Ciba Inc. has committed to Responsible Care and Product Stewardship as a cornerstone of its environmental, health and safety policy and management practices. Its business processes aim at minimizing business and regulatory non-compliance risks and at establishing sustainable relationships through the whole value chain from vendors to end users in an environment of increasing chemicals control regulation and product liability worldwide.

Disclaimer: The information provided below is based on the technical information available at the date of publication.

SELLER MAKES NO REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, INCLUDING OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. No statements herein are to be construed as inducements to infringe any relevant patent. Under no circumstances shall Seller be liable for incidental, consequential or indirect damages for alleged negligence, breach of warranty, strict liability, tort or contract arising in connection with the product(s). Buyer's sole remedy and Seller's sole liability for any claims shall be Buyer's purchase price. Data and results are based on controlled or lab work and must be confirmed by Buyer by testing for its intended conditions of use. The product(s) has not been tested for, and is therefore not recommended for, uses for which prolonged contact with mucous membranes, abraded skin, or blood is intended; or for uses for which implantation within the human body is intended.

Product Trade Name: Ciba® IRGANOX® 245

- Material Safety Data Sheet EU
- Material Safety Data Sheet USA
- Material Safety Data Sheet Canada
- Technical Data Sheet
REGISTRATION

CHEMICAL INVENTORY STATUS

The following table reflects regulatory status (Inventory listing) for product based on its component(s) for general industrial applications and use. Local chemical legislation might apply in addition. For further support, please consult local MSDS and/or contact your local PS&R representative.

<table>
<thead>
<tr>
<th>Legal Area</th>
<th>Inventory Status</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Inventory Listed</td>
<td>Listed in the legal area register</td>
</tr>
<tr>
<td>Canada DSL</td>
<td>Inventory Listed</td>
<td>All components either exempt or listed on the DSL</td>
</tr>
<tr>
<td>Switzerland</td>
<td>Inventory Listed</td>
<td>Listed in the legal area register</td>
</tr>
<tr>
<td>China</td>
<td>Inventory Listed</td>
<td>Listed in the legal area register</td>
</tr>
<tr>
<td>Japan ENCS</td>
<td>Inventory Listed</td>
<td>Listed in the legal area register</td>
</tr>
<tr>
<td>Japan ISLH</td>
<td>Inventory Listed</td>
<td>Listed in the legal area register</td>
</tr>
<tr>
<td>Korea</td>
<td>Inventory Listed</td>
<td>Listed in the legal area register</td>
</tr>
<tr>
<td>New Zealand</td>
<td>Inventory Listed</td>
<td>Listed in the legal area register</td>
</tr>
<tr>
<td>Philippines</td>
<td>Inventory Listed</td>
<td>Listed in the legal area register</td>
</tr>
<tr>
<td>USA</td>
<td>Inventory Listed</td>
<td>All component(s) comprising this product are either exempt or listed on the TSCA inventory</td>
</tr>
<tr>
<td>EU</td>
<td>-</td>
<td>Compliant with REACH (Regulation (EC) No 1907/2006, June 2007). More info at MyBusiness@Ciba at <a href="http://www.ciba.com">www.ciba.com</a></td>
</tr>
</tbody>
</table>

Disclaimer:
The information provided has been compiled to the best of our knowledge and belief. No claim for completeness is made. Users should only treat this as a guide and should make their own assessment. Ciba Inc. assumes no liability for the content or any use of the content.

TRANSPORT

<table>
<thead>
<tr>
<th>UN-Number</th>
<th>Packaging Group</th>
<th>Technical Name</th>
<th>Marine Pollutant</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SEE CURRENT MSDS
CUSTOMS/TRADE INFORMATION

Harmonized Customs Tariff Code:

<table>
<thead>
<tr>
<th>Country</th>
<th>Customs code</th>
</tr>
</thead>
<tbody>
<tr>
<td>International</td>
<td>291890</td>
</tr>
<tr>
<td>Switzerland</td>
<td>29189090999</td>
</tr>
<tr>
<td>European Union</td>
<td>2918909090</td>
</tr>
<tr>
<td>Germany</td>
<td>29189090900</td>
</tr>
<tr>
<td>USA</td>
<td>2918904300</td>
</tr>
<tr>
<td>Canada</td>
<td>2918909029</td>
</tr>
</tbody>
</table>

INTERNATIONAL CONVENTIONS

<table>
<thead>
<tr>
<th>Convention</th>
<th>THIS PRODUCT CONTAINS NO CHEMICALS BANNED OR RESTRICTED BY THESE CONVENTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Weapons</td>
<td></td>
</tr>
<tr>
<td>Dual Use</td>
<td></td>
</tr>
<tr>
<td>Drug / Drug Precursor</td>
<td></td>
</tr>
<tr>
<td>POP (Persistent Organic Pollutant)</td>
<td></td>
</tr>
<tr>
<td>Rotterdam PIC (Prior Informed Consent)</td>
<td></td>
</tr>
</tbody>
</table>

ADDITIONAL COUNTRY SPECIFIC DATA REQUIREMENTS

INFORMATION ON COUNTRY SPECIFIC REGULATIONS SUCH AS TRANSPORT, EXPOSURE LIMITS, REGISTRATION NUMBERS, LOCAL LEGAL REQUIREMENTS ETC., IS GIVEN ON THE COUNTRY SPECIFIC MSDS - PLEASE CONTACT YOUR LOCAL CIBA SALES OFFICE OR http://www.cibasc.com/pf/
### COMPOSITIONAL DETAIL

**CONSTITUENTS**

<table>
<thead>
<tr>
<th>Constituent</th>
<th>NONE OF THE SUBSTANCES LISTED ARE USED IN THE PRODUCTION OF or INTENTIONALLY ADDED DURING THE PROCESSING OF THIS PRODUCT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aromatic amines (German list)</td>
<td>NONE OF THE SUBSTANCES LISTED ARE USED IN THE PRODUCTION OF or INTENTIONALLY ADDED DURING THE PROCESSING OF THIS PRODUCT</td>
</tr>
<tr>
<td>Asbestos</td>
<td></td>
</tr>
<tr>
<td>Azo compounds</td>
<td></td>
</tr>
<tr>
<td>Bisphenol A, Bisphenol S</td>
<td></td>
</tr>
<tr>
<td>Boranes</td>
<td></td>
</tr>
<tr>
<td>Chlorinated paraffins</td>
<td></td>
</tr>
<tr>
<td>Chlorinated solvents</td>
<td></td>
</tr>
<tr>
<td>Creosote</td>
<td></td>
</tr>
<tr>
<td>Dioxins/furans</td>
<td></td>
</tr>
<tr>
<td>Natural rubber latex</td>
<td></td>
</tr>
<tr>
<td>Nonylphenol / Nonylphenol ethoxylates</td>
<td></td>
</tr>
<tr>
<td>Octylphenol /Octylphenol ethoxylates</td>
<td></td>
</tr>
<tr>
<td>Organo-cadmium pigments</td>
<td></td>
</tr>
<tr>
<td>Organo-tin compounds</td>
<td></td>
</tr>
<tr>
<td>Ozone depleting substances, CFCs etc. incl EU regulated (2037/2000/EC)</td>
<td></td>
</tr>
<tr>
<td>Penta/octabrom/decabromo-diphenyl ethers</td>
<td></td>
</tr>
<tr>
<td>Phthalates incl EU regulated (di-isononyl, di-2ethylhexyl, di-n-octyl, di-n-decyl, butylbenzyl, di-butyl)</td>
<td></td>
</tr>
<tr>
<td>Polybrominated biphenyls/terphenyls</td>
<td></td>
</tr>
<tr>
<td>Polybrominated/chlorinated organic compounds</td>
<td></td>
</tr>
<tr>
<td>Polychlorinated biphenyls/terphenyls</td>
<td></td>
</tr>
<tr>
<td>PAH (Polycyclic Aromatic Hydrocarbons)</td>
<td></td>
</tr>
<tr>
<td>PFOS (Perfluorooctanesulfonates)</td>
<td></td>
</tr>
<tr>
<td>PFAS (Perfluorooctyl sulfonates)</td>
<td></td>
</tr>
<tr>
<td>PFOA (Perfluorooctanoic acid)</td>
<td></td>
</tr>
</tbody>
</table>

This product is made under conditions not expected to produce dioxins or furans

### TRACE METALS AND SUBSTANCES WITH END ARTICLE COMPLIANCE STATEMENTS

This information is based on random analysis & not quality control nor part of a specification, nor may it be construed as a warranty, express or implied.

