Safety data sheet
according to 1907/2006/EC, Article 31

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SECTION 1: Identification of the substance/mixture and of the company/undertaking

· **1.1 Product identifier**

· **Trade name: EBR DC Positive Radiation Resist Edge Bead Remover**

· **Article number:** G040100
· **1.2 Relevant identified uses of the substance or mixture and uses advised against**
No further relevant information available.
· **Sector of Use** SU16 Manufacture of computer, electronic and optical products, electrical equipment
· **Application of the substance / the mixture** Solvents

· **1.3 Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Kayaku Advanced Materials, Inc.
200 Flanders Road
Westborough, MA 01581
Tel: (617) 965-5511
Fax: (617) 965-5818

The person responsible in EU Member State:
ONLY REPRESENTATIVE
Lionel Marcélis, PhD
President
REACH NATION SRL
22 Rue Notre Dame au Bois
1440 Braine-le-Château
BELGIUM
Tel : +32491880259

*Only Representative for 1,3-dioxolane (CAS 646-06-0) only. Other substances are being supported under REACH by Only Representatives of Non-European suppliers and others may be exempt from registration.

· **Further information obtainable from:**
Product Safety
Email: productsafety@kayakuAM.com
· **1.4 Emergency telephone number:**
Kayaku Advanced Materials : 617-965-5511
Chemtrec USA Emergency : 800-424-9300 (24 hr)
Chemtrec International Emergency : 703-527-3887 (24 hr)

SECTION 2: Hazards identification

· **2.1 Classification of the substance or mixture**
· **Classification according to Regulation (EC) No 1272/2008**

GHS02 flame

Flam. Liq. 2 H225 Highly flammable liquid and vapour.

GHS08 health hazard

Repr. 1B H360 May damage fertility or the unborn child.

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GHS07

Eye Irrit. 2 H319 Causes serious eye irritation.

· ***2.2 Label elements***
· ***Labelling according to Regulation (EC) No 1272/2008***
The product is classified and labelled according to the CLP regulation.
· ***Hazard pictograms***

GHS02 GHS07 GHS08

· ***Signal word*** *Danger*

· ***Hazard-determining components of labelling:***
1,3-dioxolane
· ***Hazard statements***
H225 Highly flammable liquid and vapour.
H319 Causes serious eye irritation.
H360 May damage fertility or the unborn child.
· ***Precautionary statements***

P210	*Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.*
P261	*Avoid breathing dust/fume/gas/mist/vapours/spray.*
P280	*Wear protective gloves/protective clothing/eye protection/face protection.*
P301+P310	*IF SWALLOWED: Immediately call a POISON CENTER/ doctor.*
P304+P312	*IF INHALED: Call a POISON CENTER/doctor if you feel unwell.*
P304+P341	*IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.*
P305+P351+P338	*IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.*
P333+P313	*If skin irritation or rash occurs: Get medical advice/attention.*
P337+P313	*If eye irritation persists: Get medical advice/attention.*
P370+P378	*In case of fire: Use for extinction: Alcohol resistant foam.*
P370+P378	*In case of fire: Use for extinction: Fire-extinguishing powder.*
P370+P378	*In case of fire: Use for extinction: Carbon dioxide.*
P403+P235	*Store in a well-ventilated place. Keep cool.*
P405	*Store locked up.*
P501	*Dispose of contents/container in accordance with local/regional/national/international regulations.*

· ***Additional information:***
Restricted to professional users.
· ***2.3 Other hazards***
· ***Results of PBT and vPvB assessment***
· ***PBT:*** *Not applicable.*
· ***vPvB:*** *Not applicable.*

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SECTION 3: Composition/information on ingredients

· **3.2 Chemical characterisation: Mixtures**
· **Description:** Solvent mixture

· **Dangerous components:**		
CAS: 646-06-0 EINECS: 211-463-5 Index number: 605-017-00-2	1,3-dioxolane (Registration No.: 01-2119490744-29-0017) Flam. Liq. 2, H225; Repr. 1B, H360; Eye Irrit. 2, H319	98-99.5%
CAS: 107-98-2 EINECS: 203-539-1 Index number: 603-064-00-3	1-methoxy-2-propanol Flam. Liq. 3, H226; STOT SE 3, H336	0.5-2%

· **Additional information:** For the wording of the listed hazard phrases refer to section 16.

