

Printing date 03/30/2019 Version Number 3 Reviewed on 03/30/2019

1 Identification

· Product identifier

· Trade name: USP 467 Class 2 Residual Solvents Standard A (1X1 mL)

· Part number: USPM-467K-1

· Application of the substance / the mixture Reagents and Standards for Analytical Chemical Laboratory Use

· Details of the supplier of the safety data sheet

· Manufacturer/Supplier:

Agilent Technologies, Inc. 5301 Stevens Creek Blvd. Santa Clara, CA 95051 USA

· Information department:

Telephone: 800-227-9770

e-mail: pdl-msds author@agilent.com

· Emergency telephone number: CHEMTREC®: 1-800-424-9300

2 Hazard(s) identification

· Classification of the substance or mixture



GHS08 Health hazard

Carc. 1B H350 May cause cancer.

Repr. 2 H361 Suspected of damaging fertility or the unborn child.

Flam. Liq. 4 H227 Combustible liquid.

- · Label elements
- · GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).
- · Hazard pictograms



GHS08

- · Signal word Danger
- · Hazard-determining components of labeling:

dichloromethane

· Hazard statements

Combustible liquid.

May cause cancer.

Suspected of damaging fertility or the unborn child.

Precautionary statements

Obtain special instructions before use.

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

Keep away from flames and hot surfaces. - No smoking.

Wear protective gloves/protective clothing/eye protection/face protection.

IF exposed or concerned: Get medical advice/attention.

In case of fire: Use for extinction: CO2, powder or water spray.

Store in a well-ventilated place. Keep cool.

Store locked up.

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

- · Classification system:
- · NFPA ratings (scale 0 4)



Health = 0

Fire = 2

Reactivity = 0

· HMIS-ratings (scale 0 - 4)



Health = *0

Fire = 2

- · Other hazards
- · Results of PBT and vPvB assessment
- · **PBT:** Not applicable.
- · vPvB: Not applicable.

3 Composition/information on ingredients

- · Chemical characterization: Mixtures
- · **Description:** Mixture of the substances listed below with nonhazardous additions.

| · Dangerous components: | | | |
|-------------------------|--------------------|--------|--|
| 67-68-5 | limethyl sulfoxide | | |
| 110-82-7 | cyclohexane | | |
| 67-56-1 | methanol | 1.362% | |
| 108-88-3 | | 0.404% | |
| | tetrahydrofuran | 0.327% | |
| | dichloromethane | 0.273% | |
| | 1,4-dioxane | 0.173% | |
| 100-41-4 | ethylbenzene | 0.167% | |

4 First-aid measures

- · Description of first aid measures
- · After inhalation: Supply fresh air; consult doctor in case of complaints.
- · After skin contact: Generally the product does not irritate the skin.
- · After eye contact: Rinse opened eye for several minutes under running water.
- · After swallowing: If symptoms persist consult doctor.
- · 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.



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5 Fire-fighting measures

- · Extinguishing media
- · Suitable extinguishing agents:
- CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- Special hazards arising from the substance or mixture No further relevant information available.
- · Advice for firefighters
- · Protective equipment: No special measures required.

6 Accidental release measures

· Personal precautions, protective equipment and emergency procedures

Wear protective equipment. Keep unprotected persons away.

- Environmental precautions: Do not allow to enter sewers/ surface or ground water.
- · Methods and material for containment and cleaning up:

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

· 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.

· Protective Action Criteria for Chemicals

| PAC-1: | | |
|----------|------------------------|-----------|
| 67-68-5 | dimethyl sulfoxide | 150 ppm |
| 110-82-7 | cyclohexane | 300 ppm |
| 67-56-1 | methanol | 530 ppm |
| 108-38-3 | m-xylene | 130 ppm |
| 108-87-2 | methylcyclohexane | 1200* ppn |
| 156-59-2 | cis-dichloroethylene | 140 ppm |
| 156-60-5 | trans-dichloroethylene | 280 ppm |
| 108-88-3 | toluene | 67 ppm |
| 109-99-9 | tetrahydrofuran | 100 ppm |
| 75-09-2 | dichloromethane | 200 ppm |
| 75-05-8 | acetonitrile | 13 ppm |
| 123-91-1 | 1,4-dioxane | 17 ppm |
| 100-41-4 | ethylbenzene | 33 ppm |
| 108-90-7 | chlorobenzene | 10 ppm |
| PAC-2: | | · |
| 67-68-5 | dimethyl sulfoxide | 290 ppm |
| 110-82-7 | cyclohexane | 1700* ppn |
| 67-56-1 | methanol | 2,100 ppm |
| 108-38-3 | m-xylene | 920 ppm |
| 108-87-2 | methylcyclohexane | 1700* ppr |
| 156-59-2 | cis-dichloroethylene | 500 ppm |