### PRODUCT APPLICATION AND USE DATA

### FOOD CONTACT APPROVAL STATUS

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**FOOD CONTACT APPROVAL STATUS**

---

---
### PRODUCT SOURCING

**SOURCE OF ALL INGREDIENTS USED IN THE PRODUCT:**

<table>
<thead>
<tr>
<th>Synthetic:</th>
<th>☑️ yes</th>
<th>☐ no</th>
<th>☐ partly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animal origin:</td>
<td>☐ yes</td>
<td>☑️ no</td>
<td>☐ partly</td>
</tr>
<tr>
<td>Animal:</td>
<td>☐ bovine</td>
<td>☐ ovine (sheep)</td>
<td>☐ caprine (goat)</td>
</tr>
</tbody>
</table>

**In the case of animal origin:**
Can risks linked with Bovine Spongiform Encephalopathy (BSE) be excluded, based on the pre-treatment of the material complying with the conditions of inactivation of the agents of Bovine Spongiform Encephalopathy (BSE), as described in Commission Decision 97/735/EC and amendment(s)?

| ☐ yes | ☑️ no | ☐ partly |

**Vegetable origin:**

| ☐ yes | ☑️ no | ☐ partly |

**In the case of vegetable origin:**
Derived from genetically manipulated organisms (GMO):

| ☐ yes | ☑️ no | ☐ unknown | ☐ not guaranteed |

This product is manufactured from starting materials which do not knowingly contain allergenic material viz peanuts, milk, fish, tree nuts, soybean, eggs, shellfish, wheat

| ☑️ yes | ☐ no |
1. Identification of the Substance/Preparation and the Company/Undertaking

Product name: IRGANOX 245
Chemical identification: ethylenebis(oxyethylene) bis[3-(5-tert-butyl-4-hydroxy-m-tolyl)propionate]
CAS Number: 036443-68-2
Use: Stabiliser

Producer/Supplier: CIBA SPEZIALITÄTENCHEMIE AG
KLYBECKSTRASSE 141
POSTFACH 4002 BASEL
SWITZERLAND

Phone Number: +41 (61) 6361111
Telefax: +41 (61) 6361212
Information: Product Safety and Regulatory Affairs
Telefax: +41 (61) 6368601
Emergency Phone Number (24h): +41 (61) 6965151

2. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>EC-Number</th>
<th>CAS Number</th>
<th>Chemical Name</th>
<th>Content</th>
<th>Symbol(s)</th>
<th>R-Phrase(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>253-039-2</td>
<td>036443-68-2</td>
<td>ethylenebis(oxyethylene) bis[3-(5-tert-butyl-4-hydroxy-m-tolyl)propionate]</td>
<td>100 %</td>
<td></td>
<td>R53</td>
</tr>
</tbody>
</table>

3. Hazards Identification

Classified as hazardous according to the EU directives. May cause long-term adverse effects in the aquatic environment.

4. First Aid Measures

Skin contact
Wash off with soap and plenty of water. Do not use organic solvents.

Eye contact
Rinse immediately with plenty of water for at least 15 minutes. In case of eye irritation, seek medical attention.

Inhalation
Move to fresh air. In case of irritation of respiratory system or mucous membranes, seek medical attention. In case of indisposition, seek medical attention. In case of prolonged exposure, seek medical attention.

Ingestion
Immediately give plenty (> 500 ml) of water (if possible charcoal slurry). In case of spontaneous vomiting be sure that vomitus can freely drain due to danger of suffocation. Give water repeatedly. Artificial induction of vomiting should be restricted to first aid staff. Give nothing by mouth in cases of unconsciousness or convulsion. Seek medical advice.

5. Fire-Fighting Measures

Suitable extinguishing media
Water spray, Carbon dioxide (CO2), Foam, Dry powder

Extinguishing media which must not be used for safety reasons
High volume water jet

Exposure hazards
Contaminated water from fire hoses or sprinklers, etc., must be prevented from draining into watercourses, sewers, or the ground water. Sufficient measures must be taken to retain water used for extinguishing. Contaminated water and soil...
must be disposed of in conformity with local regulations.

Special protective equipment for firefighters
Wear full protective clothing. Wear self-contained breathing apparatus.

Combustion products
Oxides of carbon; Toxic gases/vapours

6. Accidental Release Measures

Personal precautions
Do not breathe vapours/dust. Remove all sources of ignition. Avoid contact with skin, eyes and clothing.

Environmental precautions
Do not flush into surface water, sanitary sewer or ground water system.

Methods for cleaning up
Use mechanical handling equipment. Collect the spilled product into suitable containers, which must be tightly sealed and properly labelled. Avoid dust formation.

7. Handling and Storage

Handling
Handle and open container with care. Avoid dust formation and ignition sources. Ensure good local exhaust ventilation. Do not eat, drink or smoke at the workplace.

Storage
Keep away from food and drink. Store in the original container securely closed.

Danger! Explosion risk. Risk of explosion if an air-dust mixture forms. Avoid creating dusty conditions. Empty only into earthed containers. If container is larger than 2000 liter in volume, or when flammable solvents are present inert container or use a system otherwise designed to prevent or contain an explosion -- seek expert advice.

8. Exposure Controls / Personal Protection

Exposure limit(s)
CIEL-TWA Ciba internal exposure limit (8 hour time weighted average)
3.0 mg/m³
Effects on liver and thyroid in animal studies

Technical measures/Precautions
Exposure limit(s) should be monitored using suitable analytical equipments.

Respiratory protection
Effective dust mask.

Hand protection
Protective gloves

Eye protection
Suitable goggles or face protection

Skin and body protection
Working clothes, Closed footwear

9. Physical and Chemical Properties

Form
powder

Colour
white to yellowish

Odour
odourless

Melting/freezing temperature
76 - 79 °C

Boiling point/range
not applicable

Relative density
23 °C 1.14 g/cm³

Flash point
> 150 °C  
DIN 51758

Flammability
not tested

Ignition Temperature
> 390 °C  
BAM

Oxidising properties
not tested
Safety Data Sheet according to Directive 91/155/EEC

IRGANOX 245

Revision 05.08.2003

Assessment for self-ignition
no self-ignition

Water solubility 20 °C
< 1 mg/l

Solubility
not tested

Vapour pressure 25 °C
4E-8 Pa calculated

Partition coefficient; Log Pow
> 6 calculated

pH-value 1 % suspension in water
7 calculated

Explosive properties
not tested

10. Stability and Reactivity
Decomposition temperature
> 350 °C

Conditions to avoid
Static discharges.

Materials to avoid
Strong acids, strong bases and strong oxidising agents.

Hazardous decomposition products
Oxides of carbon, Toxic gases/vapours

11. Toxicological Information

Acute oral toxicity
Rat
LD50 > 2000 mg/kg OECD 401

Acute dermal toxicity
Rat
LD50 > 2000 mg/kg OECD 402

Acute Inhalation Toxicity
not tested

Acute eye irritation/corrosion
Rabbit
not irritant OECD 405

Acute dermal irritation/corrosion
Rabbit
not irritant OECD 404

Acute skin sensitisation
Guinea pig
not sensitising OECD 406

12. Ecological Information

Acute toxicity to fish
Bluegill 96 h
LC50 43 mg/l OECD 203
The tested concentration is well above its water solubility.

Acute toxicity to daphnia
Daphnia magna 24 h
EC50 > 55 mg/l OECD 202
No effects at the highest tested concentration. The tested concentration is well above its water solubility.

Acute toxicity to bacteria
Sewage sludge 3 h
IC50 > 100 mg/l OECD 209

Print Date 05.08.2003 3/5 (10355 C/+EU/E/5)
Acute toxicity to algae
Scenedesmus sp. 72 h

EBC50 > 100 mg/l
OECD 201 / EEC C 3
No effects at the highest tested concentration. The tested concentration is well above its water solubility.

Biodegradability
28 d
Not readily biodegradable
OECD 301 B

Ecotoxic effects
Do not discharge product uncontrolled into the environment.

13. Disposal Considerations
Waste from residues / unused products
Residual chemical should be disposed by incineration or by other modes of disposal in compliance with local legislation.
Contaminated packaging
Contaminated packaging material should be treated equivalent to residual chemical. Clean packaging material should be subjected to waste management schemes (recovery, recycling, reuse) according to local legislation.

14. Transport Information
Flash point > 150 °C
ADR/RID Class: Free
IMO Class: Free
ICAO Class: Free

15. Regulatory Information
Classification Self-classification
R-Phrase(s) R53 May cause long-term adverse effects in the aquatic environment.
S-Phrase(s) S61 Avoid release to the environment. Refer to special instructions/Safety data sheets.
Contains ethylenebis(oxyethylene) bis[3-(5-tert-butyl-4-hydroxy-m-tolyl)propionate]

16. Other Information
R-phrases from chapter 2 R53 May cause long-term adverse effects in the aquatic environment.

Essential changes Section 15

IRGANOX is a registered trademark.
Important

THIS MATERIAL IS NOT INTENDED FOR USE IN PRODUCTS FOR WHICH PROLONGED CONTACT WITH MUCOUS MEMBRANES, BODY FLUIDS OR ABRADED SKIN, OR IMPLANTATION WITHIN THE HUMAN BODY, IS SPECIFICALLY INTENDED, UNLESS THE FINISHED PRODUCT HAS BEEN TESTED IN ACCORDANCE WITH NATIONALLY AND INTERNATIONALLY APPLICABLE SAFETY TESTING REQUIREMENTS. BECAUSE OF THE WIDE RANGE OF SUCH POTENTIAL USES, CIBA IS NOT ABLE TO RECOMMEND THIS MATERIAL AS SAFE AND EFFECTIVE FOR SUCH USES AND ASSUMES NO LIABILITY FOR SUCH USES.

This product should be stored, handled and used in accordance with good industrial hygiene practices and in conformity with any legal regulation. The information contained herein is based on the present state of our knowledge and is intended to describe our products from the point of view of safety requirements. It should not therefore be construed as guaranteeing specific properties.
Material Safety Data Sheet

OSHA / ANSI Z400.1-2004 Compliant

Date / Revised: 10-10-2007  Release: 1.1

Product: IRGANOX 245

NFPRA Hazard codes:

<table>
<thead>
<tr>
<th>Health</th>
<th>Fire</th>
<th>Reactivity</th>
<th>Special</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

HMIS III rating

<table>
<thead>
<tr>
<th>Health</th>
<th>Flammability</th>
<th>Physical hazard</th>
<th>Personal protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>0</td>
<td>X</td>
</tr>
</tbody>
</table>

HMIS Note: * Indicates possible chronic health effects.

