



# Material Safety Data Sheet

## Radi-CAL™ R4

Date 21/08/18  
Issue 4

### 1. Substance/ Preparation Identification & Company

<b>Product Name</b>	Radi-CAL™ R4 Brake fluid (CP6005-20)	<b>Intended Use</b>	Hydraulic fluid for use in automotive brake and clutch systems
<b>Company</b>	AP Racing Wheler Road Coventry CV3 4LB	<b>Description</b> <b>Telephone</b> <b>Fax</b> <b>Email</b>	Race use only +44 (0) 24 76 639595 +44 (0) 24 76 639559 <a href="mailto:sales@apracings.co.uk">sales@apracings.co.uk</a>

### 2. Hazards Identification

<b>Classification</b>	This product is classified as "WARNING: H319 Causes serious eye irritation	<b>Health Hazards</b>	Seriously irritating to eyes. Irritating to skin. When ingested it may be absorbed and cause renal damage at high dosage
<b>Physical Hazards</b>	Product is not classified as flammable but will burn	<b>Environmental Hazards</b>	May be harmful to aquatic organisms and could cause long term adverse effects in the environment

### 3. Composition/ Information on Ingredients

<b>General</b>	Blend of polyglycol ethers and glycol ether esters and polyglycols, with added corrosion and oxidation inhibitors.				
<b>Hazardous Ingredients</b>	<b>Conc. %</b>	<b>CAS</b>	<b>EINECS</b>	<b>Hazard Classification</b>	<b>Risk Phrases</b>
Amine Mixture	0-2			C/N/Xn	R22,R36,R41

### 4. First Aid Measures

<b>Skin Contact</b>	Remove contaminated clothing. Wash affected skin with soap and water. If irritation persists seek medical attention.
<b>Eye Contact</b>	Flush eye with water for at least 10 minutes. If irritation persists seek medical attention.
<b>Inhalation</b>	Remove to fresh air. If recovery is not rapid, seek medical attention.
<b>Ingestion</b>	Obtain medical advice immediately. If patient is fully conscious, wash out mouth with water and give plenty of water to drink. Induce vomiting only under medical supervision.
<b>Note to Physicians:</b>	Medical personnel seeking to administer first aid are referred to the services of the Poisons Information Service who can advise in such instances. There is no specific antidote and treatment of over exposure should be directed at control of symptoms and the patient's clinical condition.

### 5. Fire Fighting Measures

<b>Extinguishing Media</b>	Alcohol resistant foam, dry powder, carbon dioxide or water (fog or fine spray)
<b>Fire Hazards</b>	No special risk – combustion products may contain harmful or irritant fumes
<b>Protective Equipment</b>	In extreme conditions self-contained breathing apparatus should be worn



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### 6. Accidental Release Measures

<b>Personal Precautions</b>	Avoid contact with eyes, skin, and clothing. When cleaning up large spillages, suitable protective clothing should be worn including eye protection and impervious gloves
<b>Environmental Precautions</b>	Prevent from entering drains, ditches or rivers. If this occurs inform relevant authorities. Prevent gross contamination of soil
<b>Clean Up Methods</b>	Contain spillage using sand or earth. Remove all material to a suitable container for subsequent disposal. Label Salvage Container appropriately. Flush contaminated area with plenty of water

### 7. Handling & Storage

<b>Handling</b>	No specific handling instructions are necessary
<b>Storage</b>	Suitable bulk storage vessels are mild/stainless steel tanks fitted with a dry air breathing system or tight head steel drums. Do not store in lined tanks or drums. Brake fluid absorbs water from the atmosphere - always keep containers tightly closed. Avoid contamination with any other substances and in particular with mineral oils which are incompatible.
<b>Specific Use</b>	Users are referred to the Specification SAE J1707 "Service Maintenance of Brake Fluids". Racing brake fluid should not be used in high magnesium alloy components and should not be mixed with other brake fluids or its outstanding performance may be compromised

### 8. Exposure Controls/ Personal Protection

<b>Exposure Limits</b>	No official TLV/OEL figures available, however 8 h TWA limits of 100 mg/m <sup>3</sup> vapour or 10 mg/m <sup>3</sup> particle should be adhered too. Due to the low vapour pressure of the preparation, vapour is not generally a problem at ambient temperature. Handling equipment should minimise the formation of mists.
<b>Engineering Measures</b>	
<b>Skin Protection</b>	Where significant exposure is possible wear impervious body covering. It is recommended that showers are provided at locations where accidental exposure may occur.
<b>Hand Protection</b>	Wear suitable impervious gloves to avoid prolonged or repeated contact. Polyethylene natural or butyl rubber and PVC are suitable materials.
<b>Eye Protection</b>	Wear close-fitting goggles where there is a risk of splashing. Eye baths should be provided at locations where accidental exposure may occur.
<b>Respiratory Protection</b>	No specific precautions at ambient temperature. If fluid is being heated or atomised, use suitable engineering control measures.
<b>Other Protective Equipment</b>	
<b>Environmental Exposure Controls</b>	No special measures required.

