## Capabilities comparison of *ALTEF* and Multi-Layer Foil gas sampling bags Based on commonly sampled chemical compounds

## **Sulfur Compounds**

Compound	Recommended sampling bag material		
	ALTEF	Multi-Layer Foil	
n-Butyl mercaptan			
tert-Butyl mercaptan			
Carbon disulfide <sup>†</sup>			
Carbonyl sulfide			
Diethyl disulfide			
Diethyl sulfide <sup>†</sup>			
Dimethyl disulfide			
Dimethyl sulfide <sup>†</sup>			
2,5-Dimethylthiophene			
Ethyl mercaptan <sup>†</sup>			
Ethyl methyl sulfide <sup>†</sup>			
2-Ethylthiophene			
Hydrogen Sulfide			
Isobutyl mercaptan <sup>†</sup>			
Isopropyl mercaptan <sup>†</sup>			
3-Methylthiophene			
Methyl mercaptan <sup>†</sup>			
n-Propyl mercaptan <sup>†</sup>			
Tetrahydrothiophene			
Thiophene <sup>†</sup>			

## Color Code:

Red: Not suitable Dark Green: Recommended

Light Green: Suitable when used as recommended

- † ALTEF bags can be used to sample these sulfur compounds if sample is analyzed within 24 hours.
- †† Multi-Layer Foil bags can be used to sample most VOCs but are not recommended for collecting low ppm to high ppb VOCs due to background levels from bag materials.

ALTEF bags are recommended for most VOCs, if analyzed within 48 hours, and for many sulfur compounds, if analyzed within 24 hours.

Multi-Layer Foil bags are recommended for Methane ( $CH_4$ ), Hydrogen Sulfide ( $H_2S$ ), Carbon Monoxide (CO), and Carbon Dioxide ( $CO_2$ ), if analyzed within 48 hours.

