

## BlocBuilder® RC-50

### Product Description

**BlocBuilder® RC-50** is an innovative, nitroxide-mediated reactivity controller used in closed-mold, composite manufacturing methods, including pultrusion, vacuum infusion, resin transfer molding, sheet molding compounds and bulk molding compounds.

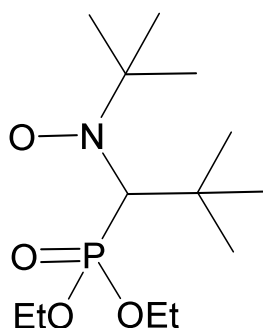
**BlocBuilder® RC-50** is designed to control the reaction between unsaturated vinyl/polyester resins and organic peroxides at room and moderate temperatures. Above 60° C, **BlocBuilder RC-50** will unblock and allow the peroxide to initiate the reaction. **BlocBuilder® RC-50** will enhance the stability of a formulated composite system. This allows the fabricator an extended potlife of pre-reacted composite mixture, or provides enhanced stability in faster reacting systems.

Chemical Name	CAS-No.	Wt/Wt	OSHA Hazardous
2-Butenedioic acid (Z)-,	105-76-0	≥ 60 - ≤ 100 %	Y
Nitroxide, 1-(diethoxyphosphinyl)	188526-94-5	≥ 3 - < 8 %	Y

*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.*

### SG-1 Molecule Structure



### Typical Physical Properties

Color	Yellow - Orange
Physical State	Liquid
Specific Gravity	0.988 @ 20°C
Melting/Freezing Point	0.1 °F (-17.7 °C)
Percent Volatiles	< 0.5%
Viscosity	8 cps @ 20°C
Solubility in Water	16.86 g/l 68 °F (20 °C)
Boiling Point	> 387 °F (> 197 °C)
Flash Point	145 °F (63 °C) (Tag closed cup)
Auto-ignition Temperature	412 °F (211 °C)

### Applications

**BlocBuilder® RC-50** is a radical controller designed to be used on elevated temperature cure composite systems using unsaturated resin systems. This controller can be used in two primary functions: first as an inhibitor replacement, allowing for delayed curing while not affecting overall cure; and second as a true b-stage controller for applications similar to prepregs.

For inhibitor types of applications (i.e. pultrusion, molding compounds, filament winding, etc.) the correct use of **BlocBuilder® RC-50** is to add an amount between 0.2 parts per hundred resin weight (phr) and 0.8 phr, depending upon the length of time needed for pot life and room temperature or elevated (below 140°F) stability. The controller can be added along with the radical initiator and added to the resin simultaneously. (Note: **BlocBuilder® RC-50** is NOT an initiator, but an initiator controller, and will not work in the absence of a radical initiator.)

For prepreg and other b-stage (partial cure) systems, the **BlocBuilder RC-50** should be added at a stoichiometrically equivalent level to the level of initiator. For practical formulating purposes, **BlocBuilder® RC-50** contains  $1.779 \times 10^{-4}$  moles of active nitroxide per gram of material. This should be used in an equal chemical balance to the molar amount of initiator used in the formulation.

If you have further questions, please contact Arkema's Technical Service for advice on use and applications.

## Storage

**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, including OSHA 29 CFR 1910.106 and NFPA 30, 70, 77, and 497.

**Store away from combustibles and materials to avoid.**

## 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.
- Observe all labeled safeguards until container is cleaned, reconditioned or destroyed.

**DO NOT CUT, DRILL, GRIND, OR WELD ON OR NEAR THIS CONTAINER.**

## Spillage

**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.

## 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.

## Fire

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 (NO<sub>x</sub>)

## First Aid

**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.

### Shelf-Life

**Blocbuilder® RC-50** is stable at room temperature, and exhibits no degradation at mildly elevated temperatures up to 140oF for short periods of time. If stored at room temperature and away from all potential contaminants (strong acids and strong bases) **Blocbuilder® RC-50** should be stable and acceptable for use for a period of 2 years.

### Equipment

- Recommended materials of construction: 304 and 316 stainless, Teflon®, Nylon, Kynar® and Kel-F.
- AVOID materials such as copper, brass, mild steel, aluminum alloys, natural and synthetic rubbers.
- Grounded, bonded electrical installations of approved explosion proof construction (NEMA Class I, Group D, Division
- Keep scrupulously clean and protect from accidental contamination, e.g., dust, overspray.
- Pumping/Metering – Low speed, positive displacement pumps recommended. Diaphragm and centrifugal pumps are satisfactory provided that fluid transfer does not result in excessive heat build-up.

### Packaging

- Available — 1 gal. (8lb/3.6 kg) polyethylene container.
- Available — 5 gal. (48.5 lb./22 kg) polyethylene container.
- Available — 55 gal. (410 lb/186 kg) HDPE container. (available upon request)

### Availability

Marketed worldwide by specialized distributors serving the reinforced plastics industry. For the location of your nearest distributor, contact the Arkema Functional Additives Sales Department.

Region	Contact Name	Contact Phone	Contact E-mail
North America	Customer Service	1 800 331 7654	arkema.usph-fa-cs@arkema.com
Central America	Ma. Eugenia Torres	+52 55 5002 7118	eugenia.torres@arkema.com
South America	Patricia Gomez	+55-11-2148-8560	patricia.gomez@arkema.com
Europe	Melanie LaFarge	+33 149 007 140	melanie.lafarge@arkema.com
China	Zou Shenglin	+86 21 6147 6888	shenglin.zou@arkema.com
India	C KR Krishnamurthy	+91-44-42197522	cr.krishnamurthy
Korea	Heekil Lee	+82 55 587 8060	heekil.lee@arkema.com
Southeast Asia	Watchara Lekhanpanyaporn	+ 66 2 2376257	l.watchara@arkema.com

### Technical Support

Arkema offers complete technical service and assistance in formulating with **BlocBuilder® RC-50**. Our laboratories and personnel are ready to assist you in any phase of your evaluation, from formulation development to end product testing. For additional information on **BlocBuilder® RC-50** please contact your account rep.

### References

For environmental, safety and toxicological information, contact our Customer Service Department at 1-800-331-7654 to request a Material Safety Data Sheet or visit our website at [www.arkema-inc.com](http://www.arkema-inc.com).

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Before handling this material, read and understand the MSDS (Material Safety Data Sheet) for additional information on personal protective equipment and for safety, health and environmental information.

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