1. Identification of the Substance/Preparation and of the Company/Undertaking

Company Information

Company: Ciba Specialty Chemicals Corporation
540 White Plains Road
P.O. Box 2005
Tarrytown, NY 10591-9005
U.S.A.
Customer Service / Product Information: 1-800-474-4731
MSDS Request Line: 1-800-431-2360

Emergency information

Emergency 24-Hour Health/Environmental Phone: (24h) +1-800-873-1138
CHEMTREC: (800) 424-9300 (24hrs) or (703) 527-3887

Product information

Product: IRGANOX 245
Use: stabilizer

2. Hazards Identification

Emergency overview

Signal word: NOTICE! !
Colour: white to slightly yellow
Appearance: powder
State of matter: solid
Odour: odourless
Health: This product has no known adverse effect on human health.
Physical/Chemical hazards: Refer to MSDS Section 7 for Dust Explosion information.

Potential health effects

Primary routes of entry:
Ingestion, Skin, Inhalation, Eyes

Potential environmental effects

This product is moderately toxic to aquatic organisms. Releases to the environment are to be avoided.

3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS Number</th>
<th>Content (Weight)</th>
<th>Hazardous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzene propanoic acid, 3-(1,1-dimethylethyl)-4-hydroxy-5-methyl-, 1,2-ethanediylbis(oxy-2,1-ethanediyl) ester</td>
<td>36443-68-2</td>
<td>50.0 - 100.0 %</td>
<td>N</td>
</tr>
</tbody>
</table>

This material is classified as not hazardous under OSHA regulations.
4. First-aid Measures

**Inhalation:**
Remove to fresh air, if not breathing give artificial respiration. If breathing is difficult, give oxygen and get immediate medical attention.

**Skin:**
After contact with skin, wash immediately with plenty of water and soap.
Get medical attention if irritation occurs.

**Eyes:**
In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

**Ingestion:**
Do not induce vomiting. If vomiting occurs naturally, have casualty lean forward to reduce the risk of aspiration.
Seek medical attention immediately.

5. Fire-fighting Measures

**Suitable extinguishing media:**
carbon dioxide, dry powder, foam, water fog

**Hazardous combustion products:**
Burning may produce toxic combustion products.

**Hazards during fire-fighting:**
Standard procedure for chemical fires.

The product can form an explosive dust/air mixture. For further information, see Section 7 Explosion Hazards.

**Protective equipment for fire-fighting:**
Wear self-contained breathing apparatus and chemical-protective clothing.

6. Accidental Release Measures

**Cleanup:**
Sweep up and shovel into suitable containers for disposal.
Avoid raising dust.
Wear suitable protective equipment.
Should not be released into the environment.

7. Handling and Storage

**Handling**

**General advice:**
As with all industrial chemicals, use good industrial practices when handling. Avoid eye, skin, and clothing contact.
Do not inhale. Do not taste or swallow. Use only with adequate ventilation.

**Protection against fire and explosion:**
Combustible powder. - Avoid creating dusty conditions. - Grounding is required when emptying into a conductive container. - When flammable solvents are present, the container must be inerted or the system otherwise designed to prevent or contain an explosion. Seek expert advice. In addition, for products packaged in fused-lined (coated) fiber drums, fiber drums with conductive liners, steel drums, steel pails, and Type "C" FIBC (bulk bags), or other conductive the following instructions also apply: - Always ground this package before emptying. The user is responsible for designing the system to handle solid and ensuring proper training of employees in the system's use.
Storage

General advice:
Keep container tightly closed in a dry, cool and well-ventilated place.

> for industrial use only <

8. Exposure Controls and Personal Protection

Engineering Controls:
Work in well ventilated areas. Do not breathe dust.

Personal protective equipment

Respiratory protection:
Wear a NIOSH-certified respirator as necessary.

Eye protection:
Wear safety goggles (chemical goggles) if there is potential for airborne dust exposures.

Body protection:
Wear chemical resistant gloves and protective clothing.

General safety and hygiene measures:
There are no OSHA or ACGIH exposure guidelines available for component(s) in this product.

9. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>white to slightly yellow</td>
</tr>
<tr>
<td>Form</td>
<td>powder</td>
</tr>
<tr>
<td>State of matter</td>
<td>solid</td>
</tr>
<tr>
<td>Odour</td>
<td>odourless</td>
</tr>
<tr>
<td>pH value</td>
<td>7 (as suspension)</td>
</tr>
<tr>
<td>Flammability</td>
<td>Not tested</td>
</tr>
<tr>
<td>Flash point</td>
<td>&gt; 150 °C (DIN 51758)</td>
</tr>
<tr>
<td>Self-ignition temperature</td>
<td>No self-ignition</td>
</tr>
<tr>
<td>Dust explosion class</td>
<td>Heavy Dust Explosion. (2)</td>
</tr>
<tr>
<td>Melting point</td>
<td>76 - 79 °C</td>
</tr>
<tr>
<td>Boiling point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>0.04 µPa (25 °C) calculated</td>
</tr>
<tr>
<td>Density</td>
<td>1.14 g/cm³ (23 °C) calculated</td>
</tr>
<tr>
<td>Partitioning coefficient n-</td>
<td>&gt; 6</td>
</tr>
<tr>
<td>octanol/water (log Pow):</td>
<td>calculated</td>
</tr>
<tr>
<td>% Volatiles</td>
<td>0.5 %</td>
</tr>
<tr>
<td>Solubility in water</td>
<td>&lt; 1 mg/l (20 °C)</td>
</tr>
<tr>
<td>Solubility in other solvents</td>
<td>Not tested</td>
</tr>
<tr>
<td>Autoignition</td>
<td>&gt; 390 °C (BAM)</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>&gt; 350 °C (Temperature program (Lütolf))</td>
</tr>
</tbody>
</table>

10. Stability and Reactivity

Stability:
Stable
11. Toxicological Information

**Acute oral toxicity:**
- LD50 / oral / rat: > 2,000 mg/kg

**Acute inhalation toxicity:**
- Not determined.

**Acute dermal toxicity:**
- LD50 / dermal / rat: > 2,000 mg/kg

**Skin irritation:**
- (Rabbits) Not an irritant. (OECD 404)

**Eye irritation:**
- (Rabbits) Not an irritant. (OECD 405)

**Skin Sensitization:**
- (Guinea pig) Maximization test: Not a sensitizer. (0/20 positive) (OECD 406)

**Subchronic Toxicity:**
A 90 day dog oral capsule study used doses of 10, 30, 100 and 300 mg/kg/day. No adverse findings attributable to the test material were found. The NOEL was > 300 mg/kg/day. A 90 day rat oral gavage study was conducted using doses of 50, 250 and 1,000 mg/kg/day. Target organs were the liver and thyroid. Liver effects included an increase in weight ratios as well as hepatocellular hypertrophy while the thyroid showed hyper trophy. Serum levels of SAP, SGPT (ALAT) and cholesterol were increased. The NOEL was 50 mg/kg/day. A 90 day rat feeding study using dietary levels of 50, 150, 500 and 1,500 ppm showed similar serum level changes as the gavage study. The increase in liver and kidney weight ratios were not accompanied by histopathologic alterations. The NOEL was determined to be 150 ppm or approximately 11 mg/kg/day.

**Carcinogenicity:**
In a 24 month feeding study rats were dosed at 0, 5, 15, 50, and 100 mg/kg/day. Effected organs were liver and thyroid. Increased incidence of thyroid gland follicular adenomas and carcinomas were observed at 50 mg/kg/day (males only), and 100 mg/kg/day (both sexes). In a 28-day oral (gavage) study with Cynomolgus monkeys at a dose level of 0, 200, and 1,000 mg/kg bw, moderate increase in liver weights and minimal to moderate hepatocellular hypertrophy were observed in treated monkeys. No other treatment-related changes were noted. No effect of test substance on the serum thyroid hormone and serum TSH values were noted. This information therefore indicates that the findings in rats was limited to this species and that the test substance will not have thyroid effects in humans.

None of the components in this product at concentrations greater than 0.1% are listed by IARC; NTP, OSHA or ACGIH as a carcinogen.
Reproductive toxicity:
2-Generation reproduction study (Rats): Irganox 245 was administered at dose levels of 0, 300, 900 or 1,800 ppm in the diet for 100 days. In general, the 900 and 1,800 ppm dose levels were found to cause treatment-related effects on the first and second generation offspring that included minimal pup loss, very slight to minimal retardation of hair growth and eye opening, a slight reduction in pups showing positive responses during functional testing and reduced pup weight gain. These effects occurred at doses that were also found to cause maternal and paternal toxic effects. The NOEL was determined to be 300 ppm. Teratogenicity (Rats): The test substance was administered by gavage to pregnant rats daily from day 6 until day 15 of pregnancy, at doses of 0, 100, 300 and 900 mg/kg. The young rats showed dose-related reduction in body weight and delay in skeletal maturation, including phalangeal nuclei, calcanei and stenebrae. In the high-dose group the number of incompletely ossified thoracic vertebral centers was increased. These effects were considered to be related to maternal toxicity seen in the mid and high-dose groups. No teratogenic effects were seen. The low-dose group, 100 mg/kg, was considered to represent the NOEL in this study.

