

# KAHN Hygrometers

USERS' BULLETIN NUMBER 3

## USE OF KAHN THIN OXIDE FILM SENSORS IN POTENTIALLY CORROSIVE GASES AND IN SAMPLE GASES CONTAINING CORROSIVE CONTAMINANTS

Some contaminants are permitted in dry gases but not in wet. In these cases a maximum permitted water dewpoint is also given. Where "No limit" is stated, operation is permitted in 100% concentrations of such gases.

	CONTAMINANT	Maximum permitted contaminant level (ppm)	Maximum water dewpoint permitted (°C)	Explosive Limits in Air (%)
C <sub>2</sub> H <sub>2</sub>	Acetylene (Ethylene)	▲	-20°C	
NH <sub>3</sub>	Ammonia	1000 ppm	-20°C	16.0-25.0%
	Aromatic alcohols	No limit	No limit	
C <sub>6</sub> H <sub>6</sub>	Benzene	No limit	No limit	1.4-7.1%
Br <sub>2</sub>	Bromine	No limit	-20°C	
CO <sub>2</sub>	Carbon Dioxide	No limit	No limit	N/A
CO	Carbon Monoxide	No limit	No limit	12.5-76.2%
CS <sub>2</sub>	Carbon Disulphide	No limit	No limit	
CCl <sub>4</sub>	Carbon Tetrachloride	No limit	No limit	N/A
CF <sub>4</sub>	Carbon Tetrafluoride	No limit	-20°C	
Cl <sub>2</sub>	Chlorine	Not permitted		
CCl <sub>2</sub> F <sub>2</sub>	Dichloro-difluoromethane	No limit	-20°C	
C <sub>2</sub> H <sub>6</sub>	Ethane	No limit	No limit	3.0-12.5%
(CH <sub>2</sub> ) <sub>2</sub> O	Ethylene Oxide	Not permitted		
	Exhaust Gases	No limit	No limit	
F <sub>2</sub>	Fluorine	10 ppm	-20°C	
	Freon	No limit	No limit	
HOCH <sub>2</sub> CH <sub>2</sub> OH	Glycol (Ethane-1,2-diol)	No limit	No limit	
HBr	Hydrobromic Acid	Not permitted		
HCl	Hydrochloric Acid	Not permitted		
HF	Hydrofluoric Acid	500 ppm	-20°C	
H <sub>2</sub> O <sub>2</sub>	Hydrogen Peroxide	Not permitted		
H <sub>2</sub> S	Hydrogen Sulphide	No limit†	No limit	4.3-45.5%
Hg	Mercury	Not permitted		
CH <sub>4</sub>	Methane	No limit	No limit	5.0-15.0%

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HCOOH	Methanoic Acid	Not permitted		
CH <sub>3</sub> OH	Methanol	10 ppm*	No limit	
C <sub>4</sub> H <sub>11</sub> O	Methylethyl Glycol	No limit	No limit	
	Natural Gas	No limit	No limit	
O <sub>2</sub>	Oxygen	No limit	No limit	
O <sub>3</sub>	Ozone	Not permitted		
HNO <sub>3</sub>	Nitric Acid	10 ppm	-20°C	
NO <sub>2</sub>	Nitrogen Dioxide	No limit	-20°C	
N <sub>2</sub> O	Nitrous Oxide	No limit	-20°C	
HClO <sub>4</sub>	Perchloric Acid	Not permitted		
	Petroleum	No limit	No limit	
COCl <sub>2</sub>	Phosgene	No limit	-20°C	
C <sub>3</sub> H <sub>8</sub>	Propane	No limit	No limit	2.2-9.5%
NaOH	Sodium Hydroxide	Not permitted		
SO <sub>2</sub>	Sulphur Dioxide	No limit#	No limit	N/A
SF <sub>6</sub>	Sulphur Hexafluoride	No limit	No limit	
SO <sub>3</sub>	Sulphur Trioxide	No limit	-20°C	
H <sub>2</sub> SO <sub>4</sub>	Sulphuric Acid	10 ppm	-20°C	
C <sub>6</sub> H <sub>5</sub> CH <sub>3</sub>	Toluene	No limit	No limit	1.3-6.8%
C <sub>6</sub> H <sub>4</sub> (CH <sub>3</sub> ) <sub>2</sub>	Xylene	No limit	No limit	1.0-6.0%

† Consult with Kahn Instruments for analysis greater than 40 PSIG.

\* Consult with Kahn Instruments for impedance type sensors, recommended concentration limit of methanol <10% of moisture concentration to be measured to ensure negligible interference effects.

# At temperatures exceeding 50°C, the maximum concentration is 50 ppm.

▲ Recommended sensor exchange after 3 months.

Impedance sensors should also be resistant to most organic acids, alcohols, ketones, aldehydes, esters, halogenated hydrocarbons, but will not be resistant to very strong alkalis. If in doubt, please contact Kahn Instruments.

#### CONDENSIBLE HYDROCARBONS

If condensible hydrocarbons (oil mists) are likely, use the Kahn coalescing filter with a 40 micron rating and 1/4" NPTF end connections. It is rated for use to 120 PSIG, and has a clear plastic bowl and a valved drain for removing coalesced liquids.

#### PARTICULATE MATERIAL

If particulate contamination is likely, use the Kahn particulate filter with retention efficiency of 99.99% for 0.6 micron particles. It is rated for use to 120 PSIG, and has clear plastic housing with 1/4" OD male tube end connections for in-line installation.

#### HIGH PRESSURES

Both coalescing and particulate filters are available for use with Kahn hygrometers up to 5000 PSIG. Consult factory for specific application.