## **VOCs**

Recommended sampling bag material   ALTEF   Multi-Layer Foil††	VOCS				
Acetone Acetonitrile Acrylonitrile Allyl chloride Benzene Bromoethane Butyl Acetate Carbon tetrachloride Carbon dioxide Carbon monoxide 1,2-Dichloroethane Dichloropropane Ethyl acetate Ethylene Heptane Hexane Isooctane Isopropyl alcohol Methyl ethyl ketone Methyl tert-butyl ether Octane Perchloroethylene Propylene Propylene Propylene 1,1,1-Trichloroethylene Vinylidene chloride	Compound	Recommended sampling bag material			
Acetonitrile Acrylonitrile Allyl chloride Benzene Bromoethane Butyl Acetate Carbon tetrachloride Chloroform Carbon dioxide Carbon monoxide 1,2-Dichloroethane Dichloropropane Ethyl acetate Ethylene Heptane Hexane Isooctane Isopropyl alcohol Methane Methyl ethyl ketone Methyl tert-butyl ether Octane Perchloroethylene Propylene Propylene Propylene Propylene 1,1,1-Trichloroethane Trichloroethylene Vinylidene chloride		ALTEF	Multi-Layer Foil <sup>††</sup>		
Acrylonitrile Allyl chloride Benzene Bromoethane Butyl Acetate Carbon tetrachloride Chloroform Carbon dioxide Carbon monoxide 1,2-Dichloroethane Dichloropropane Ethyl acetate Ethylene Heptane Hexane Isooctane Isopropyl alcohol Methane Methyl ethyl ketone Methyl tetr-butyl ether Octane Perchloroethylene Propylene Propylene 1,1,1-Trichloroethane Trichloroethylene Vinylidene chloride Vinylidene chloride Vinylidene chloride Vinylidene chloride	Acetone				
Allyl chloride Benzene Bromoethane Butyl Acetate Carbon tetrachloride Chloroform Carbon dioxide Carbon monoxide 1,2-Dichloroethane Dichloropropane Ethyl acetate Ethylene Heptane Hexane Isooctane Isopropyl alcohol Methane Methyl ethyl ketone Methyl tert-butyl ether Octane Perchloroethylene Propylene Propylene oxide Tetrahydrofuran Toluene 1,1,1-Trichloroethylene Vinylidene chloride Vinylidene chloride Vinylidene chloride Vinylidene chloride Vinylidene chloride	Acetonitrile				
Benzene Bromoethane Butyl Acetate Carbon tetrachloride Chloroform Carbon dioxide Carbon monoxide 1,2-Dichloroethane Dichloropropane Ethyl acetate Ethylene Heptane Heptane Isooctane Isopropyl alcohol Methane Methyl ethyl ketone Methyl ethyl ketone Methyl tert-butyl ether Octane Perchloroethylene Propylene Propylene oxide Tetrahydrofuran Toluene 1,1,1-Trichloroethane Trichloroethylene Vinylidene chloride Wyityl lene Vinylidene chloride Vinylidene chloride Vinylidene chloride	Acrylonitrile				
Bromoethane Butyl Acetate Carbon tetrachloride Chloroform Carbon dioxide Carbon monoxide 1,2-Dichloroethane Dichloropropane Ethyl acetate Ethylene Heptane Hexane Isooctane Isopropyl alcohol Methane Methyl ethyl ketone Methyl ether Octane Perchloroethylene Propylene Propylene Propylene Titchloroethylene Trichloroethylene Vinylidene chloride	Allyl chloride				
Butyl Acetate Carbon tetrachloride Chloroform Carbon dioxide Carbon monoxide 1,2-Dichloroethane Dichloropropane Ethyl acetate Ethylene Heptane Hexane Isooctane Isopropyl alcohol Methane Methyl ethyl ketone Methylene chloride Methyl tert-butyl ether Octane Perchloroethylene Propylene Propylene Propylene Attrichloroethane Trichloroethylene Trichloroethylene Trichloroethylene Trichloroethylene Trichloroethylene Trichloroethylene Trichloroethylene Vinylidene chloride Vinylidene chloride	Benzene				
Carbon tetrachloride Chloroform Carbon dioxide Carbon monoxide 1,2-Dichloroethane Dichloropropane Ethyl acetate Ethylene Heptane Hexane Isooctane Isopropyl alcohol Methane Methyl ethyl ketone Methylene chloride Methyl tert-butyl ether Octane Perchloroethylene Propylene Propylene Tichloroethylene Trichloroethylene Trichloroethylene Trichloroethylene Vinylidene chloride Vinylidene chloride Vinylidene chloride Vinylidene chloride Vinylidene	Bromoethane				
Chloroform Carbon dioxide Carbon monoxide 1,2-Dichloroethane Dichloropropane Ethyl acetate Ethylene Heptane Hexane Isooctane Isopropyl alcohol Methane Methyl ethyl ketone Methyl ethyl tert-butyl ether Octane Perchloroethylene Propylene Propylene Propylene Toluene 1,1,1-Trichloroethane Trichloroethylene Vinylidene chloride Vinylidene chloride Vinylidene chloride Vinylidene chloride	Butyl Acetate				
Carbon dioxide Carbon monoxide 1,2-Dichloroethane Dichloropropane Ethyl acetate Ethylene Heptane Hexane Isooctane Isopropyl alcohol Methane Methyl ethyl ketone Methyl ethyl tent-butyl ether Octane Perchloroethylene Propylene Propylene Toluene 1,1,1-Trichloroethane Trichloroethylene Vinylidene chloride Vinylidene chloride Vinylidene chloride Vinylidene chloride	Carbon tetrachloride				