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| 156-60-5 | trans-dichloroethylene | (Contd. of page 3 |
|----------|------------------------|-------------------|
| 108-88-3 | toluene | 560 ppm |
| | tetrahydrofuran | 500 ppm |
| 75-09-2 | dichloromethane | 560 ppm |
| 75-05-8 | acetonitrile | 50 ppm |
| 123-91-1 | 1,4-dioxane | 320 ppm |
| 100-41-4 | ethylbenzene | 1100* ppm |
| 108-90-7 | chlorobenzene | 150 ppm |
| PAC-3: | | |
| 67-68-5 | dimethyl sulfoxide | 1,800 ppm |
| 110-82-7 | cyclohexane | 10000** ppm |
| 67-56-1 | methanol | 7200* ppm |
| 108-38-3 | m-xylene | 2500* ppm |
| 108-87-2 | methylcyclohexane | 10000** ppm |
| 156-59-2 | cis-dichloroethylene | 850 ppm |
| 156-60-5 | trans-dichloroethylene | 1,700 ppm |
| 108-88-3 | toluene | 3700* ppm |
| | tetrahydrofuran | 5000* ppm |
| 75-09-2 | dichloromethane | 6,900 ppm |
| | acetonitrile | 150 ppm |
| | 1,4-dioxane | 760 ppm |
| | ethylbenzene | 1800* ppm |
| 108-90-7 | chlorobenzene | 400 ppm |

7 Handling and storage

- · Handling:
- · Precautions for safe handling

Ensure good ventilation/exhaustion at the workplace.

Open and handle receptacle with care.

· Information about protection against explosions and fires:

Keep ignition sources away - Do not smoke.

Keep respiratory protective device available.

- · Conditions for safe storage, including any incompatibilities
- · Storage:
- · Requirements to be met by storerooms and receptacles: No special requirements.
- · Information about storage in one common storage facility: Not required.
- · Further information about storage conditions: Keep receptacle tightly sealed.
- · Specific end use(s) No further relevant information available.

8 Exposure controls/personal protection

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

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REL

Ceiling limit value: 3.6* mg/m³, 1* ppm *30-min; See Pocket Guide App. A

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(Contd. of page 4) · Control parameters · Components with limit values that require monitoring at the workplace: 67-68-5 dimethyl sulfoxide WEEL Long-term value: 250 ppm 110-82-7 cyclohexane PEL Long-term value: 1050 mg/m³, 300 ppm **REL** Long-term value: 1050 mg/m³, 300 ppm TLV Long-term value: 344 mg/m³, 100 ppm 67-56-1 methanol Long-term value: 260 mg/m³, 200 ppm PEL **REL** Short-term value: 325 mg/m³, 250 ppm Long-term value: 260 mg/m³, 200 ppm Skin TLV Short-term value: 328 mg/m³, 250 ppm Long-term value: 262 mg/m³, 200 ppm Skin; BEI 108-88-3 toluene PEL Long-term value: 200 ppm Ceiling limit value: 300; 500* ppm *10-min peak per 8-hr shift Short-term value: 560 mg/m³, 150 ppm **REL** Long-term value: 375 mg/m³, 100 ppm TLV Long-term value: 75 mg/m³, 20 ppm BEI 109-99-9 tetrahydrofuran PEL Long-term value: 590 mg/m³, 200 ppm **REL** Short-term value: 735 mg/m³, 250 ppm Long-term value: 590 mg/m³, 200 ppm TLV Short-term value: 295 mg/m³, 100 ppm Long-term value: 147 mg/m³, 50 ppm Skin 75-09-2 dichloromethane PEL Short-term value: 125 ppm Long-term value: 25 ppm see 29 CFR 1910.1052 **REL** See Pocket Guide App. A TLV Long-term value: 174 mg/m³, 50 ppm BEI 123-91-1 1,4-dioxane Long-term value: 360 mg/m³, 100 ppm **PEL** Skin