SECTION 4: First aid measures

· **4.1 Description of first aid measures**
· **General information:** Immediately remove any clothing soiled by the product.
· **After inhalation:**
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
· **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
· **After eye contact:**
Wash eyes immediately with a large amount of water or normal saline, occasionally lifting upper and lower eye lids until no evidence of chemical remains (about 20 minutes). Remove contact lenses if present and easy to remove. Seek immediate medical attention.
· **After swallowing:** If symptoms persist consult doctor.
· **4.2 Most important symptoms and effects, both acute and delayed** No further relevant information available.
· **4.3 Indication of any immediate medical attention and special treatment needed** Treat symptomatically.

SECTION 5: Firefighting measures

· **5.1 Extinguishing media**
· **Suitable extinguishing agents:**
Alcohol resistant foam
Fire-extinguishing powder
Carbon dioxide
· **For safety reasons unsuitable extinguishing agents:**
Water with full jet
Water
· **5.2 Special hazards arising from the substance or mixture**
In case of fire, the following can be released:
Formaldehyde
· **5.3 Advice for firefighters**
· **Protective equipment:** Wear self-contained respiratory protective device.

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SECTION 6: Accidental release measures

· **6.1 Personal precautions, protective equipment and emergency procedures**
Ensure adequate ventilation
Keep away from ignition sources.
Use respiratory protective device against the effects of fumes/dust/aerosol.
Wear protective equipment. Keep unprotected persons away.
· **6.2 Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
· **6.3 Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Ensure adequate ventilation.
Dispose contaminated material as waste according to item 13.
· **6.4 Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

SECTION 7: Handling and storage

· **7.1 Precautions for safe handling**
Keep away from heat and direct sunlight.
Store in cool, dry place in tightly closed receptacles.
Ensure good interior ventilation, especially at floor level. (Fumes are heavier than air).
Ensure good ventilation/exhaust at the workplace.
Prevent formation of aerosols.
· **Information about fire - and explosion protection:**
Keep ignition sources away - Do not smoke.
Use explosion-proof apparatus / fittings and spark-proof tools.
Protect against electrostatic charges.

· **7.2 Conditions for safe storage, including any incompatibilities**
· **Storage:**
· **Requirements to be met by storerooms and containers:**
Store in inert atmosphere or keep well sealed to prevent the formation of peroxides and other oxidation products.
Store in a cool location.
· **Information about storage in one common storage facility:**
Do not store together with oxidising and acidic materials.
Do not store together with alkalis (caustic solutions).
· **Further information about storage conditions:**
Store in cool, dry conditions in well sealed containers.
Protect from heat and direct sunlight.
Store receptacle in a well ventilated area.
· **7.3 Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

· **8.1 Control parameters**
· **Additional information about design of technical facilities:** No further data; see item 7.

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· ***Ingredients with limit values that require monitoring at the workplace:***

107-98-2 1-methoxy-2-propanol

IOELV	*Short-term value: 568 mg/m³, 150 ppm* *Long-term value: 375 mg/m³, 100 ppm* *Skin*

· ***Additional information:*** *The lists valid during the making were used as basis.*

· ***8.2 Exposure controls***
· ***Personal protective equipment:***
· ***General protective and hygienic measures:***
Keep away from food and beverages.
Immediately remove all soiled and contaminated clothing
Wash hands before breaks and at the end of work.
Do not inhale gases / fumes / aerosols.
Avoid contact with the eyes and skin.
· ***Respiratory protection:***
In case of low exposure use cartridge respirator. In case of intensive or longer exposure use self-contained respiratory protective device.
· ***Protection of hands:***
Selection of glove material on consideration of the penetration times, rates of diffusion and degradation

