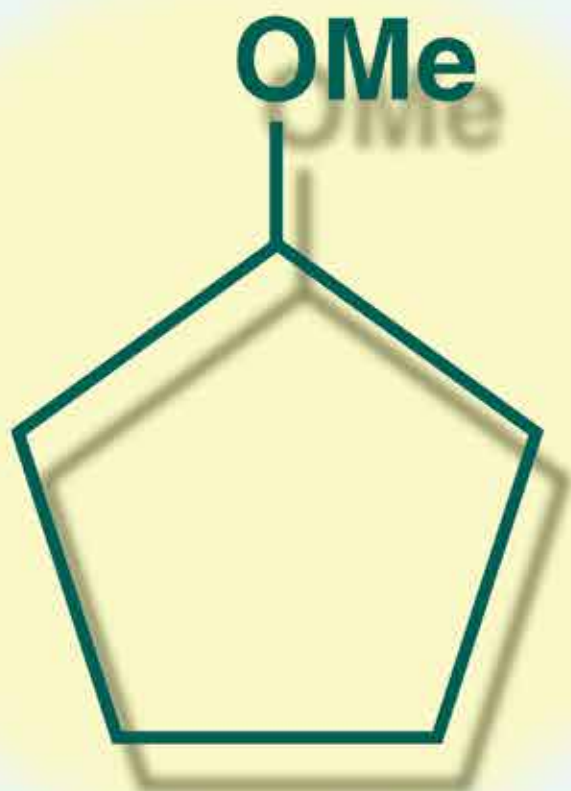


Novel hydrophobic ether solvent

Cyclopentyl methyl ether

CPME



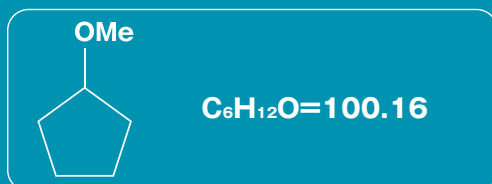
ZEON CORPORATION

Novel hydrophobic ether solvent

Cyclopentyl methyl ether

CPME

Cyclopentyl methyl ether (CPME) is a totally new hydrophobic ether solvent, which was established out of Zeon's unique synthetic technology and C5 raw materials. Unlike other common ether solvents, CPME has unique excellent properties and is widely applicable as a replacement for Tetrahydrofuran (THF), Methyl Tert-Butyl Ether (MTBE), Dioxane and other existing ether solvents.



CAS	5614-37-9
TSCA	Approved
EC Number	445-090-6
Japan	3-4548

Benefits

● HIGH HYDROPHOBICITY

Easy separation and recovery from water, reducing emissions and wastewater

Wide applicability as a reaction, extraction and crystallization solvent, giving simple and One-pot syntheses

● WIDE LIQUIDITY RANGE

Wide applications from lower to higher temperature, accelerating reaction rate

● LOW HEAT OF VAPORIZATION

Saving energy for distillation and recovery

● LOW PEROXIDE FORMATION

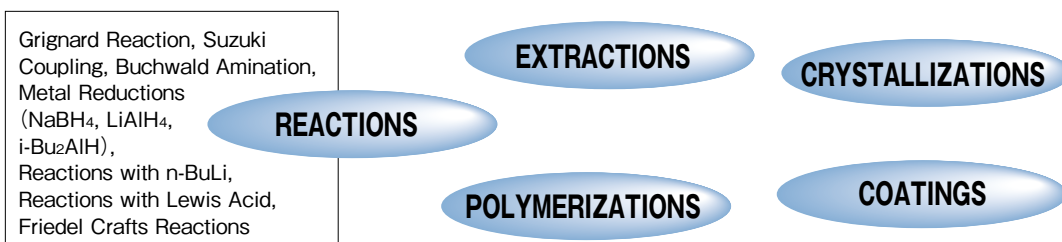
Low exothermic decomposition energy of the peroxide

