

Material Safety Data Sheet: QUORAL® BARRIER RESIN (BR)

Date of issue: October, 2013

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1. Identification of the substance, application and the company

Substance: Quoral® BR

Application: Production of molded plastic containers

Company: BP Polymers, LLC

3972 Barranca Pkwy., Ste. #J468

Irvine, CA 92606

O: 949-380-1611; F: 949-855-1519

2. Composition/information on ingredients

Polyamide 6, unreinforced.

Maleic anhydride modified polyethylene.

3. Hazards identification

At elevated temperatures: decomposition possible in poisonous products (See Pt. 10).

4. First-aid measures

CONTACT WITH THE HOT MELT: Cool immediately with plenty of water. Do not remove product crusts which may have formed neither forcibly nor by applying any solvents to the skin involved. In order to obtain medical care for possible burns and for a smooth cleansing of the skin, seek medical advice immediately.

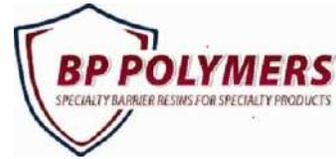
5. Fire-fighting measures

Extinguishing media: water spray, extinguishing powder, CO₂, foam, or dry powder. Fire fighters must wear self-contained breathing apparatus.

Special dangers: at temperatures over 280°C the following products are released - CO, CO₂, and H₂O.

6. Accidental release measures granules: slip hazard! Take up mechanically.





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7. Handling and storage

Provide good ventilation and/or local exhaust systems; the limit values cited under Pt. 8 should not be exceeded.

Dust must be removed by effective exhaust ventilation.

During regranulation avoid formation of dust. Store Quoral® in a cool, dry place. Preserve for air, humidity, water and heat. Use watertight PE bags

VCI storage class: 11 (VCI: German Association of Chemical Industry).

8. Exposure controls/Personal protection

Provide good ventilation for dust and vapor evacuation at the extrusion units.

The regulations for the substances listed below must be observed when processing this product, particularly if processing takes place at elevated temperatures. In our experience the provision of effective fresh-air and exhaust ventilation equipment at the points where vapors may be generated will ensure compliance with the tolerance limits quoted below.

Substance	CAS-No.	R-phrases (1)	Classification (2)
ε-caprolactam	105-60-2	R20/22-36/37/38	--

(1) Health R-Phrases (Text in Chapter 16).

Occupational Exposure Limits (mg/m³) Time weighted Average:

	EU	U. Kingdom	R. of Ireland	ACGIH
ε- caprolactam-vapour	10	10	10	5



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Fine dust as a result of mechanical treatment, e.g. grinding, sanding:

Respirable	-	5	4	3
Inhalable	-	10	10	10

Notes:

ACGIH: American Conference of Governmental Industrial Hygienists.

EU: Commission Directive 91/322/EEC and amendments.

Respiratory protection: In case of dust formation use respiratory equipment with filter type particle filter P1 according to DIN EN 143.

Hand protection: Protective gloves of leather, contaminated or damaged gloves should be replaced.

Eye protection: Protective goggles with side shield or tightly fitting protective goggles.

Body protection: For skin covering working clothes wear dust-proof overalls if large quantities of dust are generated.

Protection and hygienic measures: avoid inhaling vapors and dust. At the end of work, wash hands and face. When using Quoral® do not eat, drink or smoke.

9. Physical and chemical properties (DIN 53479)

Form: granules

Color: white

Odor: none

Melting range: 90-222°C (Kofler method)

Density: granule 1: approx. 1.12 – 1.15g/cm³ at 20°C; granule 2: approx. 0.92 g/cm³ at 20°C.

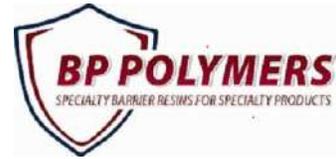
Bulk density: approx. 700 kg/m³

Vapor pressure: n/a

Viscosity: value not determined

Solubility in water: insoluble

pH value: n/a



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9. Physical and chemical properties (DIN 53479) continued

Flash-ignition temperature: > 400°C

Self-ignition temperature: >450°C

Explosive limits: n/a

10. Stability and reactivity

Thermal decomposition: decomposition begins at 350°C.