Metabolism:
In an absorption, distribution and elimination study, the product was applied dermally for 24 hours to the skin of miniature pigs at a dose of 19 mg or 195 mg. The compound was found to be minimally absorbed through the skin.

12. Ecological Information

Toxicity to fish:
Lepomis macrochirus/96 h/LC50: 43 mg/l (OECD Guide-line 203)
The tested concentration is well above its water solubility

Toxicity to aquatic invertebrates:
Daphnia magna/24 h/EC50: > 55 mg/l (OECD 202)
No effects at the highest tested concentration. The tested concentration is well above its water solubility

Toxicity to aquatic plants:
Scenedesmus sp./72 h: > 100 mg/l (OECD 201/EC C. 3)
No effects at the highest tested concentration. The tested concentration is well above its water solubility

Toxicity to microorganisms:
activated sludge/3 h/IC50: > 100 mg/l (OECD 209)

Biodegradation:
Test method: OECD 301B
Degree of elimination: (28 Days)
Evaluation: Not readily biodegradable.

13. Disposal Considerations

Waste disposal of substance:
Dispose of in accordance with national, state and local regulations.


14. Transport Information

U.S. Department of Transportation
The listed Transportation Classification does not address regulatory variations due to changes in package size, mode of shipment or other regulatory descriptors.

Road transport:
Special shipping information: Not classified as a dangerous good under transport regulations.

Air transport:
Special shipping information: Not classified as a dangerous good under transport regulations.
Inland-waterway transport:
Special shipping information: Not classified as a dangerous good under transport regulations.

## 15. Regulatory Information

### United States - Regulations

#### SARA Section 311/312 Hazard Communication Standard:

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Health</td>
<td>N</td>
</tr>
<tr>
<td>Chronic Health</td>
<td>N</td>
</tr>
<tr>
<td>Fire</td>
<td>N</td>
</tr>
<tr>
<td>Reactivity</td>
<td>N</td>
</tr>
<tr>
<td>Sudden release of pressure</td>
<td>N</td>
</tr>
</tbody>
</table>

#### SARA Reportable Quantities:
No components listed.

#### SARA Section 313 Toxic Chemical List:
No components listed.

#### OSHA hazard category:
This material is classified as not hazardous under OSHA regulations.

#### Toxic Substances Control Act (TSCA) Significant New Use Rule (SNUR):
This product is not subject to a Significant New Use Rule (SNUR).

#### Toxic Substances Control Act (TSCA) Section 5(e) Consent Orders:
This product is not subject to a Section 5(e) Consent Order.

#### Toxic Substances Control Act (TSCA) Section 5(f):
This product is not subject to a Section 5(f)/6(a) rule.

#### Toxic Substances Control Act (TSCA) Section 12(b) Export Notification:
No components listed.

#### Clean Air Act 111 - Volatile Organic Compounds (VOC):

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS Number</th>
<th>Notification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol, 2,2'-[1,2-ethanediyl(oxy)]bis-(9CI)</td>
<td>112-27-6</td>
<td>Listed</td>
</tr>
</tbody>
</table>

#### Clean Air Act 602 - Ozone Depleting Substances (ODS):
This product neither contains, nor was manufactured with, a Class I or Class II ozone depleting substance (ODS), as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App. A+B).

#### Clean Water Act - Priority Pollutants (PP):
This product does not contain any priority pollutants listed under the U.S. Clean Water Act Section 307(2)(1) Priority Pollutant List (40 CFR 401.15).

#### Pennsylvania Right to Know:
This product does not contain any components that are subject to the Pennsylvania Right-To-Know disclosure requirement.

#### California Proposition 65 - Chemicals Known to the State to Cause Cancer:
No components listed.

#### California Proposition 65 - Chemicals Known to the State to Cause Reproductive Toxicity:
No components listed.
International Regulations

Chemical Weapons Convention:
This product does not contain any component(s) listed under the Chemical Weapons Convention Schedule of Chemicals.

16. Other Information

Disclaimer:
The information contained herein is based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to such data or information. The user is responsible for determining whether the product is suitable for its intended conditions of use.

END OF DATA SHEET
1. Identification of the Substance/Preparation and of the Company/Undertaking

**Company Information**
- Company: Ciba Canada Ltd.
  2626 Argentia Road
  Mississauga, Ontario L5N 5N2
  Canada
- Customer Service / Product Information: 1-866-679-2422

**Emergency information**
- Emergency 24-Hour Health/Environmental Phone: 24h: +1-800-873-1138
- CANUTEC: (613) 996-6666 (24hrs)

**Product information**
- Product: IRGANOX 245
- Use: stabilizer

2. Hazards Identification

**Emergency overview**
- Signal word: NOTICE ! !
- Colour: white to slightly yellow
- Appearance: powder
- State of matter: solid
- Odour: odourless
- Health: This product may cause eye, skin and respiratory irritation due to mechanical action.
  - Physical/Chemical hazards: Refer to MSDS Section 7 for Dust Explosion information.

**Primary routes of entry:**
- Skin, Inhalation, Eyes

**Potential environmental effects**
- This product is moderately toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment. Releases to the environment are to be avoided.

3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS Number</th>
<th>Content (Weight)</th>
<th>Hazardous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzenepropanoic acid, 3-(1,1-dimethylethyl)-4-hydroxy-5-methyl-, 1,1'-[1,2-ethanediylbis(oxy-2,1-ethanediyl)] ester</td>
<td>36443-68-2</td>
<td>100.0 %</td>
<td>N</td>
</tr>
</tbody>
</table>

This material does not contain any hazardous components that are reportable according to WHMIS criteria.

4. First-aid Measures

**Inhalation:**
- Remove to fresh air, if not breathing give artificial respiration. If breathing is difficult, give oxygen and get immediate medical attention.
### Material Safety Data Sheet

**WHMIS / ANSI Z400.1-2004 Compliant**

**Date / Revised:** 05-07-2008  **Release:** 1.1

**Product:** IRGANOX 245

#### Skin:
After contact with skin, wash immediately with plenty of water and soap. Get medical attention if irritation occurs.

#### Eyes:
In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

#### Ingestion:
- Do not induce vomiting. If vomiting occurs naturally, have casualty lean forward to reduce the risk of aspiration.
- Seek medical attention immediately.

### 5. Fire-fighting Measures

**Suitable extinguishing media:**
- carbon dioxide, dry powder, foam, water fog

**Hazardous combustion products:**
- Burning may produce toxic combustion products, Carbon oxides.

**Hazards during fire-fighting:**
- Do not release chemically contaminated water into drains, soil or surface water. Sufficient measures must be taken to retain the water used for extinguishing. Dispose of contaminated water and soil according to local regulations.

- Standard procedure for chemical fires.

- The product can form an explosive dust/air mixture. For further information, see Section 7 Explosion Hazards.

**Protective equipment for fire-fighting:**
- Wear self-contained breathing apparatus and chemical-protective clothing.

### 6. Accidental Release Measures

**Cleanup:**
- Sweep up and shovel into suitable containers for disposal.
- Avoid raising dust.
- Wear suitable protective equipment.
- Should not be released into the environment.

### 7. Handling and Storage

#### Handling

**General advice:**
- As with all industrial chemicals, use good industrial practices when handling. Avoid eye, skin, and clothing contact.
- Do not inhale. Do not taste or swallow. Use only with adequate ventilation.

**Protection against fire and explosion:**
- Combustible powder. Avoid creating dusty conditions. Grounding is required when emptying into a conductive container. When flammable solvents are present, the container must be inerted or the system otherwise designed to prevent or contain an explosion. Seek expert advice. In addition, for products packaged in fused-lined (coated) fiber drums, fiber drums with conductive liners, steel drums, steel pails, and Type "C" FIBC (bulk bags), or other conductive the following instructions also apply: Always ground this package before emptying. The user is responsible for designing the system to handle solid and ensuring proper training of employees in the system's use.

#### Storage

**General advice:**
- Keep container tightly closed in a dry, cool and well-ventilated place.

> for industrial use only <
8. Exposure Controls and Personal Protection

**Exposure Guidelines**

<table>
<thead>
<tr>
<th>Substance Description</th>
<th>CIEL</th>
<th>8h TWA: 1.5 mg/m3 (Inhalable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzenepropanoic acid, 3-(1,1-dimethylethyl)-4-hydroxy-5-methyl-1,1'-[1,2-ethanediylbis(oxy-2,1-ethanediyl)] ester (36443-68-2)</td>
<td></td>
<td>Toxic effects on liver observed in animal study</td>
</tr>
</tbody>
</table>

**Engineering Controls:**

Work in well ventilated areas. Do not breathe dust.

**Personal protective equipment**

**Respiratory protection:**

Wear a NIOSH-certified respirator as necessary.

**Eye protection:**

Wear safety goggles (chemical goggles) if there is potential for airborne dust exposures.

**Body protection:**

Wear chemical resistant gloves and protective clothing.

**General safety and hygiene measures:**

There are no OSHA or ACGIH exposure guidelines available for component(s) in this product.

9. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>white to slightly yellow</td>
</tr>
<tr>
<td>Form</td>
<td>powder</td>
</tr>
<tr>
<td>State of matter</td>
<td>solid</td>
</tr>
<tr>
<td>Odour</td>
<td>odourless</td>
</tr>
<tr>
<td>pH value</td>
<td>7</td>
</tr>
<tr>
<td>Flammability</td>
<td>Not tested</td>
</tr>
<tr>
<td>Flash point</td>
<td>&gt; 150 °C (DIN 51758)</td>
</tr>
<tr>
<td>Self-ignition temperature</td>
<td>No self-ignition</td>
</tr>
<tr>
<td>Dust explosion class</td>
<td>Heavy Dust Explosion. (2)</td>
</tr>
<tr>
<td>Melting point</td>
<td>76 - 79 °C</td>
</tr>
<tr>
<td>Boiling point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>0.04 µPa (25 °C) calculated</td>
</tr>
<tr>
<td>Density</td>
<td>1.14 g/cm³ (23 °C)</td>
</tr>
<tr>
<td>Partitioning coefficient n-octanol/water (log Pow)</td>
<td>&gt; 6 calculated</td>
</tr>
<tr>
<td>% Volatiles</td>
<td>0.5 %</td>
</tr>
<tr>
<td>Solubility in water</td>
<td>&lt; 1 mg/l (20 °C)</td>
</tr>
<tr>
<td>Solubility in other solvents</td>
<td>Not tested</td>
</tr>
<tr>
<td>Autoignition</td>
<td>&gt; 390 °C (BAM)</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>&gt; 350 °C (Temperature program (Lütolf))</td>
</tr>
</tbody>
</table>

10. Stability and Reactivity

**Stability:**

Stable
Conditions to avoid:  Avoid electro-static discharge. Avoid sources of ignition.

Substances to avoid:  Strong oxidizing agents, strong acids, strong bases.

Possibility of Hazardous Reactions:  No hazardous reactions known.

Hazardous decomposition products:  No decomposition expected under normal storage conditions.

11. Toxicological Information

Acute oral toxicity:
LD50 / oral / rat:  > 2,000 mg/kg

Acute inhalation toxicity:
Not determined

Acute dermal toxicity:
LD50 / dermal / rat:  > 2,000 mg/kg

Skin irritation:
(Rabbits) Not an irritant. (OECD 404)

Eye irritation:
(Rabbits) Not an irritant. (OECD 405)

Skin Sensitization:
(Guinea pig) Maximization test: Not a sensitizer. (0/20 positive) (OECD 406)

Subchronic Toxicity:
A 90 day dog oral capsule study used doses of 10, 30, 100 and 300 mg/kg/day. No adverse findings attributable to the test material were found. The NOEL was > 300 mg/kg/day. A 90 day rat oral gavage study was conducted using doses of 50, 250 and 1,000 mg/kg/day. Target organs were the liver and thyroid. Liver effects included an increase in weight ratio as well as hepatocellular hypertrophy while the thyroid showed hypertrophy. Serum levels of SAP, SGPT(ALAT) and cholesterol were increased. The NOEL was 50 mg/kg/day. A 90 day rat feeding study using dietary levels of 50, 150, 500 and 1,500 ppm showed similar serum level changes as the gavage study. The increase in liver and kidney weight ratios were not accompanied by histopathologic alterations. The NOEL was determined to be 150 ppm or approximately 11 mg/kg/day.

Genetic toxicity:
Ames Test: negative
(Chinese hamsters) Nucleus anomaly test: Negative
Cell transformation: Negative.

Carcinogenicity:
In a 24 month feeding study rats were dosed at 0, 5, 15, 50, and 100 mg/kg/day. Effected organs were liver and thyroid. Increased incidence of thyroid gland follicular adenomas and carcinomas were observed at 50 mg/kg/day (males only), and 100 mg/kg/day (both sexes). In a 28-day oral (gavage) study with Cynomolgus monkeys at a dose level of 0, 200, and 1,000 mg/kg bw, moderate increase in liver weights and minimal to moderate hepatocellular hypertrophy were observed in treated monkeys. No other treatment-related changes were noted. No effect of test substance on the serum thyroid hormone and serum TSH values were noted. This information therefore indicates that the findings in rats was limited to this species and that the test substance will not have thyroid effects in humans.

None of the components in this product at concentrations greater than 0.1% are listed by IARC; NTP, OSHA or ACGIH as a carcinogen.
Reproductive toxicity:
2-Generation reproduction study (Rats): Irganox 245 was administered at dose levels of 0, 300, 900 or 1,800 ppm in the diet for 100 days. In general, the 900 and 1,800 ppm dose levels were found to cause treatment-related effects on the first and second generation offspring that included minimal pup loss, very slight to minimal retardation of hair growth and eye opening, a slight reduction in pups showing positive responses during functional testing and reduced pup weight gain. These effects occurred at doses that were also found to cause maternal and paternal toxic effects. The NOEL was determined to be 300 ppm. Teratogenicity (Rats): The test substance was administered by gavage to pregnant rats daily from day 6 until day 15 of pregnancy, at doses of 0, 100, 300 and 900 mg/kg. The young rats showed dose-related reduction in body weight and delay in skeletal maturation, including phalangeal nuclei, calcanei and sterna. In the high-dose group the number of incompletely ossified thoracic vertebral centers was increased. These effects were considered to be related to maternal toxicity seen in the mid and high-dose groups. No teratogenic effects were seen. The low-dose group, 100 mg/kg, was considered to represent the NOEL in this study.

Developmental toxicity/teratogenicity:
not determined

Metabolism:
In an absorption, distribution and elimination study, the product was applied dermally for 24 hours to the skin of miniature pigs at a dose of 19 mg or 195 mg. The compound was found to be minimally absorbed through the skin.

12. Ecological Information

Toxicity to fish:
Lepomis macrochirus/96 h/LC50: 43 mg/l (OECD Guide-line 203)
The tested concentration is well above its water solubility

Toxicity to aquatic invertebrates:
Daphnia magna/24 h/EC50: > 55 mg/l (OECD 202)
No effects at the highest tested concentration. The tested concentration is well above its water solubility

Toxicity to aquatic plants:
Scenedesmus sp./72 h/EC50 Biomass: > 100 mg/l (OECD 201/EC C. 3)
No effects at the highest tested concentration. The tested concentration is well above its water solubility

Toxicity to microorganisms:
activated sludge/3 h/IC50: > 100 mg/l (OECD 209)

Biodegradation:
Test method: OECD 301B
Degree of elimination: (28 Days)
Evaluation: Not readily biodegradable.

13. Disposal Considerations

Waste disposal of substance:
Dispose of in accordance with national, state and local regulations.

14. Transport Information

TDG (Canada) Road transport
Special shipping information: Not classified as a dangerous good under transport regulations.

International Air Transport Association (IATA)
Special shipping information: Not classified as a dangerous good under transport regulations.

International Maritime Dangerous Goods Code (IMDG)
Special shipping information: Not classified as a dangerous good under transport regulations.
15. Regulatory Information

Canada: Domestic Substances List (DSL):
All components either exempt or listed on the DSL

US: Toxic Substances Control Act (TSCA):
All component(s) comprising this product are either exempt or listed on the TSCA inventory

Canada Regulations

Workplace Hazardous Materials Information System (WHMIS Classification):
This product is not WHMIS controlled.

Significant New Activity Conditions (SNAC):
This product does not contain any components subject to a SNAC Notice.

International Regulations

Chemical Weapons Convention:
This product does not contain any component(s) listed under the Chemical Weapons Convention Schedule of Chemicals.

16. Other Information

Product Safety Contact:
Prepared by: Terence Ma (905) 812-7280
Date / Revised: 05-07-2008

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Disclaimer:
The information contained herein is based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to such data or information. The user is responsible for determining whether the product is suitable for its intended conditions of use.

END OF DATA SHEET
Ciba® IRGANOX® 245
Phenolic Primary Antioxidant for Processing and Long-Term Thermal Stabilization

Characterization
IRGANOX 245 is a sterically hindered phenolic antioxidant particularly suitable for organic substrates. It protects the substrates against thermo-oxidative degradation during manufacturing, processing and end-use. IRGANOX 245 is odorless, of low volatility, has a good color stability and exhibits high extraction resistance.

Chemical name
Ethylenebis(oxyethylene)bis-(3-(5-tert-butyl-4-hydroxy-m-tolyl)-propionate)

CAS number
36443-68-2

Structure

IRGANOX 245

Molecular weight
586.8 g/mol

Applications
IRGANOX 245 is effective in styrene polymers, particularly impact modified polystyrenes, ABS, MBS, SB and SBR-latices as well as in POM homo- and copolymers. It is also very useful for the stabilization of polyurethanes, polyamides, thermoplastic polyesters, PVC and other polymers. In addition to imparting thermostability to the finished polymer IRGANOX 245 is effective as chain stopper during PVC polymerization.

Features/benefits
IRGANOX 245 can be used in combination with other additives such as costabilizers (e.g. thioesters, phosphites, phosphonites, lactones), light stabilizers, and other functional stabilizers. The effectiveness of the blends of IRGANOX 245 with IRGAfos 168 (IRGANOX B-blends) is noteworthy.

Product forms
Code:
IRGANOX 245
Appearance:
IRGANOX 245
white, free-flowing powder
FF: white, free-flowing granules fine
FF (C): white, free-flowing granules

Guidelines for use
Already 500 ppm - 1000 ppm of IRGANOX 245 provide long-term thermal stability to the polymer. Concentrations up to 1.0 % can be used depending on the substrate and the requirements of the end application.