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
· ***Material of gloves***
Butyl rubber, BR
Nitrile rubber, NBR
· ***Penetration time of glove material***
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
· ***Eye protection:***

Tightly sealed goggles

SECTION 9: Physical and chemical properties

· ***9.1 Information on basic physical and chemical properties***
· ***General Information***
· ***Appearance:***

Form:	*Liquid*
Colour:	*Clear to light yellow*
· ***Odour:***	*Characteristic*
· ***Odour threshold:***	*Not determined.*
· ***pH-value:***	*Not determined.*

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· **Change in condition**	
Melting point/freezing point:	-26.4 °C
Initial boiling point and boiling range:	75 °C
· **Flash point:**	-6 °C
· **Flammability (solid, gas):**	Not applicable.
· **Ignition temperature:**	274 °C
· **Decomposition temperature:**	Not determined.
· **Auto-ignition temperature:**	Product is not selfigniting.
· **Explosive properties:**	Product is not explosive. However, formation of explosive air/vapour mixtures are possible.
· **Explosion limits:**	
Lower:	Not determined.
Upper:	Not determined.
· **Vapour pressure at 20 °C:**	133 hPa
· **Density at 20 °C:**	1.0355 g/cm³
· **Relative density**	Not determined.
· **Vapour density**	Not determined.
· **Evaporation rate**	Not determined.
· **Solubility in / Miscibility with water:**	Fully miscible.
· **Partition coefficient: n-octanol/water:**	Not determined.
· **Viscosity:**	
Dynamic:	Not determined.
Kinematic:	Not determined.
· **9.2 Other information**	No further relevant information available.

SECTION 10: Stability and reactivity

· **10.1 Reactivity** No further relevant information available.
· **10.2 Chemical stability** Stable
· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
· **10.3 Possibility of hazardous reactions**
Polymerisation.
Possible formation of peroxide.
· **10.4 Conditions to avoid**
Contact with incompatible materials.
Heat, flames and sparks. Extremes of temperature and direct sunlight.
· **10.5 Incompatible materials:** Strong Oxidizing Agents, Strong Acids, Strong Bases
· **10.6 Hazardous decomposition products:**
Formaldehyde
Carbon monoxide and carbon dioxide

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SECTION 11: Toxicological information

· **11.1 Information on toxicological effects**
· **Acute toxicity** *Based on available data, the classification criteria are not met.*

· **LD/LC50 values relevant for classification:**		
646-06-0 1,3-dioxolane		
Oral	*LD50*	*3000 mg/kg (Rat)*
Dermal	*LD50*	*8480 mg/kg (rabbit)*
Inhalative	*LC50*	*68.4 mg/L (Rat)*
107-98-2 1-methoxy-2-propanol		
Oral	*LD50*	*5660 mg/kg (Rat)*
Dermal	*LD50*	*13000 mg/kg (rabbit)*
Inhalative	*LC50/4 h*	*54.6 mg/l (Rat)*

· **Primary irritant effect:**
· **Skin corrosion/irritation** *Based on available data, the classification criteria are not met.*
· **Serious eye damage/irritation**
Causes serious eye irritation.
· **Respiratory or skin sensitisation** *Based on available data, the classification criteria are not met.*
· **Experience with humans:** *No further relevant information available.*
· **Additional toxicological information:**
· **CMR effects (carcinogenity, mutagenicity and toxicity for reproduction)**
· **Germ cell mutagenicity** *Based on available data, the classification criteria are not met.*
· **Carcinogenicity** *Based on available data, the classification criteria are not met.*
· **Reproductive toxicity**
May damage fertility or the unborn child.
· **STOT-single exposure** *Based on available data, the classification criteria are not met.*
· **STOT-repeated exposure** *Based on available data, the classification criteria are not met.*
· **Aspiration hazard** *Based on available data, the classification criteria are not met.*

