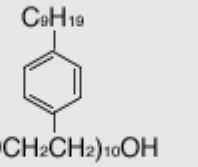
APE ELISA Kit

- The monoclonal antibody binds exclusively with and does not cross-react with other surfactants or compounds of similar structure.
- The detection range is between 0.02mg/L and 1.0mg/L. A simple concentration protocol based on solid phase extraction is available to determine much lower concentration.
- With ease of handling, the total time for measurement is only 2.5 hours.
- The kit, a 96-well microplate format, enables simultaneous measurement of multiple samples at more reasonable cost.

APE

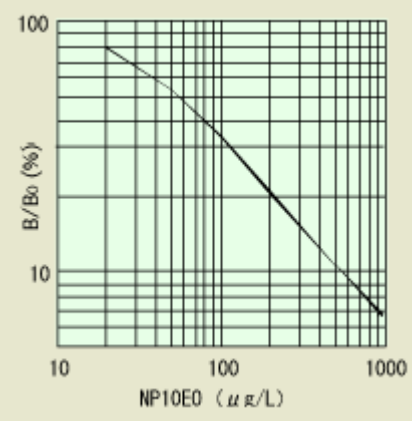
APE is an abbreviation for **A**lkyl**p**henol **E**thoxylate, also called polyoxyethylene alkylphenyl ether.
APE belongs to nonionic surfactant and is used mainly for industrial detergent or emulsifier. Ethylene oxide chains in APE are subject to microbial decomposition, generating toxic and hydrophobic biodegraded compounds.
APE has recently been pointed out as a precursor of endocrine disrupting chemicals.
Octylphenol ethoxylate(N=8) and nonylphenol ethoxylate(n=9) are the representative APEs.

Chemical Structure



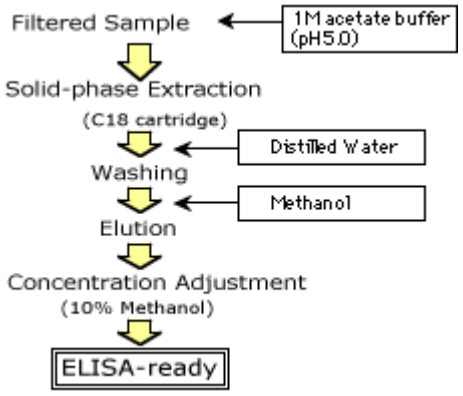
R: C_9H_{19} Nonylphenol (NP)
R: C_8H_{17} Octylphenol(OP)

APE Standard Curve



Samples containing APE within the dynamic range (0.02mg/L- 1.0mg/L) can be directly applied to assay after filtration.
Samples with APE content below the range must be concentrated with solid phase extraction prior to the ensuing session.
Coefficient of variation(CV) is generally under 10% throughout the dynamic range.

Pretreatment (Simplified Solid Phase Extraction)



With this concentration protocol, APE is measurable around the order of parts per trillion, or ng/mL.
Pour sample liquid through a C18 solid-phase cartridge and elute APE with methanol for concentration.
This protocol assures the simultaneous extraction of AE, another POE type nonionic surfactant, and removal of substances that may obstruct APE binding.
Reconstitute the elute in 10% methanol aqueous solution after evaporation for the ELISA assay.

- The specific procedure may vary in sample quality.

Cross-Reactivity Pattern

Compound	% reactivity
Nonionic surfactants	
NPE(Nonylphenol ethoxylates)	
NP10EO (Ave. EO chain length 10)	100
NP7.5EO (Ave. EO chain length 7.5)	100
NP5EO (Ave. EO chain length 5)	80
NP2EO (Ave. EO chain length 2)	40
NP1EO (Nonylphenol)	20
OPE(Octhylphenol ethoxylates)	
OP10EO	230
AE (Alkyl ethoxylates)	<0.2
Anionic surfactants	
LAS (Linear alkylbenzene sulfonate)	<0.2
SOAP (Sodium laurate)	<0.2
SDS (Sodium dodecyl sulfate)	<0.2
AES (Alkylether sulfate)	<0.2
Phenol	<0.2
PEG (Polyethylene glycol)	<0.2

The monoclonal antibody has a high specificity to APE with various polyethoxylic chain length (n=1-22) and doesn't cross-react with other surfactants or compounds of similar structure.

Kit Format

Kit Format		Comment
Microplate	1 plate (96 wells) & reagents	Needs a microplate reader(450nm) For multiple and simultaneous measurement
Tube	20 tubes & reagents	Needs 1 mL cuvette and a spectrophotometer(450nm) For limited number of samples