GPS Safety Summary

Substance Name:

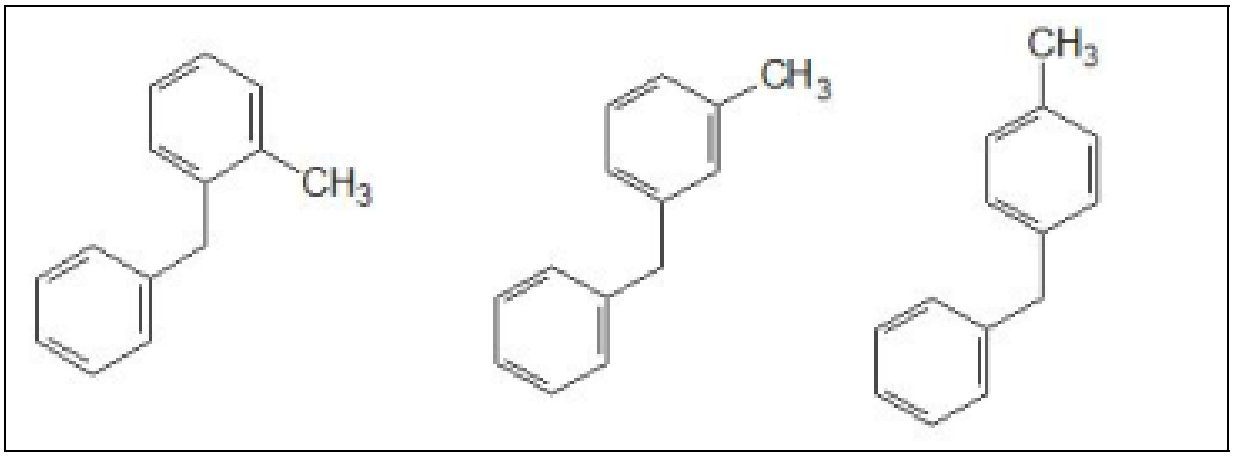
BENZYLTOLUENE

1. General Statement

Benzyltoluene is a constituent of dielectric and heat transfer fluids mostly used in closed equipments/systems.

2. Chemical Identity

Name:	Benzyltoluene
Brand names:	Jarytherm, Jarylec, Superjary
Chemical name (IUPAC):	Benzyltoluene
CAS number(s):	27776-01-8
EC number:	248-654-8
Molecular formula:	$C_{14}H_{14}$
Structure:	



3. Use and applications

Benzyltoluene is mostly used in closed equipments/systems as a technical fluid.
Its main field of application is as a dielectric fluid (as such it is prepared and impregnated into dieletrics or capacitors) and as a heat transfer fluid (as such it is handled, decanted to and recovered from heat transfer systems).

4. Physical / Chemical properties

Property	Value
Form	Liquid
Physical state (Liquid/solid/gaseous)	Liquid at 20°C at 1013 hPa
Colour	Light yellow
Odour	Aromatic
Density	0.995 g/cm3 at 19.5°C
Melting / boiling point	Melting range: -79.9°C to -71.5°C at 1013 hPa Boiling range: 283 – 287°C at 1013 hPa
Flammability	Not flammable
Explosive/oxydising properties	Not expected based on structure
Self-ignition temperature	510°C
Vapour pressure	0.66 Pa at 20°C 1.01 Pa at 25°C
Mol weight	182.261 g/mol
Water solubility	0.038 mg/l at 20°C
Flash point	137°C
Octanol-water partition coefficient (LogKow)	4.35 at 20°C
Viscosity (static)	4.03 mm2/s at 20°C 2.56 mm2/s at 40°C

5. Health Effects

Based on the chemical structure and the physico-chemical properties of benzyltoluene, it is likely that the material might absorb to proteins. Nevertheless, it can reasonably be assumed that absorption via the gastrointestinal tract does occur. Due to the higher lipophilicity a lower penetration through the skin is expected. Once absorbed via the gastrointestinal tract it is likely that the material will be distributed systemically. No high first pass effect in the liver is expected due to lack of functional groups. Data from in vitro experiments indicate metabolic pathways via oxidation and demethylation reactions resulting to the formation of more easily eliminated intermediates. Hence, despite the relatively high lipophilicity a bioaccumulation in fatty tissues is not expected.

Effect Assessment	Result
Acute Toxicity Oral / inhalation / dermal	Based on the available test data, acute toxicity is considered to be low. Inhalation of vapours from heated product can cause difficulty in breathing and formation of carboxyhaemoglobin but the effects are reversible within a few days. May be fatal if swallowed and enters in airways.
Irritation / corrosion Skin / eye/ respiratory tract	Irritating to skin. Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product. Can be considered as slightly or not irritating to eyes.
Sensitisation	Based on the available test data, not expected to cause allergic skin reaction.

