carbon dioxide (CO₂)

Aliphatic aldehydes

Advice for firefighters

Protective equipment: No special measures required.

6 Accidental release measures

Personal precautions, protective equipment and emergency procedures Ensure adequate ventilation

Environmental precautions: Do not allow to enter sewers/ surface or ground water.

(Continued on page 3)

Safety Data Sheet
according to P.U.(A) 310/2013

Printing Date: 30.10.2017

Version number 3

Revision: 30.10.2017

Trade name: 245 Lead-free Alloy Solder Wire

(Continued from page 2)

Methods and material for containment and cleaning up:

Dispose contaminated material as waste according to item 13.

Melted solder will solidify on cooling and can be scraped up. Use caution to avoid breathing fumes if a gas torch is used to cut up large pieces.

Reference to other sections

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

7 Handling and storage

Handling:

Precautions for safe handling Prevent formation of dust.

Information about fire - and explosion protection: No special measures required.

Conditions for safe storage, including any incompatibilities

Storage:

Requirements to be met by storerooms and receptacles: Store in a cool location.

Information about storage in one common storage facility: Not required.

Further information about storage conditions:

Store in dry conditions.

Exposure to sulfur or to high humidity will tarnish the solder surface.

Specific end use(s) No further relevant information available.

8 Exposure controls and personal protection

Additional information about design of technical facilities: No further data; see item 7.

Control parameters

Ingredients with limit values that require monitoring at the workplace:

CAS: 7440-31-5 TIN (Sn)

PEL (Malaysia)	Long-term value: 2 mg/m ³ sebagai Sn
----------------	--

CAS: 7440-22-4 SILVER (Ag)

PEL (Malaysia)	Long-term value: 0.1* 0.01** mg/m ³ *Logum **Sebatian terlarutkan, sebagai Ag
----------------	---

CAS: 7440-36-0 ANTIMONY (Sb)

PEL (Malaysia)	Long-term value: 0.5 mg/m ³ sebagai Sb
----------------	--

Exposure controls

Personal protective equipment:

General protective and hygienic measures:

The usual precautionary measures are to be adhered to when handling chemicals.

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing

Wash hands before breaks and at the end of work.

Respiratory protection:

Not necessary if room is well-ventilated.

Use suitable respiratory protective device in case of insufficient ventilation.

(Continued on page 4)

Safety Data Sheet

according to P.U.(A) 310/2013

Printing Date: 30.10.2017

Version number 3

Revision: 30.10.2017

Trade name: 245 Lead-free Alloy Solder Wire

(Continued from page 3)

Protection of hands:


Protective gloves

Material of gloves

Cloth gloves

Nitrile rubber, NBR

Natural rubber, NR

Penetration time of glove material

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

Eye protection:


Safety Glasses with Side Shields Required

9 Physical and chemical properties

Information on basic physical and chemical properties
General Information
Appearance:

Form:	Solid
Colour:	Grey
Odour:	Mild

pH-value: Not applicable.

Change in condition

Melting point/freezing point >100 °C (>212 °F)
Undetermined.

Initial boiling point and boiling range Undetermined.

Flash point: Not Applicable

Flammability (solid, gas) Not determined.

Auto-ignition temperature Product is not selfigniting.

Explosive properties: Product does not present an explosion hazard.

Vapour pressure: Not applicable.

Density: Not determined.

Vapour density Not applicable.

Solubility in / Miscibility with water: Insoluble.

Solvent content:
Organic solvents: 0.2 %

Solids content: 99.9 %

Other information Tiadak maklumat lanjut yang diperoleh.

MY
(Continued on page 5)

Safety Data Sheet
according to P.U.(A) 310/2013

Printing Date: 30.10.2017

Version number 3

Revision: 30.10.2017

Trade name: 245 Lead-free Alloy Solder Wire

(Continued from page 4)

10 Stability and reactivity

Reactivity No further relevant information available.

Chemical stability

Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.

Possibility of hazardous reactions No dangerous reactions known.

Conditions to avoid No further relevant information available.

Incompatible materials: No further relevant information available.

Hazardous decomposition products:

Carbon monoxide and carbon dioxide

When heated, the solvents are evaporated and rosin may be thermally degraded to liberate aliphatic aldehydes, acids, and terpenes.

