



MATERIAL SAFETY DATA SHEET

Wilwood Engineering

Product Name: WILWOOD EXP 600 PLUS SUPER HI-TEMP RACING BRAKE FLUID

Effective Date: 3 September 2014

Publication Date: 3 September 2014

1. PRODUCT AND COMPANY IDENTIFICATION:

Trade Name:

Wilwood EXP 600 Plus Super Hi-Temp Racing Brake fluid

DOT 4 – all grades with WBP of $\geq 165^{\circ}\text{C}$.

DOT 5.1 – all grades

Identified Uses:

Hydraulic fluid for use in automotive brake and clutch systems.

Company Identification:

Wilwood Engineering

4700 Calle Bolero

Camarillo, CA 93012, USA

Emergency Telephone Number:

(805) 388-1188. Hours 7:30 am - 5:00 pm Monday - Friday PST

After Hours, N/A

2. HAZARDS IDENTIFICATION:

Classification of the substance or mixture:

Classification according to regulation 1999/45/EC (DPD); Not classified

Classification according to regulation 1272/2008 (CLP/GHS):. Not classified.

Label Elements

Labelling according to 1999/45/EC (DPD):

Hazard symbol - None

Safety phrases recommended; S2 Keep out of the reach of children. S26 (modified) In case of contact with eyes, rinse immediately with plenty of water for 10 min. If irritation persists seek medical advice. S46 – If swallowed seek medical advice immediately and show this container or label.

Labelling according to 1272/2008 (CLP/GHS)

Hazard Pictogram/s; None

Signal word: Not applicable

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Hazard phrases; None\

Precautionary phrases recommended; P102 - keep out of the reach of children. P305/P351/P338 – If in eyes rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. P337/313 – If eye irritation persists, get medical advice. P301/311 – If swallowed, call a poison center or doctor/physician and have container or label at hand.

Other Hazards

Product is not classified as flammable or combustible but will burn.

Product is not classified as PBT or vPvB according to Annex XIII.

3. COMPOSITION INFORMATION:

Substances

Not Applicable.

Mixtures

General description. Blend of polyglycol ethers, glycol ether esters and polyglycols with added corrosion and oxidation inhibitors.

Hazardous Ingredients

Ingredient	EC No.	CAS No.	Registration No.	% w/w	Classification 67/548EEC	Classification 1272/2008
Butyl Triglycol	205-592-6	143-22-6	01-2119531322-53	0-20	Xi; R41	Eye Damage - Cat 1; H318
Diethylene glycol	203-872-2	111-46-6	01-2119457857-2	0-10	Xn; R22	Acute Oral Toxicity Cat 4 - H302. STOT-RE Cat 2 - H373.
Methyl diglycol	203-906-6	111-77-3	01-2119475100-52	<3	Xn; R63	Reproductive toxicity- Cat 2; H361d
Butyl diglycol	203-961-6	112-34-5	01-2119475104-44	<3	Xi; R36	Eye Irritant - Cat 2 H319

See Section 16 for explanation of the classification codes.

4 FIRST AID MEASURES:

General Advice - First Aid responders should pay attention to self-protection and use any recommended protective clothing – see section 8.

Inhalation - remove victim to fresh air – and keep at rest. If recovery is not rapid, seek medical attention.

Skin contact - remove contaminated clothing. Wash affected skin with soap and water. If irritation persists seek medical attention.

Eye contact - Flush eye with plenty of water for at least 10 minutes. If irritation persists seek medical attention.

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Ingestion - Obtain medical advice immediately. If patient is fully conscious, wash out mouth with water and give plenty of water to drink. Never give anything by mouth to an unconscious person. Induce vomiting only under medical supervision.

Most important symptoms and effects both acute and delayed.

The most important symptoms and effects are described in sections 2 and 11.

Indication of any immediate medical attention and special treatment needed.

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:

Suitable Extinguishing Media - Alcohol resistant foam, dry powder, carbon dioxide or water (fog or fine spray).

Unsuitable Extinguishing Media - Water jets (although these may be used to cool adjacent containers).

Special hazards arising from the substance or mixture.

