1. PRODUCT AND COMPANY IDENTIFICATION

Company

Arkema Inc.
900 First Avenue
King of Prussia, Pennsylvania 19406

Functional Additives

Customer Service Telephone Number: (800) 331-7654
(Monday through Friday, 8:30 AM to 5:30 PM EST)

Emergency Information

Transportation: CHEMTREC: (800) 424-9300
(24 hrs., 7 days a week)
Medical: Rocky Mountain Poison Center: (866) 767-5089
(24 hrs., 7 days a week)

Product Information

Product name: BlocBuilder® RC-50
Synonyms: SG1 in Dibutyl maleate
Molecular formula: Mixture
Chemical family: Not applicable
Product use: Free radical polymerization controller

2. HAZARDS IDENTIFICATION

Emergency Overview

Color: yellow-orange
Physical state: liquid
Odor: slight

WARNING!
COMBUSTIBLE LIQUID AND VAPOR.
MAY BE FATAL IF SWALLOWED.
MAY CAUSE EYE IRRITATION.
MAY CAUSE ALLERGIC SKIN REACTION.
MAY CAUSE HEADACHE, NAUSEA, DIZZINESS, DROWSINESS, LOSS OF CONSCIOUSNESS.

Potential Health Effects

Primary routes of exposure:
Inhalation and skin contact.

Signs and symptoms of acute exposure:
May cause eye irritation. Allergic skin reaction: redness, rash. Central nervous system effects: headache, nausea,
dizziness, drowsiness, loss of consciousness.

Skin:
Practically non-irritating to slightly irritating. Repeated or prolonged skin contact may cause allergic reactions in some individuals. (based on components)
Eyes:
Moderately irritating. (based on components)

Ingestion:
Slightly toxic. (based on components)

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS-No.</th>
<th>Wt/Wt</th>
<th>OSHA Hazardous</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Butenedioic acid (2Z)-, dibutyl ester</td>
<td>105-76-0</td>
<td>&gt;= 60 - &lt;= 100 %</td>
<td>Y</td>
</tr>
<tr>
<td>Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethyl/propyl 1,1-dimethylethyl</td>
<td>188526-94-5</td>
<td>&gt;= 3 - &lt; 8 %</td>
<td>Y</td>
</tr>
</tbody>
</table>

The substance(s) marked with a “Y” in the Hazard column above, are those identified as hazardous chemicals under the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200).

This material is classified as hazardous under Federal OSHA regulation.

4. FIRST AID MEASURES

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Skin:
In case of contact, immediately flush skin with soap and plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eyes:
Immediately flush eye(s) with plenty of water. Get medical attention immediately if irritation persists.

Ingestion:
If swallowed, DO NOT induce vomiting. Get medical attention. Never give anything by mouth to an unconscious person.

5. FIREFIGHTING MEASURES

Flash point: 145 °F (63 °C) (Tag closed cup)
Auto-ignition temperature: 412 °F (211 °C)
Lower flammable limit (LFL): no data available
Upper flammable limit (UFL): no data available
Extinguishing media (suitable):
Dry chemical, water spray, foam, carbon dioxide
Protective equipment:
Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear
(full Bunker Gear) and self-contained breathing apparatus (pressure demand / NIOSH approved or equivalent).

Further firefighting advice:
Fire fighting equipment should be thoroughly decontaminated after use.

Fire and explosion hazards:
When burned, the following hazardous products of combustion can occur:

Carbon oxides
nitrogen oxides (NOx)

6. ACCIDENTAL RELEASE MEASURES

In case of spill or leak:
Extinguish sources of ignition nearby and downwind. Evacuate area of all unnecessary personnel. Ventilate the
area. Pick up with inert absorbent material (e.g. clay or diatomaceous earth). Do not allow to enter soil, waterways
or waste water channels. Consult a regulatory specialist to determine appropriate state or local reporting
requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements
listed in pertinent environmental permits.