Physical Properties

Melting Range
76 - 79°C

Flashpoint
> 150°C

Specific Gravity (20 °C)
1.14 g/cm³

Vapor Pressure (20 °C)
4 E-8 Pa

Solubility (20 °C)

Acetone
> 50

Benzene
18

Chloroform
> 40

Ethyl acetate
37

n-Hexane
< 0.1
<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol</td>
<td>10</td>
</tr>
<tr>
<td>Methanol</td>
<td>12</td>
</tr>
<tr>
<td>Methylene chloride</td>
<td>&gt;40</td>
</tr>
<tr>
<td>Toluene</td>
<td>6</td>
</tr>
<tr>
<td>Styrene</td>
<td>6</td>
</tr>
<tr>
<td>Water</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Polyetherol</td>
<td>-3</td>
</tr>
</tbody>
</table>

**Volatility (TGA, in air at 20°C/ min)**
- Temp. at 1% weight loss: 280°C
- Temp. at 10% weight loss: 330°C

**Handling & Safety**
In accordance with good industrial practice, handle with care and avoid unnecessary personal contact. Avoid continuous or repetitive breathing of dust. Use only with adequate ventilation. Prevent contamination of the environment. Avoid dust formation and ignition sources. For more detailed information please refer to the material safety data sheet.

**Registration**
IRGANOX 245 is listed on the following Inventories:
- Australia: AICS
- Canada: DSL
- China: IECSC
- Europe: EINECS
- Japan: ENCS
- Korea: ECL
- New Zealand: TSA
- Philippines: PICCS
- Switzerland: BUWAL
- USA: TSCA

IRGANOX 245 is approved in many countries for use in food contact applications. For detailed information refer to our Positive List or contact your local sales office.

**IMPORTANT:** The following supersedes Buyer’s documents. SELLER MAKES NO REPRESENTATION, OR WARRANTY, EXPRESS OR IMPLIED, INCLUDING OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. No statements herein are to be construed as inducements to infringe any relevant patent. Under no circumstances shall Seller be liable for incidental, consequential or indirect damages for alleged negligence, breach of warranty, strict liability, tort or contract arising in connection with the product(s). Buyer’s sole remedy and Seller’s sole liability for any claims shall be Buyer’s purchase price. Data and results are based on controlled or lab work and must be confirmed by Buyer by testing for the intended conditions of use. The product(s) has (have) not been tested for, and is (are) therefore not recommended for, uses for which prolonged contact with mucous membranes, abraded skin, or blood is intended; or for uses for which implantation within the human body is intended.

Please note that products may differ from country to country. If you have any queries, kindly contact your local Ciba Specialty Chemicals representative. Further information at website: http://www.cibasc.com
## IRGANOX 245

<table>
<thead>
<tr>
<th>Element/Substance</th>
<th>aluminium</th>
<th>antimony</th>
<th>arsenic</th>
<th>barium</th>
<th>cadmium</th>
<th>calcium</th>
<th>chromium</th>
<th>copper</th>
<th>lead</th>
<th>manganese</th>
<th>mercury</th>
<th>nickel</th>
<th>selenium</th>
<th>tin</th>
<th>zinc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abbreviation</td>
<td>Al</td>
<td>Sb</td>
<td>As</td>
<td>Ba</td>
<td>Cd</td>
<td>Ca</td>
<td>Cr</td>
<td>Cu</td>
<td>Pb</td>
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<td>Hg</td>
<td>Ni</td>
<td>Se</td>
<td>Sn</td>
<td>Zn</td>
</tr>
<tr>
<td>Analytical Method</td>
<td>ICP-AES</td>
<td>ICP-MS</td>
<td>ICP-AES</td>
<td>ICP-AES</td>
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<td>ICP-AES</td>
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<td>ICP-AES</td>
<td></td>
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<tr>
<td>Content max. [ppm]</td>
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<td>5</td>
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</table>

<table>
<thead>
<tr>
<th>Element/Substance</th>
<th>bromine</th>
<th>chlorine</th>
<th>iron</th>
<th>potassium</th>
<th>magnesium</th>
<th>sodium</th>
<th>sulfur</th>
<th>silicon</th>
<th>PBB</th>
<th>PBDPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abbreviation</td>
<td>Br</td>
<td>Cl</td>
<td>Fe</td>
<td>K</td>
<td>Mg</td>
<td>Na</td>
<td>S</td>
<td>Si</td>
<td>PBB</td>
<td>PBDPE</td>
</tr>
<tr>
<td>Analytical Method</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Content max. [ppm]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>none</td>
<td>none</td>
</tr>
</tbody>
</table>

none: not used or intentionally added
END ARTICLE COMPLIANCE STATEMENTS

EU Directive 94/62/EC (“Packaging and packaging waste directive”) as amended by 2004/12/EC 30.6.2001 – WHEREIN the total heavy metals is below the following:

Pb + Cd + Cr + Hg 100 ppm

• YES - the product conforms to the requirements of the Directive

Trace metal requirement of the EU Directive 2000/53/EC (“End of life vehicle directive”) as amended 27.6.2002 – WHEREIN the total heavy metals is below the following:

<table>
<thead>
<tr>
<th>Metal</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pb</td>
<td>1000 ppm</td>
</tr>
<tr>
<td>Cd</td>
<td>100 ppm</td>
</tr>
<tr>
<td>Cr (VI)</td>
<td>1000 ppm</td>
</tr>
<tr>
<td>Hg</td>
<td>1000 ppm</td>
</tr>
</tbody>
</table>

• YES - the product conforms to the trace metal requirements of the Directive

Note: customers must also refer to the msds for hazard classification (defined by Directive 67/548/EEC)


• YES - the product conforms to the trace metal requirements of the Directive

Note: customers must refer to the msds for hazard classification (defined by Directive 67/548/EEC)

EU Directive 2002/95/EC (“ROHS”-Electrical & Electronic Equipment) under which Hg, Cd, Pb, Cr VI and PBB, PBDPE are to be reduced to:

<table>
<thead>
<tr>
<th>Metal</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pb</td>
<td>1000 ppm</td>
</tr>
<tr>
<td>Cd</td>
<td>100 ppm</td>
</tr>
<tr>
<td>Cr (VI)</td>
<td>1000 ppm</td>
</tr>
<tr>
<td>Hg</td>
<td>1000 ppm</td>
</tr>
<tr>
<td>PBB</td>
<td>1000 ppm</td>
</tr>
<tr>
<td>PBDPE</td>
<td>1000 ppm</td>
</tr>
</tbody>
</table>

• YES - the product conforms to the requirements of the Directive

EU Directive 2002/96/EC (Waste Electrical & Electronic Equipment WEEE)

under which Hg, PCB, PCT; CFC, HCFC; HFC; hydrocarbons, plastic-containing brominated flame retardants asbestos, ozone depleting substances (see Annex II).

Note the Constituents table & information on trace metals given above

• YES - the product conforms to the requirements of the Directive
European standards for the safety of toys EN Standard: EN 71-3 (1994); WHEREIN the total heavy metals is below the following:

<table>
<thead>
<tr>
<th>Element</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sb</td>
<td>60 ppm</td>
</tr>
<tr>
<td>As</td>
<td>25 ppm</td>
</tr>
<tr>
<td>Ba</td>
<td>1000 ppm</td>
</tr>
<tr>
<td>Cd</td>
<td>75 ppm</td>
</tr>
<tr>
<td>Cr</td>
<td>60 ppm</td>
</tr>
<tr>
<td>Pb</td>
<td>90 ppm</td>
</tr>
<tr>
<td>Hg</td>
<td>60 ppm</td>
</tr>
<tr>
<td>Se</td>
<td>500 ppm</td>
</tr>
</tbody>
</table>

· YES - the product conforms to the requirements of the EN 71-3

Compliance with Regulation (EC) No 1907/2006 ANNEX XVII
(RESTRICTIONS ON THE MANUFACTURE, PLACING ON THE MARKET AND USE OF CERTAIN DANGEROUS SUBSTANCES, PREPARATIONS AND ARTICLES
Previous Marketing and Use Directives)
· YES- the correct use of this product will not lead to contravention of this regulation as implemented on June 1st 2007-note the constituents
  table & information on trace metals given above

Compliance with Automotive Lists- specifically the requirements listed in Global Automotive Declarable Substance List GADSL (March 2008)
· YES - the product conforms to the requirements

Compliance with US Council of Northeastern Governors (CONEG) WHEREIN the total heavy metals is below the following:

<table>
<thead>
<tr>
<th>Element</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cd</td>
<td>100 ppm</td>
</tr>
<tr>
<td>Hg</td>
<td>100 ppm</td>
</tr>
<tr>
<td>Pb</td>
<td>100 ppm</td>
</tr>
<tr>
<td>Cr</td>
<td>100 ppm</td>
</tr>
</tbody>
</table>

· YES - the product conforms to the requirements of the Directive

Compliance with California Proposition 65 and other USA State regulations
SEE USA COUNTRY SPECIFIC MSDS - PLEASE CONTACT YOUR LOCAL CIBA SALES OFFICE
Ciba Inc.