No special risk – combustion products may contain harmful or irritant fumes. Containers may rupture from gas generation if exposed to fire.

Advise for fire fighters.

Eye protection should be worn. Keep containers cool with water spray. In extreme conditions self-contained breathing apparatus and protective suit should be worn.

6. ACCIDENTAL RELEASE MEASURES:

Personal Precautions, protective equipment and emergency procedures.

Prevent unnecessary personnel entering area of spillage. Avoid contact with eyes, skin, and clothing. When cleaning up large spills, appropriate protective clothing should be worn including eye protection and impervious gloves - see section 8 for details.

Environmental Precautions

Prevent from entering drains, ditches or rivers. If this happens inform relevant authorities. Prevent gross contamination of soil.

Methods and materials for containment and cleaning up.

Contain spillage using sand earth or absorbent booms. Small spillages can be absorbed using rags or absorbent granules. Remove all material to a suitable container for subsequent disposal. Label Salvage Container appropriately. Flush contaminated area with plenty of water.

References to other sections

For personal protection see section 8. For disposal methods see section 13.

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7. HANDLING AND STORAGE:

Precautions for safe handling

Avoid any method of handling that generates mists or aerosols. Do not eat, drink or smoke when handling this product. Wash hands thoroughly after use.

Conditions for safe storage including any incompatibilities

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.

Specific end use

Users are referred to the Specification SAE J1707 "Service Maintenance of Brake Fluids"

8 EXPOSURE CONTROLS / PERSONAL PROTECTION:

Occupational exposure limits - Mixture

No official figures available. Due to the low vapor pressure of the preparation, vapor is not generally a problem at ambient temperature.

Individual ingredients	Country	8 hours	15 min
Diethylene glycol	Australia	23 ppm / 101 mg/m ³	
	Austria	10 ppm / 44 mg/m ³	40ppm / 176 mg/m ³
	Denmark	2.5 ppm / 11 mg/m ³	5ppm / 22 mg/m ³
	Germany	10 ppm / 44 mg/m ³	40 ppm / 176 mg/m ³
	Latvia	10 mg/m ³	
	New Zealand	23 ppm / 101 mg/m ³	
	Sweden	10 ppm / 45 mg/m ³	20ppm / 90 mg/m ³
	Switzerland	10 ppm / 44 mg/m ³	40ppm / 176 mg/m ³
	UK	23 ppm / 101 mg/m ³	
	Butyl diglycol	Austria	10 ppm / 67.5 mg/m ³
Belgium		10 ppm / 67.5 mg/m ³	15ppm / 101.2 mg/m ³
Denmark		100 mg/m ³	200 mg/m ³
EU		10 ppm / 67.5 mg/m ³	15ppm / 101.2 mg/m ³
France		10 ppm / 67.5 mg/m ³	15ppm / 101.2 mg/m ³
Germany		10 ppm / 67.5 mg/m ³	15ppm / 101.2 mg/m ³
Hungary		67.5 mg/m ³	101.2 mg/m ³
Italy		10 ppm / 67.5 mg/m ³	15ppm / 101.2 mg/m ³
Latvia		10 ppm / 67.5 mg/m ³	15ppm / 101.2 mg/m ³
Poland		67.5 mg/m ³	100 mg/m ³
Spain		10 ppm / 67.5 mg/m ³	15ppm / 101.2 mg/m ³
Sweden		15 ppm / 100 mg/m ³	30ppm / 200 mg/m ³
Switzerland		10 ppm / 67.5 mg/m ³	15ppm / 101.2 mg/m ³
The Netherlands		50 mg/m ³	100 mg/m ³
UK	10 ppm / 67.5 mg/m ³	15ppm / 101.2 mg/m ³	

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Methyl diglycol	Austria	10 ppm / 50.1 mg/m ³
	Belgium	10 ppm / 50.1 mg/m ³
	Denmark	25 ppm (provisional)
	EU	10 ppm / 50.1 mg/m ³
	France	10 ppm / 50.1 mg/m ³
	Germany	10 ppm / 50.1 mg/m ³
	Hungary	50.1 mg/m ³
	Italy	10 ppm / 50.1 mg/m ³
	Latvia	20 ppm / 100 mg/m ³
	Poland	50.0 mg/m ³
	Spain	10 ppm / 50.1 mg/m ³
	The Netherlands	45 mg/m ³
	UK	10 ppm / 50.1 mg/m ³