Carbon monoxide  1,2-Dichloroethane  Dichloropropane  Ethyl acetate  Ethylene  Heptane  Hexane Isooctane Isopropyl alcohol  Methane  Methyl ethyl ketone  Methyl etnyl ketone  Methyl tert-butyl ether  Octane  Perchloroethylene  Propylene  Propylene oxide  Tetrahydrofuran  Toluene  1,1,1-Trichloroethane  Trichloroethylene  Vinylidene chloride	Chloroform				
1,2-Dichloroethane Dichloropropane Ethyl acetate Ethylene Heptane Heptane Isooctane Isopropyl alcohol Methane Methyl ethyl ketone Methyl ethyl ketone Methyl tert-butyl ether Octane Perchloroethylene Propylene Propylene Toluene 1,1,1-Trichloroethane Trichloroethylene Vinylidene chloride Vinylidene chloride Vinylidene chloride	Carbon dioxide				
Dichloropropane  Ethyl acetate  Ethylene  Heptane  Hexane  Isooctane  Isopropyl alcohol  Methane  Methyl ethyl ketone  Methyl en chloride  Methyl tert-butyl ether  Octane  Perchloroethylene  Propylene  Propylene  Toluene  1,1,1-Trichloroethane  Trichloroethylene  Vinylidene chloride  Vinylidene chloride	Carbon monoxide				
Ethylene  Ethylene  Heptane  Hexane  Isooctane  Isopropyl alcohol  Methane  Methyl ethyl ketone  Methyl ethyl ketone  Methyl tert-butyl ether  Octane  Perchloroethylene  Propylene  Propylene oxide  Tetrahydrofuran  Toluene  1,1,1-Trichloroethane  Trichloroethylene  Vinylidene chloride	1,2-Dichloroethane				
Ethylene Heptane Hexane Isooctane Isopropyl alcohol Methane Methyl ethyl ketone Methyl en chloride Methyl tert-butyl ether Octane Perchloroethylene Propylene Propylene Titrahydrofuran Toluene 1,1,1-Trichloroethylene Vinylidene chloride Vinylidene chloride	Dichloropropane				
Heptane Hexane Isooctane Isopropyl alcohol Methane Methyl ethyl ketone Methyl ethyl ketone Methyl tert-butyl ether Octane Perchloroethylene Propylene Propylene Tetrahydrofuran Toluene 1,1,1-Trichloroethylene Vinylidene chloride	Ethyl acetate				
Hexane Isooctane Isopropyl alcohol Methane Methyl ethyl ketone Methylene chloride Methyl tert-butyl ether Octane Perchloroethylene Propylene Propylene Tetrahydrofuran Toluene 1,1,1-Trichloroethane Trichloroethylene Vinylidene chloride	Ethylene				
Isooctane Isopropyl alcohol Methane Methyl ethyl ketone Methyl en chloride Methyl tert-butyl ether Octane Perchloroethylene Propylene Propylene Tetrahydrofuran Toluene 1,1,1-Trichloroethylene Trichloroethylene Vinylidene chloride	Heptane				
Isopropyl alcohol  Methane  Methyl ethyl ketone  Methylene chloride  Methyl tert-butyl ether  Octane  Perchloroethylene  Propylene  Propylene oxide  Tetrahydrofuran  Toluene  1,1,1-Trichloroethane  Trichloroethylene  Vinylidene chloride	Hexane				
Methane  Methyl ethyl ketone  Methylene chloride  Methyl tert-butyl ether  Octane  Perchloroethylene  Propylene  Propylene oxide  Tetrahydrofuran  Toluene  1,1,1-Trichloroethylene  Trichloroethylene  Vinylidene chloride	Isooctane				
Methyl ethyl ketone  Methylene chloride  Methyl tert-butyl ether  Octane  Perchloroethylene  Propylene  Propylene oxide  Tetrahydrofuran  Toluene  1,1,1-Trichloroethane  Trichloroethylene  Vinylidene chloride	Isopropyl alcohol				
Methylene chloride  Methyl tert-butyl ether  Octane  Perchloroethylene  Propylene  Propylene oxide  Tetrahydrofuran  Toluene  1,1,1-Trichloroethane  Trichloroethylene  Vinylidene chloride	Methane				
Methyl tert-butyl ether  Octane  Perchloroethylene  Propylene  Propylene oxide  Tetrahydrofuran  Toluene  1,1,1-Trichloroethane  Trichloroethylene  Vinylidene chloride	Methyl ethyl ketone				
Octane Perchloroethylene Propylene Propylene oxide Tetrahydrofuran Toluene 1,1,1-Trichloroethane Trichloroethylene Vinylidene chloride	Methylene chloride				
Perchloroethylene Propylene Propylene oxide Tetrahydrofuran Toluene 1,1,1-Trichloroethane Trichloroethylene Vinylidene chloride	Methyl tert-butyl ether				
Propylene Propylene oxide Tetrahydrofuran Toluene 1,1,1-Trichloroethane Trichloroethylene Vinylidene chloride	Octane				
Propylene oxide  Tetrahydrofuran  Toluene  1,1,1-Trichloroethane  Trichloroethylene  Vinylidene chloride	Perchloroethylene				
Tetrahydrofuran  Toluene  1,1,1-Trichloroethane  Trichloroethylene  Vinylidene chloride	Propylene				
Toluene  1,1,1-Trichloroethane  Trichloroethylene  Vinylidene chloride	Propylene oxide				
1,1,1-Trichloroethane  Trichloroethylene  Vinylidene chloride	Tetrahydrofuran				
Trichloroethylene Vinylidene chloride	Toluene				
Vinylidene chloride	1,1,1-Trichloroethane				
	Trichloroethylene				
p-Xylene	Vinylidene chloride				
	p-Xylene				

F:U:BEN:JIP:COMPARISON BY COMPOUND.PS EFFECTIVE 12/8/2010

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