Declaration of Compliance

of additives for polymers intended to come into contact with foodstuffs

IRGANOX 245

Chemical Name: Benzenepropanoic acid, 3-(1,1-dimethylethyl)-4-hydroxy-5-methyl-,1,2-ethanediylbis(oxy-2,1-ethanediyl) ester
CAS_Number: 36443-68-2
Other Designation: Triethyleneglycol-bis-3(3-tert.butyl-4-hydroxy-5-methylphenyl)propionate
(FDA designation: Ethylene-bis-(oxyethylene)-bis-(3-tert.butyl-4-hydroxy-5-methylhydrocinnamate)

29 Juli 2008

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www.ciba.com
psr_pa.service@ciba.com

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European Union

The product is in accordance with the Regulation (EC) 1935/2004 of October 27th 2004 in as far as:
- the product has been evaluated by EFSA and did not endanger human health as required in article 3 of Regulation (EC) 1935/2004/EC
- the grade is produced to comply with pre-established specifications and purity limits
- the production of the above grade is carried out in production units with the necessary quality control systems and which enables traceability through all stages of production.

The product is not authorized as direct food additive in the European Union.


plastics

SML: 9 mg/kg food
Food allowed: All, but compliance with SML to be verified for non fatty food contact (simulants A,B,C)
Temperature allowed: no restrictions
Source: Directive 2004/19/EC as amended*


Austria

polyacetals

max. conc. (%): 0.5
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: Temporary approval until 30.09.2001
BGSK-Letter, 26.09.1996

polyalkylene terephthalates

max. conc. (%): 0.5
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: Temporary approval until 30.09.2001
BGSK-Letter, 26.09.1996

polyamides

max. conc. (%): 0.5
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: Temporary approval until 30.09.2001
BGSK-Letter, 26.09.1996

polystyrene

max. conc. (%): 0.25
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: Temporary approval until 30.09.2001
BGSK-Letter, 26.09.1996
Ciba Inc.
IRGANOX 245

PVC

max. conc. (%): 0.1
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: Temporary approval until 30.09.2001
BGSK-Letter, 26.09.1996

PVDC

max. conc. (%): 0.2
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: Temporary approval until April 1999
BGU-Letter, 14.03.1989

PVDC copolymers

max. conc. (%): 0.2
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: Temporary approval until April 1999
BGU-Letter, 14.03.1989

styrene mixed- and graft polymers and blends of polystyrene with other approved polymer

max. conc. (%): 0.25
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: Temporary approval until 30.09.2001
BGSK-Letter, 26.09.1996

Belgium

plastics

SML: 3 mg/kg food
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: Moniteur Belge of 13.02.1998

Czech Republic

polyamides

max. conc. (%): no restrictions
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: Decree Ministry of Health, 1989
Ciba Inc.
IRGANOX 245

polybutylene terephthalate

max. conc. (%): 0.5
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: Decree Ministry of Health, 1989

polystyrene

max. conc. (%): 0.2
Food allowed: for food containing < 5% fat
Temperature allowed: no restrictions
Source: Decree Ministry of Health, 1989

PVC

max. conc. (%): no restrictions
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: Decree Ministry of Health, 1989

PVDC

max. conc. (%): 0.5
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: Decree Ministry of Health, 1989

styrene copolymers

max. conc. (%): 0.2
Food allowed: for food containing < 5% fat
Temperature allowed: no restrictions
Source: Decree Ministry of Health, 1989

France

plastic

Existing Regulation: For the additives listed in Arrêté du 2 janvier 2003 list B, the verification of compliance with specific migration limits (SML) in simulant D (for fatty foods) shall apply from 1 July 2006
SML: 9 mg/kg food
Food allowed: All, but compliance with SML to be verified for non fatty food contact (simulants A,B,C)
Temperature allowed: no restrictions

polyacetals

max. conc. (%): 0.5
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: DGCCRF, Note d'information 2003-27
Ciba Inc.
IRGANOX 245

polyalkylene terephthalates

max. conc. (%): 0.5
Food allowed: in contact with food containing only up to 15% ethanol
Temperature allowed: no restrictions
Source: DGCCRF, Note d'information 2003-27

polyamides

max. conc. (%): 0.5
Food allowed: in contact with food containing only up to 15% ethanol
Temperature allowed: no restrictions
Source: DGCCRF, Note d'information 2003-27

polystyrene

max. conc. (%): 0.25
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: DGCCRF, Note d'information 2003-27

PVC

max. conc. (%): 0.1
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: DGCCRF, Note d'information 2003-27

PVDC

max. conc. (%): 0.2
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: DGCCRF, Note d'information 2003-27

styrene copolymers

max. conc. (%): 0.25
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: DGCCRF, Note d'information 2003-27

Germany

plastic dispersions

Existing Regulation: complying with Empfehlung XIV, of the BfR
max. conc. (%): 0.25
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: Franck, Kunststoffe im Lebensmittelverkehr (1997), page 46 c
IRGANOX 245
plastics

Existing Regulation: For the additives listed in Section B, the verification of compliance with specific migration limits (SML) in simulant D (for fatty foods) shall apply from 1 July 2006
SML: 9 mg/kg food
Food allowed: All, but compliance with SML to be verified for non-fatty food contact (simulants A, B, C)
Temperature allowed: no restrictions
Source: Directive 2004/19/EC, Annex II, Section B

poly(terephthalic acid diolester)

Existing Regulation: complying with Empfehlung XVII, of the BfR
max. conc. (%): 0.5
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: Bundesgesundheitsblatt 30 (1987), page 113

polyacetals

Existing Regulation: complying with Empfehlung XXXIII, of the BfR
max. conc. (%): 0.5% and max. 1.0% in combination with all other stabilizers
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: Bundesgesundheitsblatt 27 (1984), page 27

polyamides

Existing Regulation: complying with Empfehlung X, § 4, of the BfR
max. conc. (%): 0.5% as antistatic agent
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: Letter of BgVV, 16.11.1988

polystyrene

Existing Regulation: complying with Empfehlung V, of the BfR
max. conc. (%): 0.25% and max. 2.0% in combination with all other antioxidants
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: Letter of BgVV, 10.01.1990

PVC plasticized

Existing Regulation: complying with Empfehlung I, of the BfR
max. conc. (%): 0.1
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: Bundesgesundheitsblatt 27 (1984), page 25
Ciba Inc.
IRGANOX 245

PVC rigid

Existing Regulation: complying with Empfehlung II, of the BfR
max. conc. (%): 0.1
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: Bundesgesundheitsblatt 27 (1984), page 25

PVDC copolymers containing mainly PVDC

Existing Regulation: complying with Empfehlung XXXIV, § 3, Section e, of the BfR
max. conc. (%): 0.2
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: Letter of BgVV, 03.11.1988

styrene co- and graft-polymers and mixtures of polystyrene with polymers

Existing Regulation: complying with Empfehlung VI, of the BfR
max. conc. (%): 0.25% and max. 2.0% in combination with all other antioxidants
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: Bundesgesundheitsblatt 27 (1984), page 25

Great Britain

acrylonitrile-butadiene-styrene

max. conc. (%): 0.25
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: Basis of recommendation; BPF, Ed. 86

polyacetals

max. conc. (%): 0.5
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: Basis of recommendation; BIBRA-Letter, 1.2.88

polystyrene

max. conc. (%): 0.25
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: Basis of recommendation; BPF, Ed. 86

PVC

max. conc. (%): 0.1
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: Basis of recommendation; BPF, Ed. 86
Ciba Inc.
IRGANOX 245

PVDC

max. conc. (%): 0.1
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: BPF-Letter, 6.11.1987

PVDC copolymers

max. conc. (%): 0.1
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: BPF-Letter, 6.11.1987

Italy

plastic

SML: 9 mg/kg water
Food allowed: for use in pipes and articles which come into contact with drinkable water and
water to be made drinkable
Temperature allowed: no restrictions
Source: Decreto Ministeriale 174, of 06.04.2004, Annex IIIa (referring to Decreto Ministeriale
123, of 28.03.2003, Annex IV)

plastics

Existing Regulation: For the additives listed in Section B, the verification of compliance with
specific migration limits (SML) in simulant D (for fatty foods) shall apply from 1 July 2006
SML: 9 mg/kg food
Food allowed: All, but compliance with SML to be verified for non fatty food contact (simulants
A,B,C)
Temperature allowed: no restrictions
III, Section B as amended

Netherlands

plastic

SML: 6 mg/kg food (for simulant D only)
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: Verpakkingen en Gebruiksartikelen 2.2.1(VGB/Aanv.16) of 10-2003, list 2.4 national
level
Ciba Inc.
IRGANOX 245

plastics

Existing Regulation: For the additives listed in Section B, the verification of compliance with specific migration limits (SML) in simulant D (for fatty foods) shall apply from 1 July 2006
SML: 9 mg/kg food
Food allowed: All, but compliance with SML to be verified for non fatty food contact (simulants A,B,C)
Temperature allowed: no restrictions
Source: Directive 2004/19/EC, Annex II, Section B

Slovakia

polyamides

max. conc. (%): no restrictions
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: Decree Ministry of Health, 1989

polyethylene terephthalate

max. conc. (%): 0.5
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: Decree Ministry of Health, 1989

polystyrene

max. conc. (%): 0.2
Food allowed: for food containing < 5% fat
Temperature allowed: no restrictions
Source: Decree Ministry of Health, 1989

PVC

max. conc. (%): no restrictions
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: Decree Ministry of Health, 1989

PVDC

max. conc. (%): 0.5
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: Decree Ministry of Health, 1989

styrene copolymers

max. conc. (%): 0.2
Food allowed: for food containing < 5% fat
Temperature allowed: no restrictions
Source: Decree Ministry of Health, 1989
Spain

plastics

Existing Regulation: For the additives listed in Section B, the verification of compliance with specific migration limits (SML) in simulant D (for fatty foods) shall apply from 1 July 2006
- SML: 9 mg/kg food
- Food allowed: All, but compliance with SML to be verified for non fatty food contact (simulants A,B,C)
- Temperature allowed: no restrictions
Source: Directive 2004/19/EC, Annex II, Section B

Non-European Union Countries

Australia

plastics

Source: In the Australia standard AS 2070 on plastics materials for food contact use, it has been stated that new plastics produced in compliance with either the EC food contact regulations (2002/72/EC) or the US food contact regulations (FDA 21CFR) are allowed for use in food contact applications in Australia. Reference should also be made to standard AS 2171 (Guide to manufacture of plastics item for food contact applications).