11 Toxicological information

Information on toxicological effects

Acute toxicity

LD/LC50 values relevant for classification:

Modified Rosin

Oral	LD50	>4,000 mg/kg (Rat)
Dermal	LD50	>2,500 mg/kg (rabbit)

Primary irritant effect:

Skin corrosion or irritation No irritant effect.

Serious eye damage or eye irritation Irritating effect.

Respiratory / skin sensitization

Sensitisation possible through inhalation.

Sensitisation possible through skin contact.

Additional toxicological information:

The product shows the following dangers according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version:

Harmful

Irritant

12 Ecological information

Toxicity

Aquatic toxicity: No further relevant information available.

Persistence and degradability Tiadak maklumat lanjut yang diperoleh.

Behaviour in environmental systems:

Bioaccumulative potential Tiadak maklumat lanjut yang diperoleh.

Mobility in soil Tiadak maklumat lanjut yang diperoleh.

Additional ecological information:

General notes:

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

Danger to drinking water if even extremely small quantities leak into the ground.

Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

Other adverse effects Tiadak maklumat lanjut yang diperoleh.

Safety Data Sheet
according to P.U.(A) 310/2013

Printing Date: 30.10.2017

Version number 3

Revision: 30.10.2017

Trade name: 245 Lead-free Alloy Solder Wire

(Continued from page 5)

13 Disposal information

Waste treatment methods

Recommendation Must not be disposed together with household garbage. Do not allow product to reach sewage system.

Uncleaned packaging:

Recommendation: Disposal must be made according to official regulations.

14 Transportation information

UN-Number

ADR, ADN, IMDG, IATA Void

UN proper shipping name

ADR, ADN, IMDG, IATA Void

Transport hazard class(es)

ADR, ADN, IMDG, IATA

Class Void

Packing group

ADR, IMDG, IATA Void

Environmental hazards: Not applicable.

Special precautions for user Not applicable.

Transport in bulk according to Annex II of Marpol and the IBC Code Not applicable.

UN "Model Regulation": Void

15 Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture

All ingredients are listed on the following Government Inventories:

China: Inventory of Existing Chemical Substances in China (IECSC)

Korea: Korea Existing Chemicals List (ECL)

Europe: European Inventory of Existing Commercial Chemical Substances (EINECS)

Japan: Inventory of Existing and New Chemical Substances (ENCS)

Philippines: Philippine Inventory of Chemicals and Chemical Substances (PICCS)

USA: TSCA (Toxic Substances Control Act) TSCA Inventory of Chemical Substances

GHS label elements The product is classified and labelled according to the Globally Harmonised System (GHS).

Hazard pictograms



GHS07

Signal word Warning

Hazard-determining components of labelling:

Modified Rosin

Hazard statements

H317 May cause allergic skin reaction.

Precautionary statements

P261 Avoid breathing dust/fume/ gas/mist/vapours/spray.

(Continued on page 7)

Safety Data Sheet

according to P.U.(A) 310/2013

Printing Date: 30.10.2017

Version number 3

Revision: 30.10.2017

Trade name: 245 Lead-free Alloy Solder Wire

(Continued from page 6)

P280 Wear protective gloves.

P302+P352 IF ON SKIN: Wash with plenty of water.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

The information contained herein is based on data considered accurate and is offered solely for information, consideration and investigation. Kester extends no warranties, makes no representations and assumes no responsibility as to the accuracy, completeness or suitability of this data for any purchaser's use. The data on this Safety Data Sheet (SDS) relates only to this product and does not relate to use with any other material or in any process. All chemical products should be used only by, or under the direction of, technically qualified personnel who are aware of the hazards involved and the necessity for reasonable care in handling. Hazard communication regulations require that employees must be trained on how to use a Safety Data Sheet (SDS) as a source for hazard information.

Department issuing SDS: Product Compliance / EHS Department**Contact:**

EHS_Kester@kester.com

Branch Manager (Malaysia only) Tel : 04-6414633

Abbreviations and acronyms:

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organisation

ICAO-TI: Technical Instructions by the "International Civil Aviation Organisation" (ICAO)

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

Skin Sens. 1: Skin sensitization – Category 1

*** Data compared to the previous version altered.**