SECTION 12: Ecological information

· **12.1 Toxicity**

· **Aquatic toxicity:**	
646-06-0 1,3-dioxolane	
14 day NOEC	*>1000 mg/l (algae)*
LC50/48 hr	*12000 mg/L (Sheepshead minnow)*
107-98-2 1-methoxy-2-propanol	
EC50/96 hr	*23300 mg/l (daphnia magna)*
	>1000 mg/l (green algae)
LC50/96 h	*20800 mg/l (Pimephales promelas)*

· **12.2 Persistence and degradability** *The single components are biodegradable*
· **12.3 Bioaccumulative potential**
Due to the distribution coefficient n-octanol/water a worth-mentioning accumulation in organisms is not expected.

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· ***12.4 Mobility in soil***
Component: Propylene glycol monomethyl ether, rapid dissipation in soil expected. Koc value between 1 and 50 indicating very high soil mobility.
· ***Additional ecological information:***
· ***General notes:***
Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
· ***12.5 Results of PBT and vPvB assessment***
· ***PBT:*** *Not applicable.*
· ***vPvB:*** *Not applicable.*
· ***12.6 Other adverse effects*** *No further relevant information available.*

SECTION 13: Disposal considerations

· ***13.1 Waste treatment methods***
· ***Recommendation***
Disposal must be made in accordance with International, National, and regional regulations.
Must not be disposed together with household garbage. Do not allow product to reach sewage system.

· ***Uncleaned packaging:***
· ***Recommendation:*** *Disposal must be made according to official regulations.*
· ***Recommended cleansing agents:*** *Water, if necessary together with cleansing agents.*

SECTION 14: Transport information

· ***14.1 UN-Number***	
· ***ADR, IMDG, IATA***	*UN1166*
· ***14.2 UN proper shipping name***	
· ***ADR, IMDG, IATA***	*DIOXOLANE*
· ***14.3 Transport hazard class(es)***	
· ***ADR, IMDG, IATA***	
· ***Class***	*3 Flammable liquids.*
· ***Label***	*3*
· ***14.4 Packing group***	
· ***ADR, IMDG, IATA***	*II*
· ***14.5 Environmental hazards:***	
· ***Marine pollutant:***	*No*
· ***14.6 Special precautions for user***	*Warning: Flammable liquids.*
· ***Hazard identification number (Kemler code):***	*33*
· ***EMS Number:***	*F-E,S-D*

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· **14.7 Transport in bulk according to Annex II of Marpol and the IBC Code**	Not applicable.
· **Transport/Additional information:**	
· **ADR**	
· **Limited quantities (LQ)**	1L
· **Transport category**	2
· **Tunnel restriction code**	D/E
· **UN "Model Regulation":**	UN1166, DIOXOLANE, 3, II

SECTION 15: Regulatory information

· **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
No further relevant information available.

· **Directive 2012/18/EU**
· **REGULATION (EC) No 1907/2006 ANNEX XVII** Conditions of restriction: 3
· **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Relevant phrases**
H225 Highly flammable liquid and vapour.
H226 Flammable liquid and vapour.
H319 Causes serious eye irritation.
H336 May cause drowsiness or dizziness.
H360 May damage fertility or the unborn child.
· **Classification according to Regulation (EC) No 1272/2008**
Art. 9(1) of Regulation (EC) No. 1272/2008 was used for classification purposes.

· **Department issuing SDS:** Product safety department
· **Contact:** Tom Cole, EHS Manager (tcole@kayakuAM.com)
· **Revision History:**
The manufacturer's information in Section 1, the product hazard information in Section 2 and the component hazard information in Section 3 have been updated.
· **Abbreviations and acronyms:**
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
ICAO: International Civil Aviation Organisation
ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic

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vPvB: very Persistent and very Bioaccumulative
Flam. Liq. 2: Flammable liquids – Category 2
Flam. Liq. 3: Flammable liquids – Category 3
Eye Irrit. 2: Serious eye damage/eye irritation – Category 2
Repr. 1B: Reproductive toxicity – Category 1B
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3