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|-----------|--|
| TLV | Long-term value: 72 mg/m³, 20 ppm |
| | Skin |
| | -4 ethylbenzene |
| PEL | Long-term value: 435 mg/m³, 100 ppm |
| REL | Short-term value: 545 mg/m³, 125 ppm |
| | Long-term value: 435 mg/m³, 100 ppm |
| TLV | Long-term value: 87 mg/m³, 20 ppm BEI |
| · Ingredi | ients with biological limit values: |
| 67-56-1 | 1 methanol |
| BEI 15 | 5 mg/L |
| M | Iedium: urine |
| | ime: end of shift |
| Pa | arameter: Methanol (background, nonspecific) |
| 108-88- | -3 toluene |
| BEI 0.0 | 02 mg/L |
| | ledium: blood |
| | ime: prior to last shift of workweek |
| Pa | arameter: Toluene |
| 0.0 | 03 mg/L |
| | ledium: urine |
| | ime: end of shift |
| | arameter: Toluene |
| | |
| | 3 mg/g creatinine |
| | ledium: urine |
| | ime: end of shift |
| | arameter: o-Cresol with hydrolysis (background) |
| | -9 tetrahydrofuran |
| BEI 2 1 | |
| | ledium: urine |
| | ime: end of shift arameter: Tetrahydrofuran |
| | 2 dichloromethane |
| BEI 0 | |
| | Sing/L ledium: urine |
| | ime: end of shift |
| | arameter: Dichloromethane (semi-quantitative) |
| | -4 ethylbenzene |
| | 7 g/g creatinine |
| | ledium: urine |
| Ti | ime: end of shift at end of workweek |
| Pa | arameter: Sum of mandelic acid and phenylglyoxylic acid (nonspecific, semi-quantitative) |
| _ | |
| М | ledium: end-exhaled air |
| Ti | ime: not critical |
| Pa | arameter: Ethyl benzene (semi-quantitative) |
| | (Contd. on pag |



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- · Additional information: The lists that were valid during the creation were used as basis.
- · Exposure controls
- · Personal protective equipment:
- · General protective and hygienic measures:

Keep away from foodstuffs, beverages and feed.

Wash hands before breaks and at the end of work.

Store protective clothing separately.

Breathing equipment:

When used as intended with Agilent instruments, the use of the product under normal laboratory conditions and with standard practices does not result in significant airborne exposures and therefore respiratory protection is not

Under an emergency condition where a respirator is deemed necessary, use a NIOSH or equivalent approved device/equipment with appropriate organic or acid gas cartridge.

Protection of hands:

Although not recommended for constant contact with the chemicals or for clean-up, nitrile gloves 11-13 mil thickness are recommended for normal use. The breakthrough time is 1 hr. For cleaning a spill where there is direct contact of the chemical, butyl rubber gloves are recommended 12-15 mil thickness with breakthrough times exceeding 4 hrs. Supplier recommendations should be followed.

· Material of gloves

For normal use: nitrile rubber, 11-13 mil thickness

For direct contact with the chemical: butyl rubber, 12-15 mil thickness

· Penetration time of glove material

For normal use: nitrile rubber: 1 hour

For direct contact with the chemical: butyl rubber: >4 hours

· Eve protection:



Tightly sealed goggles

9 Physical and chemical properties

- · Information on basic physical and chemical properties
- General Information
- Appearance:

Form: Fluid

According to product specification Color:

Characteristic · Odor: Not determined. · Odor threshold:

· pH-value: Not determined.

· Change in condition

· Ignition temperature:

Melting point/Melting range: Undetermined. 189 °C (372.2 °F) **Boiling point/Boiling range:** · Flash point: 87 °C (188.6 °F) · Flammability (solid, gaseous): Not applicable. 270 °C (518 °F)

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| | (Contd. of page |
|--|--|
| Decomposition temperature: | Not determined. |
| Auto igniting: | Product is not selfigniting. |
| Danger of explosion: | Not determined. |
| Explosion limits: | |
| Lower: | 1.8 Vol % |
| Upper: | 63 Vol % |
| Vapor pressure at 20 °C (68 °F): | 0.4 hPa (0.3 mm Hg) |
| Density at 20 °C (68 °F): | 1.08643 g/cm³ (9.06626 lbs/gal) |
| Relative density | Not determined. |
| Vapor density | Not determined. |
| Evaporation rate | Not determined. |
| Solubility in / Miscibility with | |
| Water: | Not miscible or difficult to mix. |
| Partition coefficient (n-octanol/water | er): Not determined. |
| Viscosity: | |
| Dynamic: | Not determined. |
| Kinematic: | Not determined. |
| Solvent content: | |
| Organic solvents: | 99.7 % |
| VOC content: | 99.38 % |
| | 1,079.7 g/l / 9.01 lb/gal |
| Solids content: | 0.0 % |
| Other information | No further relevant information available. |

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: No dangerous decomposition products known.