Toxicity after repeated exposure Oral / inhalation / dermal	Based on the available test data, not expected to cause significant target organ toxicity after repeated exposure.
Genotoxicity / Mutagenicity	Based on the available test data, not expected to cause adverse genetic effects.
Carcinogenicity	Despite the absence of specific tests, no concern for a carcinogenic potential in view of the overall data.
Toxicity for reproduction	Based on the available test data performed on analogue substance, did not expected to cause adverse effects on reproduction or on the development of offspring.

6. Environmental Effects

Effect Assessment	Result
Aquatic Toxicity	Benzyltoluene shows a low solubility in water. No acute toxicity is observed up to the solubility limit.

Fate and behaviour	Result
Biodegradation	Ready biodegradability tests were carried out for benzyltoluene, showing a partial mineralisation of the substance. Benzyltoluene should then be considered as inherently biodegradable, not fulfilling specific criteria.
Bioaccumulation potential	Due to the logKow of 4.5 and a calculated BCF of 344, benzyltoluene should be considered as potentially moderately bioaccumulable.
PBT / vPvB conclusion	Not considered to be PBT or vPvB.

7. Exposure

7.1 Human health

Benzyltoluene is industrially manufactured in a closed process, which minimizes the employee exposure potential. Procedures, controls, collective and personal risk management measures are in place, which limit to the minimum any occupational exposure during the manufacture and the use of the substance.

The primary routes of industrial/professional exposure of benzyltoluene are inhalation and skin contact.

Workers who might accidentally come into contact with the undiluted substance should follow the safety measures recommended in the extended safety data sheet.

Based on the risk assessment, the risk is controlled when activities are carried out under conditions recommended in the extended safety data sheet (chapter 8 and exposure scenario).

7.2 Environment

Benzyltoluene is industrially manufactured in closed systems, minimizing release to the environment. Procedures, controls and risk management measures are in place, which limit to the minimum any environmental exposure.

Release in the air is expected to be limited due to the physico-chemical properties (low volatility) and control systems in place at the production and use sites. Moreover, release in wastewater is expected to be negligible during manufacture and use as the process operates without water.
However, it should be considered that the substance has a high tendency to adsorb to organic material.

Based on the risk assessment, the use of benzyltoluene is safe under conditions recommended in the extended safety data sheet (chapter 8 and exposure scenario).

8. Risk Management recommendations

Human health measures		
Organizational	A basic standard of occupational hygiene is recommended; Ensure operatives are well informed of the hazards and trained to minimise exposures	
Protection	**Eye/Face protection:**	Safety glasses
	Skin protection:	Combination with delayed penetration
	Hand protection:	PVC gloves (suitable gloves tested to EN374)
	Respiratory protection:	In case of high concentration or prolonged activity, wear a suitable mask.
Engineering controls	Provide appropriate exhaust ventilation at places where dust is formed. Ensure that eyewash stations and safety showers are close to workstation locations. Provide self-contained breathing apparatus nearby.	
Environment protective measures		
Do not allow contact with soil, surface or ground water. Prevent leaks and prevent soil/water pollution caused by leaks. Wash water should not be released to the environment but collected and disposed of in accordance with all relevant management regulations. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.		

9. Regulatory Information / Classification and Labelling

9.1 Regulatory Information

This substance has been registered under:

- EU Regulation EC 1907/2006 (REACH)

9.2 Classification and labelling

Under GHS substances are classified according to their physical, health, and environmental hazards. The hazards are communicated via specific labels and the eSDS. GHS attempts to standardize hazard communication so that the intended audience (workers, consumers, transport workers, and emergency responders) can better understand the hazards of the chemicals in use. Substances registered for REACH are classified according CLP (EC) 1272/2008, implementation of the GHS in the European Union.

Classification	
According to REGULATION (EC) no 1272/2008: – Skin irritation ; Category 2; Cause Skin irritation. – Aspiration hazard ; Category 1 ; May be fatal if swallowed and enters airways – Chronic aquatic toxicity; Category 4; May cause long lasting harmful effects to aquatic life	
Pictogram	
– GHS07: Exclamation mark	
– GHS08: Health hazard	
Hazard statement	
– H315: Causes skin irritation – H304: May be fatal if swallowed and enters airways – H413: May cause long lasting harmful effects to aquatic life.	

10. Contact Information within Company

For further information on this substance or product safety summary in general, please contact:

– ICCA portal where the GPS Safety Summary is posted:
http://www.icca-chem.org/en/Home/ICCA-initiatives/global-product-strategy/

11. Date of Issues / Revision

– Date of issue: 2013/02/10

– Date of revision:

12. Disclaimer

The information contained in this paper is intended as advice only and whilst the information is provided in utmost good faith and has been based on the best information currently available, is to be relied upon at the user's own risk.

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