



SUBSTANCE LIST

2018

Gas analysis with non-dispersive Infrared detection (NDIR)

substance name	molecular formula	min. Nachweisgrenze - max. Messbereichsendwert		min. Nachweisgrenze - max. Messbereichsendwert	
		mg/m³	g/m³	ppm	ppm
chlorinated hydrocarbons					
ascusol 2- bromopropane	C3H7Br	5	50	1,0	10.000
chloroethylene / vinyl chloride	C2H3Cl	2 5	0,05 125	2,0	50.000
chloromethane	CH3Cl	5	2	2,0	1.000
cis-1,2-dichloroethene	C2H2Cl2	10	40	2,0	10.000
dichloromethane	CH2Cl2	2	40	0,5	11.000
ENSOLV 1-bromopropane	C3H7Br	10	40	2,0	10.000
HFE-71DE mixture of trans-1,2-dichloroethene methyl nonafluoroisobutyl ether methyl nonafluorobutyl ether	mixture	5	40	0,2	1600
tetrachloroethene	C2Cl4	2	40	0,3	6.000
tetrachloromethane	CCL4	2	40	0,8	6.000
trans-1,2-dichloroethene	C2H2Cl2	2	40	1,2	10.000
trichloroethene	C2HCl3	2	40	0,3	7.500
trichloromethane	CHCl3	2	40	1,0	8.000
hot gas					
formaldehyde	CH2O	4	0,2	3	160
methane slack	CH2	5	0,15	8	225
aromatic hydrocarbons					
benzene	C6H6	5	40	1,5	12.000
sum of BTX-aromatic compounds: benzene toluene xylene	C6H6 C7H8 C8H10	5	40	1,5	12.000
1,2-dichlorobenzene	C6H4Cl2	5	50	1,0	8.000
naphthalene	C10H8	7	1	1,0	200
pyridine	C5H5N	10	50	3,0	15.000
styrene	C8H8	5	25	1,0	6.000
toluene	C7H8	5	40	1,5	12.000
m-xylene o-xylene p-xylene	C8H10	5	40	1,5	12.000
alkanes					
isooctane	C8H18	2	50	0,4	10.500
n-butane	C4H10	2	50	0,8	21.000
n-heptane	C7H16	2	50	0,9	12.000
n-hexane	C6H14	2	50	0,6	14.000
n-pentane	C5H12	2	50	0,6	17.000
cyclopentane	C5H10	2	50	0,6	17.000

Gas analysis with non-dispersive Infrareddetection (NDIR)

substance name	molecular formula	min. detection limit - max. full-scale range		min. detection limit - max. full-scale range	
		mg/m³	g/m³	ppm	ppm
other					
phosgene	CCl ₂ O	1	1	0,2	250
ammonia	NH ₃	1	86	1,4	120.000
carbon monoxide	CO	4	12	0,1	10.000
clindry mixture of flourinated and brominated hydrocarbons	-	20	50	-	-
decamethylcyclopentasiloxane (Green Earth)	C ₁₀ H ₃₀ O ₅ Si ₅	1	50	0,1	33.000
dimethyl sulfoxide	C ₂ H ₆ OS	20	50	6,0	15.500
nitrogen monoxide	NO	4	15	3,2	12.000
nitrogen dioxide	NO ₂	4	15	2,1	8.000
nitrous oxide (laughing gas)	N ₂ O	1	11	0,5	6.000
humidity	H ₂ O	100	300	150,0	400.000
1,3-butadiene	C ₄ H ₆	5	0,45	2,2	200
n-butyl acetate	C ₆ H ₁₂ O ₂	2	40	0,4	8.300
ethyl acetate	H ₃ COOC ₂ H ₅	4	3	1,1	850
sulfur dioxide	SO ₂	-	-	2,0	5.000
alcohols / ketones					
acetone	C ₃ H ₆ O	2	40	0,8	17.000
ethanol	C ₂ H ₅ OH	2	40	1,0	21.000
isopropanol	C ₃ H ₇ OH	2	40	0,8	16.000
methanol	CH ₃ OH	2	40	1,5	30.000
narkotic gas					
sevoflurane	C ₄ H ₉ OF ₇	5	50	0,4	6.000
isoflurane	C ₃ H ₂ OClF ₆	1	20	0,2	2.600
halothane	C ₂ HBrClF ₃	4	10	0,5	1.200
enflurane	C ₃ H ₂ ClF ₅ O	3	70	0,4	1.000
desflurane	C ₃ H ₂ OF ₆	1	2	0,2	300

