



Minimum Requirements to Gas Quality for MAN - NG/Biogas Engines

Parameter	Symbol	Value	Unit	Remarks
Methane number	MZ	> 80		lower methane numbers on request
Calorific value	H _{u,N}	> 5	kWh / Nm ³	
Chlorine content	Cl	< 80	mg / Nm ³ CH ₄	Chlorine as volatile compound
Fluorine content	F	< 40	mg / Nm ³ CH ₄	Fluorine as volatile compound
Total-Fluorine-Chloriner	Σ(Cl,F)	< 80	mg / Nm ³ CH ₄	
Dust content < 5 μm		< 10	mg / Nm ³ CH ₄	
Oil vapour		< 400	mg / Nm ³ CH ₄	no condensation in whole suction part
Volatile organic compounds	VOC	< 25	mg / Nm ³ CH ₄	by higher VOC content consult MAN
Silicon content ^{x1}	Si	< 2	mg / Nm ³ CH ₄	by higher silicon content consult MAN
Sulphur content	S	< 200	mg / Nm ³	
Hydrogen sulphide	H ₂ S	< 150 / < 228	ppm / mg / Nm ³	by higher hydrogen sulphide content consult MAN
Ammonia content	NH ₃	< 40 / < 30	Ppm / mg / Nm ³	
Relative humidity	φ	< 60	%	no condensation in the whole suction part
Temperature gas mixer outlet	T _G	10 < T _G < 30	° C	



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- X1 Silicon may occur in engine oil as a constituent of additives (antifoaming agents). Silicon can, however also get into the engine oil in the form of dust due to inadequate filtering of the air. For this reason the silicon concentration in the gas must always be assessed together with the oil analyses. High silicon concentrations in the engine oil may, depending on whether they occur in organic or inorganic form, lead to increased wear and tear on components. If the engine oil has a high silicon content the content of elements causing wear and tear – iron, chromium and aluminium – must be assessed too.

We generally recommend that the gas be analysed every six months.

If gas composition changes from time to time regular analyses of the gas and the engine oil will be necessary to ensure reliable operation.

If the limits are exceeded the engine must be switched off and MAN Diesel SE, Business Unit High Speed, Dep. HSP must be consulted.

If the engine is kept in operation with inadmissible limits the warranty for the engine will become null and void.

MAN Diesel SE assumes no warranty for deficiencies and/or defects/damage (corrosion, impurities, wear and tear etc.) resulting from the use of gases and substances which were not known and agreed when the contract was concluded.