7. HANDLING AND STORAGE

Handling
General information on handling:
Keep away from heat and flames.
Do not taste or swallow.
Avoid breathing vapor or mist.
Avoid contact with eyes.
Avoid prolonged or repeated contact with skin.
Keep container closed.
Use only with adequate ventilation.
Wash thoroughly after handling.
Check that all equipment is properly grounded and installed to satisfy electrical classification requirements.
Emptied container retains vapor and product residue.
DO NOT CUT, DRILL, GRIND, OR WELD ON OR NEAR THIS CONTAINER.

Storage
General information on storage conditions:
Store in cool, dry, well ventilated area away from sources of ignition such as flame, sparks and static electricity.
Ensure that all storage and handling equipment is properly grounded and installed to satisfy electrical classification
requirements. Static electricity may accumulate when transferring material. All storage containers, including drums,
cylinders and IBCs, must be bonded and grounded during filling and emptying operations. Limit indoor storage to
areas equipped with appropriate automatic sprinkler system. Observe all federal, state and local regulations and
National Fire Protection Association (NFPA) Codes which pertain to the specific local conditions of storage and use,
Storage incompatibility – General:
Store away from combustibles and materials to avoid.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Airborne Exposure Guidelines:

Engineering controls:
Investigate engineering techniques to reduce exposures. Provide ventilation if necessary to minimize exposures. If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.

Consult ACGIH ventilation manual or NFPA Standard 91 for design of exhaust systems.

Respiratory protection:
Avoid breathing vapor or mist. Where airborne exposure is likely or airborne exposure limits are exceeded (if applicable, see above), use NIOSH approved respiratory protection equipment appropriate to the material and/or its components (full facepiece recommended). If exposures cannot be kept at a minimum with engineering controls, consult respirator manufacturer to determine appropriate type equipment for a given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where there may be a potential for significant exposure or where exposure limit may be significantly exceeded, use an approved full face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs must comply with 29 CFR § 1910.134.

Skin protection:
Wear appropriate chemical resistant protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine appropriate type glove material for given application. Wear chemical goggles, a face shield, and chemical resistant clothing such as a rubber apron when splashing may occur. Rinse immediately if skin is contaminated. Wash contaminated clothing and clean protective equipment before reuse. Provide a safety shower at any location where skin contact can occur. Wash thoroughly after handling.

Eye protection:
Where eye contact may be likely, wear chemical goggles and have eye flushing equipment available.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>yellow-orange</td>
</tr>
<tr>
<td>Physical state</td>
<td>liquid</td>
</tr>
<tr>
<td>Odor</td>
<td>slight</td>
</tr>
<tr>
<td>pH</td>
<td>no data available</td>
</tr>
<tr>
<td>Density</td>
<td>no data available</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>no data available</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>no data available</td>
</tr>
</tbody>
</table>
Vapor density: no data available
Boiling point/boiling range: > 387 °F (> 197 °C)
Freezing point: 0.1 °F (-17.7 °C)
Melting point/range: no data available
Solubility in water: 16.86 g/l 68 °F (20 °C)

10. STABILITY AND REACTIVITY

Stability:
Hazardous polymerization does not occur. This material is chemically stable under normal and anticipated storage, handling and processing conditions.

Materials to avoid:
Incompatible with strong acids and bases.

Conditions / hazards to avoid:
Avoid flames, welding arcs, potential ignition sources, or other high temperature sources which induce thermal decomposition.

Hazardous decomposition products:
Oxides of carbon and nitrogen can be liberated at high temperatures.

11. TOXICOLOGICAL INFORMATION

Data on this material and/or its components are summarized below.

Data for 2-Butenedioic acid (2Z)-, dibutyl ester (105-76-0)

Acute toxicity

Oral:
Slightly toxic. (rat) LD50 = 3,730 mg/kg.

Dermal:
Practically nontoxic. (rabbit) LD50 = 10,039 mg/kg.

Inhalation:
Practically nontoxic. (rat) 4 h LC50 > 5 mg/l.

Skin Irritation:
Slightly irritating. (rabbit)

Eye Irritation:
Slightly irritating. (rabbit)
Skin Sensitization:
Repeated skin exposure. (guinea pig) Skin allergy was observed.