### 9. Physical & Chemical Properties

<b>Description</b>	Blend of polyglycol ethers and glycol ether borateesters, with added corrosion and oxidation inhibitors.	
<b>Colour</b>	Clear liquid - colourless to amber (although some grades of brake fluid may be dyed.)	<b>Test Ref</b> Visual
<b>Odour</b>	Bland	N/A
<b>pH</b>	6.5 – 7.5	SAE J 1703



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<b>Melting point</b>	< -50 °C	
<b>Boiling Point</b>	> 300 °C.	SAE J 1703
<b>Flash Point</b>	> 100 °C.	IP 35
<b>Auto Ignition Temperature</b>	> 300 °C.	ASTM D 286
<b>Flammability Limits</b>	In Air: Not established (non-volatile)	
<b>Density @ 20°C</b>	1.060 – 1.090 g/ml	DIN 51757
<b>Solubility</b>	In water: miscible in any ratio In ethanol: miscible in any ratio	
<b>Partition Coefficient n-Octanol/Water</b>	< 2.0 (all main ingredients)	OECD 117
<b>Viscosity @ 20°C</b>	Approx. 5-10 cSt	ASTM D 445
<b>Vapour pressure@ 20°C</b>	< 2 millibars	Reid
<b>Vapour Density</b>	Not established	
<b>Evaporation Rate</b>	Negligible	

### 10. Stability & Reactivity

<b>Conditions to Avoid</b>	No hazardous conditions if stored under normal conditions. Glycol Ethers can form peroxides on storage – do not distil to dryness.
<b>Materials to Avoid</b>	Strong oxidising agents. For user safety, brake fluid should never be contaminated with any other substance.
<b>Hazardous Decomposition Products</b>	None known.

### 11. Toxicological Information (Comments may be based on analogy with similar products)

<b>Skin Contact</b>	Not classified as irritant (Test Method OECD 404) although some sensitive individuals may be affected. Repeated contact may de-fat the skin and cause dermatitis. Product does not contain any known sensitisers. Acute percutaneous toxicity is low LD50 (sk) Rat = > 3000 mg/kg.
<b>Eye Contact</b>	Product is expected to have an irritating effect on the eye (OECD Test Method 405).
<b>Inhalation</b>	Unlikely to be hazardous by inhalation at ambient temperatures due to low vapour pressure. If product is inhaled at elevated temperatures or as an aerosol it may irritate respiratory tract and may cause systemic effects similar to ingestion (see below).
<b>Ingestion</b>	Product is of relatively low acute oral toxicity – however, if any significant amount is ingested there is a risk of renal damage which in extreme cases could lead to kidney failure, coma and death. LD50 (oral) Rat = > 5000 mg/kg. Sparse experience indicates lethal dose in man could be considerably less.
<b>Chronic Toxicity</b>	General – There are no reports of long term adverse affects in man. Carcinogenicity - Not known to be carcinogenic. Mutagenicity - Not known to be mutagenic. Reproductive Toxicity - Major ingredients have not been shown to cause significant fertility or development problems at levels which are not themselves toxic to the animal concerned.

### 12. Ecological Information (Comments may be based on analogy with similar products)

<b>Ecotoxicity</b>	Product is of low to medium ecotoxicity
<b>Fish</b>	96h LC50 = > 100 mg/l (Oncorhynchus Mykiss)
<b>Daphnia</b>	48h EC50 = Not Determined but expected to be virtually non



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	Algae	72h	toxic. EC50 = Not Determined but expected to be virtually non toxic.
<b>Mobility</b>	Soluble in water and will partition to aqueous phase. Volatilisation from water to air not expected. Mobile in soil until degraded.		
<b>Persistence/ Degradability</b>	Product is inherently biodegradable and is expected to be readily biodegradable. OECD 302B (Zahn Wellans/ EMPA) = 100% elimination at 21 days. If admitted into adapted biological water treatment plants, no significant adverse effects on the degrading action of the live sludge are expected.		
<b>Bio Accumulative Potential</b>	Not expected to bio accumulate - Log POW for all main ingredients = <2.0		

### 13. Disposal Considerations

<b>Disposal Dangers</b>	Not significant. As for spillages - avoid liquid entering drains, rivers etc.
<b>Disposal Measures</b>	Controlled incineration or recycling is recommended.
<b>Regulations</b>	Dispose of in accordance with local and national regulations. In the E.U. used brake fluids are classified as Hazardous Waste (Directive 91/689/EEC). EWC number: 16.01.13.

### 14. Transport Information

<b>UN No /Class</b>	None
<b>ADR/RID</b>	Not classified
<b>IMO/MDG</b>	Not classified as hazardous
<b>Marine Pollutant</b>	No
<b>IATA/IACO Class</b>	Not classified

### 15. Regulatory Information

<b>E.U. Classification</b>	Xi – Irritant
<b>Risk Phrases</b>	R36 - Irritating to eyes. R52/53 – Harmful to aquatic organisms and may cause long term adverse effects in the aquatic environments
<b>Safety Phrases</b>	S2 - Keep out of reach of children. S26 (Modified) - In case of contact with eyes, rinse immediately with water for 10 minutes. If irritation persists seek medical advice. S46 - If swallowed seek medical advice immediately and show this document or label. S29 – Do not empty into drains
<b>Restrictions on Use or Exposure</b>	To be in accord with local and national regulations. In the U.K. this would include the HASAWA and COSHH.

#### Health Safety and Environmental

Designated Hazardous Substances and reportable Quantities(40 CFR 302.4)			
Chemical name	CAS No	Typical % WT	RQ (Pounds)
None	-----	-----	-----
SARA 302 Extremely Hazardous Substances (40 CFR 355)			
Chemical name	CAS No	Typical % WT	RQ (Pounds)
None	-----	-----	-----



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### Health Safety and Environmental

SARA 313 Toxic Chemicals (40 CFR 372)		
Chemical name	CAS No	Typical % WT
None	-----	-----
California Proposition 65 List		
Chemical name	CAS No	Type of Toxicity
None	-----	-----

### 16. Other Information

**Risk (R) Phrases** R22 – Harmful if swallowed.  
R36 – Irritating to eyes  
R41 Risk of serious damage to eyes

**Legal Disclaimer** The information contained herein is based on the present knowledge held by AP Racing and does not constitute the users own assessment of work place risk and substance use as required by other Health and Safety legislation.