Derived No Effect Levels (DNEL)

Butyl Triglycol

Worker; Long term exposure – systemic effects, dermal 50mg/kg/day
 Worker; Long term exposure – systemic effects, inhalation 195mg/ m³
 Consumer Long term exposure – systemic effects, dermal 25mg/kg/day
 Consumer Long term exposure – systemic effects, inhalation 117mg/ m³
 Consumer Long term exposure – systemic effects, oral 2.5mg/kg/day

Butyl Diglycol

Worker; Short term exposure – local effects, inhalation 101.2mg/ m³
 Worker; Long term exposure – systemic effects, dermal 20mg/kg/day
 Worker; Long term exposure – systemic effects, inhalation 67mg/ m³
 Consumer; Short term exposure – local effects, inhalation 50.6mg/ m³
 Consumer Long term exposure – systemic effects, dermal 10mg/kg/day
 Consumer Long term exposure – systemic effects, inhalation 34mg/ m³
 Consumer Long term exposure – systemic effects, oral 1.25mg/kg/day

Diethylene glycol

Worker; Long term exposure – systemic effects, dermal 106mg/kg/day
 Worker; Long term exposure – systemic effects, inhalation 60mg/ m³
 Consumer Long term exposure – systemic effects, dermal 53mg/kg/day
 Consumer Long term exposure – systemic effects, inhalation 12mg/ m³

Methyl Diglycol

Worker; Long term exposure – systemic effects, dermal 0.53mg/kg/day
 Worker; Long term exposure – systemic effects, inhalation 50.1mg/ m³
 Consumer Long term exposure – systemic effects, dermal 0.27mg/kg/day
 Consumer Long term exposure – systemic effects, inhalation 25mg/ m³
 Consumer Long term exposure – systemic effects, oral 1.5mg/kg/day

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Predicted No Effect Concentrations (PNEC)

Butyl Triglycol

Aqua (freshwater) 1.5 mg/L
 Aqua (marine water) 0.25 mg/L
 Aqua (intermittent releases) 5.0 mg/L
 Sewage Treatment Plant (STP) 200 mg/ L
 Sediment (freshwater) 5.77 mg/kg/sediment dw
 Sediment (marine water) 0.13 mg/kg/sediment dw
 Soil 0.45 mg/kg/soil dw
 Oral 111 mg/kg/food

Butyl Diglycol

Aqua (freshwater) 1.0 mg/L
 Aqua (marine water) 0.1 mg/L
 Aqua (intermittent releases) 3.9 mg/L
 Sewage Treatment Plant (STP) 200mg/ L
 Sediment (freshwater) 4.0 mg/kg/sediment dw
 Sediment (marine water) 0.4 mg/kg/sediment dw
 Soil 0.4 mg/kg/soil dw
 Oral 56 mg/kg/food.

Diethylene glycol

Aqua (freshwater) 10 mg/L
 Aqua (marine water) 1 mg/L
 Aqua (intermittent releases) 10 mg/L
 Sewage Treatment Plant (STP) 199.5 mg/ L
 Sediment (freshwater) 20.9 mg/kg/sediment dw
 Soil 1.53 mg/kg/soil dw

Methyl Diglycol

Aqua (freshwater) 12 mg/L
 Aqua (marine water) 1.2 mg/L
 Aqua (intermittent releases) 12 mg/L
 Sewage Treatment Plant (STP) 10000 mg/ L
 Sediment (freshwater) 44.4 mg/kg/sediment dw
 Sediment (marine water) 0.44 mg/kg/sediment dw
 Soil 2.44 mg/kg/soil dw
 Oral 0.9 mg/kg/food

Recommended monitoring techniques

Personal air monitoring. An applicable standard is BS EN 14042.

Exposure controls - general

Employ good industrial hygiene practice as part of a control banding approach.

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Appropriate Engineering Controls

Not necessary under normal conditions. If fluid is being heated or atomised, local exhaust ventilation with filter / scrubber is recommended.