● NARROW EXPLOSION AREA

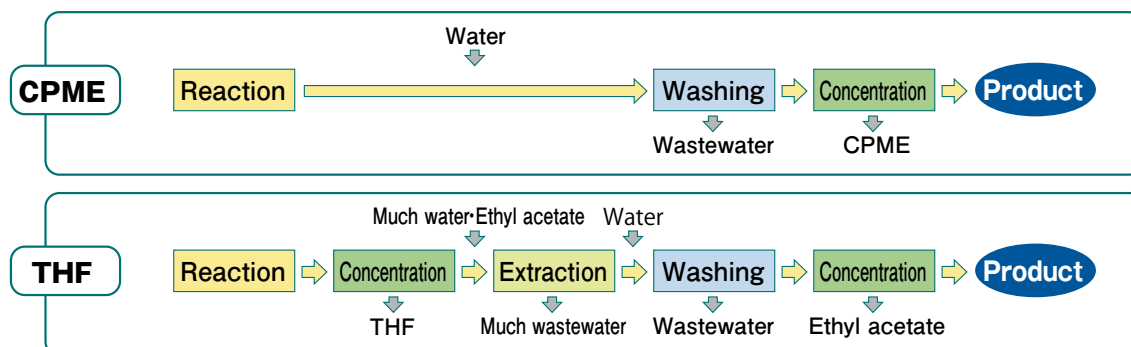
● STABLE TO ACIDS AND BASES

● EASY DRYING

Applications



Organic Processes with CPME vs. THF



Physical Properties

	CPME	MeTHF	THF	Diethyl ether	Dioxane	MTBE	
Relative density	0.86	0.85 ^{*d}	0.89 ^{*a}	0.71 ^{*b}	1.03 ^{*a}	0.70 ^{*a}	
Vapor specific gravity (air=1)	3.45	2.97 ^{*d}	2.5 ^{*a}	2.6 ^{*a}	3.0 ^{*a}	3.0 ^{*a}	
Boiling point [°C]	106	80.2 ^{*d}	66 ^{*a}	35 ^{*a}	101 ^{*a}	55 ^{*a}	
Melting point [°C]	<-140	-136 ^{*d}	-108.5 ^{*a}	-116 ^{*a}	12 ^{*a}	-109 ^{*a}	
Viscosity (20°C) [cP]	0.57	0.46 (25°C) ^{*d}	0.55 ^{*b}	0.24 ^{*b}	1.31 ^{*b}		
Surface tension (20°C) [mN/m]	25.17		26.4 ^{*b}	17.3 ^{*b}	36.9 ^{*b}		
Heat of vaporization (boiling point) [kcal/kg]	69.2	87.1 ^{*d}	98.1 ^{*b}	86.1 ^{*b}	98.6 ^{*b}		
Specific heat (20°C) [kcal/kg · k]	0.435		0.469 ^{*b}	0.584 ^{*c}	0.41 ^{*b}		
Dielectric constant (25°C)	4.76	6.97 ^{*d}	7.58 ^{*b}	4.20 ^{*b}	2.24 ^{*b}		
Azeotropic temperature with water [°C]	83	71 ^{*d}	64 ^{*c}	34 ^{*b}	88 ^{*b}		
Azeotropic composition (Solvent / Water, wt%)	83.7/16.3	89.4/10.6 ^{*d}	94.0/6.0 ^{*c}	98.7/1.3 ^{*b}	81.6/18.4 ^{*b}		
Solubility in water (23°C) [g/100g]	1.1	14 (20°C) ^{*d}	∞ ^{*a}	6.9 (20°C) ^{*a}	∞ ^{*a}	4.2 ^{*a}	
Solubility of water in solvent (23°C) [g/100g]	0.3	4 (20°C) ^{*d}	∞ ^{*b}	1.2 ^{*b}	∞ ^{*b}		
Flash point [°C]	-1	-11 ^{*d}	-14.5 ^{*a}	-45 ^{*a}	12 ^{*a}	-28 ^{*a}	
Auto Ignition temperature [°C]	180	270 ^{*e}	321 ^{*a}	160-180 ^{*a}	180 ^{*a}	375 ^{*a}	
Explosion range [vol%]	Lower limit	1.1	1.5 ^{*e}	2 ^{*a}	1.7 ^{*a}	2 ^{*a}	1.6 ^{*a}
		Upper limit	9.9	8.9 ^{*e}	11.8 ^{*a}	48 ^{*a}	22 ^{*a}

ref ;

*a ; International Chemical Safety Cards (ICSC)

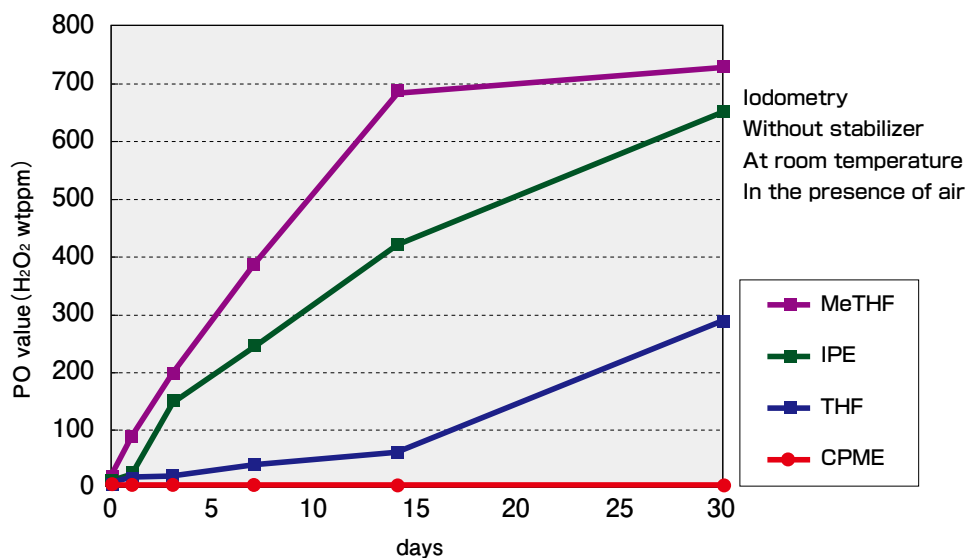
*b ; 溶剤ハンドブック、講談社 (1989) (Youzai hand book, Kodansha Ltd. , 1989)

*c ; 溶剤ポケットブック、オーム社 (2001) (Youzai pocket book, Ohmsha, Ltd. , 2001)

*d ; Org. Process Res. Dev., 2007, 11 (1), pp 156-159

*e ; Penn A Kem, Metyhtetrahydrofran, MSDS Date: 10/1/2010

Peroxide Formation of Ether Solvents



※The product is stabilized with approximate 50 ppm of BHT

Product Specifications

Purity (GC)	99.90 % min
Water	100 ppm max
Color (Hazen No)	10 max
Peroxide	50 wtppm max

Packaging

170kg Drum, 16kg Can

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- The information contained herein is believed to be reliable, but no representations, guarantees or warranties of any kind are made as to its accuracy, suitability for particular applications or results to be obtained.
- Please read the Material Safety Data Sheet (MSDS) carefully prior to handling.
- This product was developed for the applications in this brochure. In case of other applications, please handle under your confirmation of safety for the applications, or please talk to Zeon Corporation beforehand.

ZEON CORPORATION Specialty Chemicals Division

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Jun. 2018
0618005(SE CS)
Printed in Japan
187.05-117-0018