Brazil

plastic materials

- SML: 50 mg/kg food total migration
- Food allowed: no restrictions
- Temperature allowed: no restrictions
Source: Resolução - RDC nº 105, 1999

Canada

acrylonitrile-butadiene-styrene

- max. conc. (%): 0.3
- Food allowed: no restrictions
- Temperature allowed: no restrictions
Source: HPB-Letter, Ottawa, 24.10.1985

adhesives

- max. conc. (%): 0.1
- Food allowed: no restrictions
- Temperature allowed: no restrictions
Source: HPB-Letter, Ottawa, 24.10.1985
Ciba Inc.
IRGANOX 245

polyoxymethylene

max. conc. (%): 0.75
Food allowed: not for food containing more than 15% alcohol
Temperature allowed: no restrictions
Source: HPB-Letter, Ottawa, 24.10.1985

polystyrene rubber modified

max. conc. (%): 0.3
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: HPB-Letter, Ottawa, 24.10.1985

PVC rigid and semi-rigid, homopolymers and copolymers

max. conc. (%): 0.1
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: HPB-Letter, Ottawa, 24.10.1985

PVDC

max. conc. (%): 0.1
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: HPB-Letter, Ottawa, 24.10.1985

PVDC copolymers

max. conc. (%): 0.1
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: HPB-Letter, Ottawa, 24.10.1985

China

adhesives

max. conc. (%): per actual requirements under GMP
SML: 9mg/kg

plastic

max. conc. (%): PS,AS,ABS:0.30%
SML: 9mg/kg

plastic

max. conc. (%): PA,PET:0.50%
SML: 9mg/kg
Ciba Inc.
IRGANOX 245

**PVC**

max. conc. (%): PVC: 0.20%
SML: 9mg/kg

**PVDC**

max. conc. (%): PVDC: 0.10%
SML: 9mg/kg

**Japan**

**acrylonitrile-butadiene-styrene**

max. conc. (%): 0.25% and max. 2.0% as a total of Epoxy; Phosphor; Sulfur, Phenolic Compounds
Food allowed: no restrictions
Temperature allowed: no restrictions

**acrylonitrile-styrene**

max. conc. (%): 0.25% and max. 2.0% as a total of Epoxy; Phosphor; Sulfur, Phenolic Compounds
Food allowed: no restrictions
Temperature allowed: no restrictions

**nylon resins**

max. conc. (%): 0.5% and max. 1.5% as a total of Phosphor; Sulfur, Phenolic Compounds
Food allowed: no restrictions
Temperature allowed: no restrictions

**polyacetals**

max. conc. (%): 0.5
Food allowed: only for non-alcoholic food
Temperature allowed: no restrictions

**polyacrylonitrile**

max. conc. (%): 0.3
Food allowed: no restrictions
Temperature allowed: no restrictions
Ciba Inc.
IRGANOX 245

polyamides

max. conc. (%): 0.5% and max. 1.5% as a total of Epoxy; Phosphor; Sulfur, Phenolic Compounds
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: JHOSPA P/L No. A6-2-10, March 1996

polybutylene terephthalate

max. conc. (%): 0.5
Food allowed: only for non-alcoholic foods
Temperature allowed: no restrictions

polyethylene terephthalate

max. conc. (%): 0.5
Food allowed: only for non-alcoholic foods
Temperature allowed: no restrictions

polymethacryl styrene

max. conc. (%): 0.25% and max. 1.0% as a total of Epoxy; Phosphor; Sulfur, Phenolic Compounds
Food allowed: no restrictions
Temperature allowed: no restrictions

polymethyl methacrylate

SML: 3 mg/kg food
Food allowed: no restrictions
Temperature allowed: no restrictions

polystyrene

max. conc. (%): 0.25% and max. 2.0% as a total of Epoxy; Phosphor; Sulfur, Phenolic Compounds
Food allowed: no restrictions
Temperature allowed: no restrictions

PVC copolymers

max. conc. (%): 0.1
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: JHPVCA, P/L No. C-13 (49), L - 7490, Jan 1996
Ciba Inc.
IRGANOX 245

PVC rigid

max. conc. (%): 0.2
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: JHPVCA, P/L No. C-13 (49), L - 7490, Jan 1996

Switzerland

polyacetals

max. conc. (%): 0.5
SML: 6 mg/kg food
Food allowed: no restrictions
Temperature allowed: max. 80°C by contact with fat, oil or alcohol containing food
Source: BAG-Letters, 08.03.1984 and 16.11.1989

polyalkylene terephthalates

max. conc. (%): 0.5
SML: 6 mg/kg food
Food allowed: no restrictions
Temperature allowed: no restrictions

polyamides

max. conc. (%): 0.5
SML: 6 mg/kg food
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: BAG-Letter, 28.05.1986

PVC rigid

max. conc. (%): 0.1
SML: 6 mg/kg food
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: BAG-Letters, 08.03.1984 and 19.11.1989

PVDC

max. conc. (%): 0.2
SML: 6 mg/kg food
Temperature allowed: max. 30°C by contact with fat, oil or alcohol (>15 vol. % ethanol)
Source: BAG-Letter, 03.04.1987

PVDC copolymers

max. conc. (%): 0.2
SML: 6 mg/kg food
Food allowed: no restrictions
Temperature allowed: max. 30°C by contact with fat, oil or alcohol (>15 vol. % ethanol)
Source: BAG-Letter, 03.04.1987
Ciba Inc.
IRGANOX 245

styrene (graft and copolymers)

max. conc. (%): 0.25
SML: 6 mg/kg food
Food allowed: no restrictions
Temperature allowed: max. 80°C by contact with fat, oil or alcohol containing food
Source: BAG-Letters, 08.03.1984 and 16.11.1989

United States

acrylonitrile-butadiene-styrene

Existing Regulation: used in accordance with applicable regulations in parts 175, 176, 177 and 181
max. conc. (%): 0.3
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: CFR chapter 21, §178.2010 Antioxidant and/or stabilizers for polymers

adhesives

Existing Regulation: complying with § 175.105
max. conc. (%): no restrictions
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: CFR, chapter 21, §178.2010 Antioxidant and/or stabilizers for polymers

polyoxymethylene

Existing Regulation: used in accordance with § 177.2480
max. conc. (%): 0.25
Food allowed: The finished article shall not be used for foods containing more than 15% alcohol.
Temperature allowed: no restrictions
Source: CFR chapter 21, §178.2010 Antioxidant and/or stabilizers for polymers

polyoxymethylene copolymers

Existing Regulation: used in accordance with § 177.2470
max. conc. (%): 0.75
Food allowed: The finished article shall not be used for foods containing more than 15% alcohol.
Temperature allowed: no restrictions
Source: CFR chapter 21, §178.2010 Antioxidant and/or stabilizers for polymers

polystyrene and/or rubber modified polystyrene polymers

Existing Regulation: complying with § 177.1640
max. conc. (%): 0.3
Food allowed: no restrictions
Temperature allowed: no restrictions
Source: CFR, chapter 21, §178.2010 Antioxidant and/or stabilizers for polymers
Ciba Inc.
IRGANOX 245

PVDC

Existing Regulation: used in accordance with a prior sanction or applicable regulations in parts 175, 176 and 177
max. conc. (%): 0.1
Food allowed: no restrictions, shall contain not less than 50% weight of total polymer units derived from vinylidene chloride.
Temperature allowed: no restrictions
Source: CFR chapter 21, §178.2010 Antioxidant and/or stabilizers for polymers

PVDC copolymers

Existing Regulation: used in accordance with a prior sanction or applicable regulations in parts 175, 176 and 177.
max. conc. (%): 0.1
Food allowed: no restrictions, shall contain not less than 50% weight of total polymer units derived from vinylidene chloride.
Temperature allowed: no restrictions
Source: CFR, chapter 21, §178.2010 Antioxidant and/or stabilizers for polymers

vinyl chloride rigid plastics prepared from vinyl chloride homopolymers and/or vinyl chloride

Existing Regulation: used in accordance with a prior sanction or applicable regulations in parts 175, 176 and 177.
max. conc. (%): 0.2
Food allowed: no restrictions, shall contain not less than 50% weight of total polymer units derived from vinyl chloride.
Temperature allowed: no restrictions
Source: CFR, chapter 21, §178.2010 Antioxidant and/or stabilizers for polymers

By observing the above regulations, we have fulfilled our duty of care regarding the conformance of the products we supply with legislation governing food contact applications. It is the responsibility of the user to test the suitability of our products for the intended food application. The manufacturer of food contact materials and articles must ascertain that these finished materials or articles meet the general regulatory requirement that they do not bring about an unacceptable change in the composition of the foodstuffs or deterioration in the organoleptic characteristics thereof.
This letter is intended for your use only and replaces any previous letters of compliance for EU member states.
This product information is machine-printed and will not be signed.