Individual protection measures / personal protective equipment

Respiratory Protection – Not needed under normal conditions. Self contained breathing apparatus or Organic vapour respirators (A-P2) may be used where product is being heated or atomised and engineering control measures are not practical.

Hand Protection - Wear chemically resistant impervious gloves (EN 374) to avoid prolonged or repeated contact. Butyl rubber, Natural rubber, Nitrile rubber and PVC are suitable materials. Because of great variety of types of gloves see manufacturer's figures for breakthrough times. In the case of prolonged contact a glove with a protection class of 6 (breakthrough time of >480 min) is recommended.

Eye Protection - Wear close-fitting goggles (EN 166) or face shield where there is a risk of splashing (acrylic or PVC preferred to polycarbonate which may be attacked by brake fluid). Eye baths should be provided at locations where accidental exposure may occur.

Skin Protection - Where significant exposure is possible wear impervious body covering. It is recommended that showers are provided at locations where accidental exposure may occur.

Environmental Exposure Controls

No special measures required.

9. PHYSICAL AND CHEMICAL PROPERTIES:

Information of basic physical and chemical properties

		Test method
Appearance	Clear liquid - colorless to amber (although some brake fluids may be dyed)	Visual
Odor	Bland	N/A
Odor threshold	N/A – very low odor	
pH	7.0 to 11.50	SAE J 1703
Melting point	< -50° C.	SAE J 1703
Boiling point	> 260° C. SAE J 1703	
Flash point	> 120° C. IP 35	
Flammability limits in air.	Not established as non-volatile	
Auto ignition temp.	> 300° C.	ASTM D 286
Decomposition Temperature	> 300° C.	
Evaporation Rate	Negligible	
Density @ 20°C	1.030 – 1.090 g/ml	DIN 51757
Solubility	In water: miscible in any ratio In ethanol: miscible in any ratio	
Partition Coefficient (n-Octanol/Water)	< 2.0 (all main ingredients)	OECD 117
Viscosity @ 20°C	Approx. 5-10 cSt	ASTM D 445

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Vapour pressure 20° C	< 2 milibars	Reid
Vapour Density	Not established as non-volatile	
Explosive properties	Not explosive	
Oxidising Properties	Not oxidising	

Other information

No other relevant data.

10. STABILITY AND REACTIVITY:

Reactivity

No hazardous reactions if stored and handled as indicated.

Chemical Stability

Product is stable under normal conditions.

Possibility of hazardous reactions.

Glycol Ethers can form peroxides on storage

Glycol ethers can react with light metals with the evolution of hydrogen.

Conditions to Avoid

Do not distill to dryness without testing for peroxide formation.

Incompatible Materials

Strong oxidising agents. For user safety, brake fluid should never be contaminated with any other substance

Hazardous Decomposition Products

None known.

11. TOXICOLOGICAL INFORMATION:

Acute Toxicity

Ingestion - Product is of low acute oral toxicity – LD50 (oral) Rat = > 5000 mg/kg. (Sparse experience indicates lethal dose in man could be less). However, if any significant amount is ingested, there is a risk of renal damage which in extreme cases could lead to kidney failure, coma or death. Other symptoms of overexposure include Central Nervous System effects, abdominal discomfort, metabolic acidosis, headache and nausea.

Inhalation - Unlikely to be hazardous by inhalation at ambient temperatures due to low vapor 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 above).

Aspiration – No aspiration hazard expected.

Dermal - Acute percutaneous toxicity is low LD50 (sk) Rabbit = > 3000 mg/kg. Massive contact with damaged skin could result in the absorption of harmful amounts.

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Irritation

Eye Contact - Has a mildly irritating effect on the eye. (Test Method OECD 405).

Skin Contact - Based on available data the classification criteria are not met (Test Method OECD 404). Repeated contact may de-fat the skin and cause dermatitis.

Corrosivity

Based on available data the classification criteria are not met.

Sensitisation

Based on available data the classification criteria are not met.

Repeated dose toxicity

There are no reports of long term adverse affects in man.

Carcinogenicity

Not known to be carcinogenic.