11 Toxicological information

- · Information on toxicological effects
- · Acute toxicity:

| | LD/LC50 values that are relevant for classification: | | | | |
|---|--|------|-------------------------|--|--|
| Γ | ATE (Acute Toxicity Estimate) | | | | |
| Γ | Dermal | LD50 | >113,507 mg/kg (rabbit) | | |

Inhalative LC50/4 h 172 mg/L

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| | | | (Contd. of p |
|------------|-----------|-----------------------|--------------|
| 67-68-5 di | methyl su | foxide | |
| Oral | LD50 | 14,500 mg/kg (rat) | |
| Dermal | LD50 | >5,000 mg/kg (rabbit) | |
| Inhalative | LC50/4 h | 40,250 mg/L (rat) | |
| 110-82-7 | yclohexan | ne | |
| Oral | LD50 | >5,000 mg/kg (rat) | |
| Dermal | LD50 | >2,000 mg/kg (rabbit) | |
| Inhalative | LC50/4 h | 13.9 mg/L (rat) | |
| 67-56-1 m | ethanol | | |
| Oral | LD50 | 5,628 mg/kg (rat) | |
| Dermal | LD50 | 15,800 mg/kg (rabbit) | |
| 108-88-3 t | oluene | | |
| Oral | LD50 | 5,580 mg/kg (rat) | |
| Dermal | LD50 | 12,124 mg/kg (rabbit) | |
| Inhalative | LC50/4 h | 5,320 mg/L (mouse) | |
| | | 28.1 mg/L (rat) | |
| 109-99-9 t | etrahydro | furan | |
| Oral | LD50 | 2,500 mg/kg (rat) | |
| 75-09-2 di | chloromet | hane | |
| Oral | LD50 | 1,600 mg/kg (rat) | |
| Dermal | LD50 | >2,000 mg/kg (rat) | |
| Inhalative | LC50/4 h | 88 mg/L (rat) | |
| 123-91-1 | ,4-dioxan | e | |
| Oral | LD50 | 5,700 mg/kg (mouse) | |
| | | 4,200 mg/kg (rat) | |
| Dermal | LD50 | 7,858 mg/kg (rabbit) | |
| Inhalative | LC50/4 h | 46 mg/L (rat) | |
| 100-41-4 | thylbenze | ne | |
| Oral | LD50 | 3,500 mg/kg (rat) | |
| Dermal | LD50 | 15,354 mg/kg (rabbit) | |
| Inhalative | LC50/4 h | 17.2 mg/L (rat) | |

- · Primary irritant effect:
- on the skin: No irritant effect.
- · on the eye: No irritating effect.
- · Sensitization: No sensitizing effects known.
- · Additional toxicological information:

The product shows the following dangers according to internally approved calculation methods for preparations:

· Carcinogenic categories

| · IARC (International Agency for Research on Cancer) | | | |
|--|-----------------|----|--|
| 108-38-3 | m-xylene | 3 | |
| 108-88-3 | toluene | 3 | |
| 75-09-2 | dichloromethane | 2A | |

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| | | (Contd. of page 9) |
|-----------|---|--------------------|
| | 1,4-dioxane | 2B |
| 100-41-4 | ethylbenzene | 2B |
| | p-xylene | 3 |
| 95-47-6 | o-xylene | 3 |
| · NTP (Na | tional Toxicology Program) | |
| 75-09-2 | dichloromethane | R |
| 123-91-1 | 1,4-dioxane | R |
| · OSHA-C | a (Occupational Safety & Health Administration) | |
| 75-09-2 | dichloromethane | |

12 Ecological information

- · Toxicity
- Aquatic toxicity: No further relevant information available.
- · Persistence and degradability No further relevant information available.
- Behavior in environmental systems:
- · Bioaccumulative potential No further relevant information available.
- · Mobility in soil No further relevant information available.
- · Additional ecological information:
- · General notes:

Water hazard class 1 (Self-assessment): slightly hazardous for water

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

- · Results of PBT and vPvB assessment
- · **PBT:** Not applicable.
- · vPvB: Not applicable.
- · Other adverse effects No further relevant information available.