Fumes caused by overheating during improper processing or by burning may be injurious to health.

Hazardous decomposition products: smoldering or incomplete combustion leads to the formation of toxic gas mixtures consisting mainly of CO, CO₂ and nitrogen oxides; amines, nitriles, aliphatic and aromatic hydrocarbons, aldehydes, ketones, acids, ε-caprolactam ammonia and hydrogen cyanide are also formed.

Hazardous reactions: no hazardous reactions observed.

Stable at room temperature.

11. Toxicological information

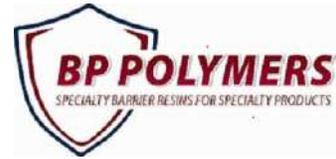
Under recommended processing conditions small amounts of H₂O, ε-caprolactam, CO₂, CO, ketones and acids; also small amounts aldehydes may be emitted.

According to our experience and information, the product has no harmful effects on health if properly handled.

12. Ecological information

The product is practically insoluble in water. In view of its consistency and insolubility in water, no ecological problems are to be expected if the product is properly handled. This product is not readily biodegradable.





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13. Disposal considerations

The product is suitable for mechanical recycling. After appropriate treatment it can be remelted and reprocessed into new molded articles. Mechanical recycling is only possible if the material has been selectively retrieved and carefully segregated according to type.

May only be transported to suitable incinerator with reduced non-air emissions observing local official regulations.

May be disposed of together with household refuse if local official regulations are observed.

European Waste Catalogue (EWC) code: 070213.

14. Transport information

GGVSE: -- Not classified as dangerous goods under transportation regulations.

UN: -- Not classified as dangerous goods under transportation regulations.

RID/ADR: -- Not classified as dangerous goods under transportation regulations.

ADNR: -- Not classified as dangerous goods under transportation regulations.

GGV See/IMDG Code: -- Not classified as dangerous goods under transportation regulations.

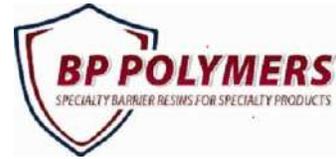
ICAO-TI/IATA-DGR: -- Not classified as dangerous goods under transportation regulations.

Declaration for land cargo: not classified as dangerous goods under transportation regulations.

Declaration for sea cargo (IMDG): not classified as dangerous goods under transportation regulations.

Declaration for air cargo: not classified as dangerous goods under transportation regulations.

Other information: keep dry.



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15. Regulatory information

No labeling necessary according to EC Directives 67/548/EEC or 1999/45/EC and RL 2001/60/EG and their valid adaptations and derived national regulations.

Water pollution class (WGK: Not hazardous to water (VwVwS appendix 1) (VwVwS = German Regulation on Substances Hazardous to Water).

Swiss law of poison: class of poison free; BAG-T-No. 614100.

Safety data sheet: RL 91/155EWG changed to RL 93/112/EWG and RL 2001/58/EG: dangerous goods and preparations.

EG number (EINICS-nr): in compliance.

16. Other information

This Safety Data Sheet is valid for the following types of Quoral® BR:

BR50

BR70

The following R-Phrases refer to substances that are either contained in this product or may be generated or released during processing, and do not necessarily correspond to the product labeling. Information on labeling the product put into circulation in accordance with EC Directives is given in Chapter 15.

R 20/22: Harmful by inhalation and if swallowed.

R 36/37/38: Irritating to eyes, respiratory system and skin.

All chapters in the SDS which have been changed since the last edition are marked with an asterisk in front of the chapter number.

The data given here is based on current knowledge and experience. The purpose of this Material Safety Data Sheet is to describe the products in terms of their safety requirements.

The above details do not imply any guarantee concerning composition, properties or performance.