Gas analysis with non-dispersive Infrareddetection (NDIR)

substance name	molecular formula	min. detection limit - max. full-scale range		min. detection limit - max. full-scale range	
		mg/m³	g/m³	Vol.-%	Vol.-%
landfill gases / biogas / composting gases					
methane	CH ₄	-	-	0,01	100
carbon dioxide	CO ₂	-	-	0,01	100

Gas analysis with non-dispersive Infrared detection (NDIR)

substance name	molecular formula	min. detection limit - max. full-scale range		min. detection limit - max. full-scale range	
		mg/m³	g/m³	ppm	ppm
fluorinated hydrocarbons / chlorofluorocarbon					
R11 trichlorofluoromethane	CFCI3	0,5 1,0 2,0	0,1 2,0 40,0	0,1 0,2 0,4	17,5 350 7.000
R12 dichlorodifluoromethane	CCl2F2	0,5 1,0 2,0	0,1 2,0 40,0	0,1 0,2 0,4	19,9 400 8.000
R22 chlorodifluoromethan	CHClF2	2,0	15,0	0,6	4.200
R23 trifluoromethane	CHF3	1,0	20,0	0,4	6.900
R113 1,1,2-trichloro-1,2,2-trifluoroethane	C2Cl3F3	5,0	30,0	1,0	3.800
R114 dichlorotetrafluoroethane	C2Cl2F4	5,0	30,0	1,0	4.200
R123 2,2-dichloro-1,1,1-trifluoroethane	C2HCl2F3	5,0	30,0	1,0	4.700
R124 2-chloro-1,1,1,2-tetrafluoroethane	C2HF4Cl	5,0	30,0	1,0	5.300
R134a tetrafluoroethane	C2H2F4	0,5 1,0 2,0	0,1 2,0 40,0	0,1 0,2 0,4	23,5 500 9.00
R141b 1,1-dichloro-1-fluoroethane	C2H3Cl2F	0,5 1,0 2,0	0,1 2,0 40,0	0,1 0,2 0,4	20,5 400 8.000
R245 1,1,1,3,1-pentafluoropropane	C4H2F5	4,0	20,0	0,7	3.000
sulfur hexafluoroide	SF6	2,0	6,0	0,5	1.000
nitrogen trifluoroide	NF3	7,5	30,0	2,5	10.000
perfluoropentane	C5F12	2,0	15,0	0,2	1.250
decafluoropentane (vertrel)	C5F10	2,0	20,0	0,2	1.900
2,2,2,3-tetrafluoropropanol (TFP)	C3H4F4O	4,0	30,0	0,8	5.500
azeotropic chlorofluorocarbon mixtures					
R401a mixture of R152a 1,1-difluoroethane 15% 124 2-chloro-1,1,2,tetrafluoroethane 33% R22 chlorodifluoromethane 52%	mixture	5	30	1,2	7.300
R401b mixture of R152a 1,1-difluoroethane 13% 124 2-chloro-1,1,2,tetrafluoroethane 27% R22 chlorodifluoromethane 60%	mixture	5	30	1,3	7.400
R402a mixture of R22 chlorodifluoromethane 38% R125 pentafluoroethane 60% R290 propane 2%	mixture	10	30	2,3	6.800
R402b mixture of R22 chlorodifluoromethane 60% R125 pentafluoroethane 38% R290 propane 2%	mixture	10	30	2,5	7.300
R403b mixture of R22 chlorodifluoromethane 56% R218 oktafluoropropane 39% R290 propane 5%	mixture	10	30	2,0	5.800

Gas analysis with non-dispersive Infrared detection (NDIR)

substance name	molecular formula	min. detection limit - max. full-scale range		min. detection limit - max. full-scale range	
		mg/m³	g/m³	ppm	ppm
azeotropic chlorofluorocarbon mixtures					
R404a mixture of R125 pentafluoroethane 44% R134a tetrafluoroethane 4% R143a trifluoroethane 52%	mixture	10	30	2,4	7.200
R407c mixture of R32 difluoromethane 23% R125 pentafluoroethane 25% R134a tetrafluoroethane 52%	mixture	5	30	1,3	7.600
R410a mixture of R32 difluoromethane 50% R125 pentafluoroethane 50%	mixture	10	30	2,8	8.400
R413a mixture of R134a tetrafluoroethane 88% R218 oktafluoropropane 9% R600a isobutane 5%	mixture	5	30	1,1	6.700
R507a mixture of R125 pentafluoroethane 50% R143a tetrafluoroethane 50%	mixture	2	30	0,5	7.500
R508b mixture of R23 trifluoromethane 46% R116 hexafluoroethane 54%	mixture	10	30	2,6	6.800