13 Disposal considerations

- · Waste treatment methods
- · Recommendation:

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

- · Uncleaned packagings:
- · Recommendation: Disposal must be made according to official regulations.

14 Transport information

- · Not Regulated, De minimus Quantities -
- · UN-Number
- · DOT, ADN, IMDG, IATA not regulated
- · UN proper shipping name
- · DOT, ADN, IMDG, IATA not regulated

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| | | (Contd. of page 10) |
|---|-----------------|---------------------|
| · Transport hazard class(es) | | |
| · DOT, ADN, IMDG, IATA · Class | not regulated | |
| · Packing group · DOT, IMDG, IATA | not regulated | |
| · Environmental hazards: | Not applicable. | |
| · Special precautions for user | Not applicable. | |
| Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable. | | |
| · UN "Model Regulation": | not regulated | |

15 Regulatory information

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

| Section | 355 | (extremely | hazardous | substances |): |
|---------|-----|------------|-----------|------------|----|

None of the ingredients is listed.

| 110 02 7 | 1 1 |
|----------|-------------|
| 110-82-7 | cyclohexane |

67-56-1 methanol

108-38-3 m-xylene

108-88-3 toluene

75-09-2 dichloromethane

75-05-8 acetonitrile

123-91-1 1,4-dioxane

100-41-4 ethylbenzene 108-90-7 chlorobenzene

106-42-3 p-xylene

95-47-6 o-xylene

· TSCA (Toxic Substances Control Act):

All ingredients are listed.

· Proposition 65

· Chemicals known to cause cancer:

75-09-2 dichloromethane

123-91-1 1,4-dioxane

100-41-4 ethylbenzene

· Chemicals known to cause reproductive toxicity for females:

None of the ingredients is listed.

· Chemicals known to cause reproductive toxicity for males:

None of the ingredients is listed.

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Safety Data Sheet acc. to OSHA HCS

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· Chemicals known to cause developmental toxicity:

· EPA (Environmental Protection Agency)

67-56-1 methanol 108-88-3 toluene

· Carcinogenic categories

110-82-7 cyclohexane 108-38-3 m-xylene

108-88-3 toluene

156-59-2 cis-dichloroethylene

109-99-9 tetrahydrofuran

75-05-8 acetonitrile

123-91-1 1,4-dioxane

106-42-3 p-xylene

100-41-4 ethylbenzene

108-90-7 chlorobenzene

75-09-2 dichloromethane

156-60-5 trans-dichloroethylene

I
II
II
II
SC
L
CBD, D
L
D

Ι

| 95-47-6 | o-xylene | I |
|--|-----------------|----|
| · TLV (Threshold Limit Value established by ACGIH) | | |
| 108-38-3 | m-xylene | A4 |
| 108-88-3 | toluene | A4 |
| 109-99-9 | tetrahydrofuran | A3 |
| 75-09-2 | dichloromethane | A3 |
| 75-05-8 | acetonitrile | A4 |
| 123-91-1 | 1,4-dioxane | A3 |
| 100-41-4 | ethylbenzene | A3 |
| 108-90-7 | chlorobenzene | A3 |
| 106-42-3 | p-xylene | A4 |
| 95-47-6 | o-xylene | A4 |
| · NIOSH-Ca (National Institute for Occupational Safety and Health) | | |

· National regulations:

75-09-2 dichloromethane 123-91-1 1,4-dioxane

· Information about limitation of use:

Workers are not allowed to be exposed to the hazardous carcinogenic materials contained in this preparation. Exceptions can be made by the authorities in certain cases.

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



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16 Other information

The information contained in this document is based on Agilent's state of knowledge at the time of preparation. No warranty as to its accurateness, completeness or suitability for a particular purpose is expressed or implied.

- · Department issuing SDS: Document Control / Regulatory
- · Contact: regulatory@ultrasci.com
- \cdot Date of preparation / last revision 03/30/2019 / 2
- · Abbreviations and acronyms:

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

DOT: US Department of Transportation

IATA: International Air Transport Association

ACGIH: American Conference of Governmental Industrial Hygienists

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)

HMIS: Hazardous Materials Identification System (USA)

VOC: Volatile Organic Compounds (USA, EU)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

NIOSH: National Institute for Occupational Safety

OSHA: Occupational Safety & Health

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

BEI: Biological Exposure Limit

Flam. Liq. 4: Flammable liquids – Category 4

Carc. 1B: Carcinogenicity – Category 1B

Repr. 2: Reproductive toxicity – Category 2

* * Data compared to the previous version altered.

US ·