Mutagenicity

Not known to be mutagenic

Toxicity for reproduction

Major ingredients have not been shown to cause significant fertility or development problems at levels which are not themselves toxic to the animal concerned. One minor ingredient – Methyl diglycol – has been shown to affect fetus development in some studies and is classified as R63 / H361d.

12. ECOLOGICAL INFORMATION:

Toxicity

Product is of low acute ecotoxicity.

Fish 96h LC50 = > 100 mg/l (Oncorhynchus Mykiss)

Daphnia 48h EC50 = Not Determined but expected to be virtually non toxic.

Algae 72h EC50 = Not Determined but expected to be virtually non toxic.

Persistence and Degradability

Product is inherently biodegradable and is expected to be readily biodegradable based on ingredients. OECD 302B (Zahn Wellans/EMPA) = 100% elimination at 21 days. If admitted into adapted biological water treatment plants, no adverse effects on the degrading action of the live sludge are expected.

Bioaccumulative Potential

Not expected to bio accumulate. Log POW for all main ingredients = < 2.0

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Mobility in soil

Soluble in water and will partition to aqueous phase. Volatilisation from water to air not expected. Mobile in soil until degraded.

Results of PBT and vPvB assessment.

Product is considered to be neither “persistent, bio-accumulating and toxic” nor “very persistent and very bio-accumulating” according to Annex XIII of Regulation EC 1907/2006.

Other adverse effects.

Not relevant.

13. DISPOSAL CONSIDERATIONS:

DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. AS YOUR SUPPLIER, WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Incinerator or other thermal destruction device.

Treatment and disposal methods of used packaging: Empty containers should be recycled or otherwise disposed of by an approved waste management facility. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. Do not re- use containers for any purpose.

14. TRANSPORT INFORMATION:

Land Transport

ADR Not classified

RID Not classified

Sea Transport

IMO/IMDG Not classified

Marine Pollutant No

Air Transport

IATA/IACO Not classified

Inland waterways

ADN Not classified

Packing Group

N/A

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Environmental Hazards

Not environmentally hazardous

Special precautions for user

None relevant

Transport in bulk (annex II of Marpol)

Not classified.

15. REGULATORY INFORMATION:

Safety, health and environmental regulations / legislation specific to the substance or mixture.

Chemical Inventories.

All ingredients are registered on the following inventories;

E.U. (EINECS / EILINCS)	USA (TSCA)	Canada (DSL/NDSL)	Australia (AICS)
Japan (ENCS)	China (IECSC)	Korea (ECL)	Philippine (PICCS)
New Zealand (NZLoC)	Taiwan		

WGK Hazard class

Assessed as WGK 1 (self assessment). Slight hazard to water.

Other

Usage should be in accord with all local and national regulations. In the U.K. this would include the Health and Safety at Work Act and the Control of Substances Hazardous to Health regulations (COSHH.)

Chemical safety assessment.

A chemical safety assessment has not been carried out for this product by the supplier.

16. OTHER INFORMATION

Abbreviations and acronyms used in this data sheet.

DPD – Dangerous Preparations Directive.

CLP – Classification, labelling and packaging of substances and mixtures regulation,

GHS – UN Globally Harmonised system of classification and labelling of chemicals

STOT – RE Specific Target Organ Toxicity – Repeated Exposure

R22 – Harmful if swallowed.

R36 – Irritating to eyes.

R41 – Risk of serious damage to eyes.

R63 – Possible risk of harm to the unborn child.

H302 – Harmful if swallowed

H318 – Causes serious eye damage

H319 – Causes serious eye irritation

H361d – Suspected of damaging fertility or the unborn child.

H373 – May cause damage to organs through prolonged or repeated exposure.

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Revisions

Because of the major changes, this data sheet should be read as entirely new (Rev B 9/3/14).

NOTICE:

The information herein is presented in good faith and believed to be accurate as of the effective date shown on the first page of this document. However, no warranty, express or implied is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations. See MSD Sheet for health and safety information.

U.S. REGULATIONS:

SARA HAZARD CATEGORY:

This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title 111) and is considered, under application definitions, to meet the following categories:

An immediate health hazard.