Gas analysis with thermal conductivity detector (TCD)

substance name	molecular formula	min. detection limit - max. full-scale range		min. detection limit - max. full-scale range	
		mg/m ³	mg/m ³	Vol.-%	Vol.-%
hydrogen					
hydrogen in nitrogen or air	H ₂	-	-	0	100
hydrogen in argon	H ₂	-	-	0	100
hydrogen in helium	H ₂	-	-	20	100
hydrogen in methane	H ₂	-	-	0	100
hydrogen in carbon dioxide	H ₂	-	-	0	100
Helium					
helium in nitrogen or air	He	-	-	0	100
helium in argon	He	-	-	0	100
carbon dioxide					
carbon dioxide in nitrogen or air	CO ₂	-	-	0	100
carbon dioxide in argon	CO ₂	-	-	0	100
carbon monoxide					
carbon monoxide in hydrogen	CO	-	-	0	100
argon					
argon in nitrogen or air	Ar	-	-	0	100
argon in carbon dioxide	Ar	-	-	40	100
argon in oxygen	Ar	-	-	0	100
methane					
methane in nitrogen or air	CH ₄	-	-	0	100
methane in argon	CH ₄	-	-	0	100
oxygen					
oxygen in nitrogen	O ₂	-	-	0	100
oxygen in argon	O ₂	-	-	0	100
nitrogen					
nitrogen in hydrogen	N ₂	-	-	0	100
nitrogen in argon	N ₂	-	-	0	100
nitrogen in carbon dioxide	N ₂	-	-	0	100

Gas analysis with thermal conductivity detector (TCD)

substance name	molecular formula	min. detection limit - max. full-scale range		min. detection limit - max. full-scale range	
		mg/m ³	g/m ³	Vol.-%	Vol.-%
ammonia					
ammonia in hydrogen	NH3	-	-	0	100
ammonia in nitrogen	NH3	-	-	0	100
sulphur hexafluoride					
sulphur hexafluoride in nitrogen or air	SF6	-	-	0	100

Gas analysis with electrochemical sensor

substance name	molecular formula	min. detection limit - max. full-scale range		min. detection limit - max. full-scale range	
		mg/m³	g/m³	ppm	ppm
sulphides					
hydrogen sulphide	H2S	-	-	1,0	2.000
oxides					
carbon monoxide	CO	-	-	0	10.000
sulphur dioxide	SO2	10	5	4	2.000
nitrogen dioxide	NO2	6	0,382	3	200
nitrogen monoxide	NO	40	6,23	30	5.000
other					
ammonia	NH3	-	3,53	0	5.000
arsine	AsH3	-	-	0,03	0,5 1,0
hydrogen chloride (hydrochloric acid)	HCl	-	0,150	0	100
hydrogen cyanide (hydrocyanic acid)	HCN	-	-	0	50 100
diborane	B2H6	0,03	0,00112	0,03	1
phosphane	PH3	56	2,83	40	2.000
ozone	O3	-	0,002 0,009	0	1 5
ethylene oxide	C2H4O	0	0,183	0	100

Gas analysis with electrochemical sensor

substance name	molecular formula	min. detection limit - max. full-scale range		min. detection limit - max. full-scale range	
		Vol.-%	Vol.-%	ppm	ppm
binary gases					
oxygen	O2	0,0005	30	5,0	1.000
hydrogen	H2	0,001	1	10,0	10.000
chlorine	Cl2	0,0001	0,025	1	250

Gas analysis with paramagnetic sensor

substance name	molecular formula	min. detection limit - max. full-scale range		min. detection limit - max. full-scale range	
		mg/m³	g/m³	Vol.-%	Vol.-%
oxygen	O ₂	-	-	0,05	5 25 50 100

Gas analysis with zirconium oxide sensor

substance name	molecular formula	min. detection limit - max. full-scale range		min. detection limit - max. full-scale range	
		mg/m³	g/m³	Vol.-%	Vol.-%
oxygen	O ₂	-	-	0 0,1	25 95

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