Genotoxicity

Assessment in Vitro:
No genetic changes were observed in laboratory tests using: bacteria

Genotoxicity

Assessment in Vivo:
No genetic changes were observed in laboratory tests using: animals

Reproductive effects
Reproduction test. oral (rat) / No toxicity to reproduction

Human experience
Skin contact:
No skin allergy was observed. (repeated or prolonged exposure)

Data for Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (188526-94-5)

Acute toxicity

Oral:
Slightly toxic. (rat) LD50 = 500 - 1,000 mg/kg.

Skin Irritation:
Practically non-irritating. (rabbit)

Eye Irritation:
Moderately irritating. (rabbit)

Skin Sensitization:
Repeated skin exposure. (guinea pig) Skin allergy was observed.

Genotoxicity

Assessment in Vitro:
No genetic changes were observed in laboratory tests using: bacteria

12. ECOLOGICAL INFORMATION

Chemical Fate and Pathway
Data on this material and/or its components are summarized below.

Data for 2-Butenedioic acid (2Z)-, dibutyl ester (105-76-0)

Biodegradation:
Readily biodegradable. (3 d) biodegradation 100 %

Octanol Water Partition Coefficient:
log Pow = 4.16
Data for Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (188526-94-5)

Biodegradation:
Not readily biodegradable. (28 d) biodegradation 4 %

Octanol Water Partition Coefficient:
log Pow = 3.75

Ecotoxicology
Data on this material and/or its components are summarized below.

Data for 2-Butenedioic acid (2Z)-, dibutyl ester (105-76-0)

Aquatic toxicity data:
Moderately toxic. Freshwater fish 96 h LC50 = 1.2 mg/l

Aquatic invertebrates:
Slightly toxic. Daphnia 48 h EC50 = 21 mg/l

Algae:
Moderately toxic. Algae 72 h EC50 = 6.2 mg/l

13. DISPOSAL CONSIDERATIONS

Waste disposal:
Disposal via incineration is recommended. Dispose of in accordance with federal, state and local regulations. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits. Note: Chemical additions to, processing of, or otherwise altering this material may make this waste management information incomplete, inaccurate, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations.

14. TRANSPORT INFORMATION

US Department of Transportation (DOT): not regulated

International Maritime Dangerous Goods Code (IMDG): not regulated

15. REGULATORY INFORMATION

Chemical Inventory Status

EU. EINECS
EINECS
Conforms to, The product contains ELINCS substances.
US. Toxic Substances Control Act  

This product complies with TSCA Inventory requirements. One of the components does not appear on the TSCA Inventory because it is manufactured and processed under a Low Volume Exemption (LVE) to the Premanufacture Notification process. There are maximum amounts of this material that may be manufactured / imported. This material is available for commercial use ONLY as a controlled radical polymerization controller for unsaturated polyester polymers. Further, the Exposure and Environmental Release Controls specified in this document are specified under the LVE and must be adhered to, at a minimum.

Australia. Industrial Chemical (Notification and Assessment) Act  

This product contains one or several components that are not on the Canadian DSL nor NDSL lists.


Does not conform

Japan. Kashin-Hou Law List  

Does not conform

Korea. Existing Chemicals Inventory (KECI)  

Does not conform

Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act  

Does not conform

China. Inventory of Existing Chemical Substances (IECSC)  

Does not conform

New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand  

Does not conform

United States – Federal Regulations

SARA Title III – Section 302 Extremely Hazardous Chemicals:

SARA Title III - Section 311/312 Hazard Categories:
Fire Hazard, Acute Health Hazard

SARA Title III – Section 313 Toxic Chemicals:
SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) - Reportable Quantity (RQ):
OSHA Regulated Carcinogens (NTP, IARC, OSHA Listed):

**NTP:**
No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

**IARC:**
No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**OSHA:**
No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

**United States – State Regulations**

**New Jersey Right to Know**
No components are subject to the New Jersey Right to Know Act.

**Pennsylvania Right to Know**

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**California Prop. 65**
This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive defects.

**16. OTHER INFORMATION**

**Latest Revision(s):**
- Revised Section(s): added ® to name
- Reference number: 000000056890
- Date of Revision: 11/11/2011
- Date Printed: 01/23/2013

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