Schedule of Accreditation

issued by

United Kingdom Accreditation Service

2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

5710

Accredited to ISO 17034:2016

EffecTech Limited

Issue No: 006 **Issue date:** 16 January 2025

Dove House
Dove Fields
Uttoxeter
Staffordshire
ST14 8HU

Contact: Steve Price
Tel: +44 (0)1889 569229
E-Mail: steve.price@effectech.co.uk
Website: www.effectech.co.uk

Reference material production at the above address

DETAIL OF ACCREDITATION

Matrix / Artefact	Property Value(s) / Identity / Characterisation Range		Characterisation Procedure / Technique	Type* (CRM / RM)
SYNTHETIC NATURAL GAS MIXTURES	amount fraction	(% mol/mol)	Production of Certified Reference Materials to in house method PR039 and value assignment by in house method TM001/UT	CRM
	nitrogen	(0.1 to 22)		
	carbon dioxide	(0.05 to 15)		
	methane	(34 to 100)		
	ethane	(0.1 to 35)		
	propane	(0.05 to 15)		
	iso-butane	(0.01 to 2)		
	n-butane	(0.01 to 2)		
	neo-pentane	(0.002 to 0.35)		
	iso-pentane	(0.005 to 0.35)		
	n-pentane	(0.005 to 0.35)		
	n-hexane	(0.001 to 0.35)		
	2-methylpentane	(0.001 to 0.35)		
	3-methylpentane	(0.001 to 0.35)		
	2,2-dimethylbutane	(0.001 to 0.35)		
	benzene	(0.001 to 0.2)		
	cyclohexane	(0.001 to 0.2)		
	n-heptane	(0.001 to 0.2)		
	toluene	(0.001 to 0.1)		
	methylcyclohexane	(0.001 to 0.1)		
	n-octane	(0.0005 to 0.05)		
	n-nonane	(0.0005 to 0.02)		
	n-decane	(0.0005 to 0.005)		
	helium	(0.005 to 0.2)		
	hydrogen	(0.05 to 20)		
	oxygen	(0.05 to 3)		

Matrix / Artefact	Property Value(s) / Identity / Characterisation Range	Characterisation Procedure / Technique	Type* (CRM / RM)
SYNTHETIC NATURAL GAS MIXTURES (cont'd)	amount fraction (% mol/mol) oxygen (0.001 to 22.5)	Production of Certified Reference Materials to in house method PR039 and value assignment by in house method TM026/UT	CRM
	superior calorific value molar basis (kJ.mol^{-1}) mass basis (MJ.kg^{-1}) volume basis (MJ.m^{-3}) inferior calorific value molar basis (kJ.mol^{-1}) mass basis (MJ.kg^{-1}) volume basis (MJ.m^{-3}) relative density density (kg.m^{-3}) superior Wobbe index (MJ.m^{-3}) inferior Wobbe index (MJ.m^{-3}) molar mass (kg.kmol^{-1}) compression factor	Values calculated by **ISO 6976:1995** (including amendment No 1, May 1998) on a *real* or *ideal* gas basis assuming mixture is dry (free from water) Combustion properties can be expressed in units of the Joule (J) or in kilowatt hours (kWh)	CRM
	gross calorific value molar basis (kJ.mol^{-1}) mass basis (MJ.kg^{-1}) volume basis (MJ.m^{-3}) net calorific value molar basis (kJ.mol^{-1}) mass basis (MJ.kg^{-1}) volume basis (MJ.m^{-3}) relative density density (kg.m^{-3}) gross Wobbe index (MJ.m^{-3}) net Wobbe index (MJ.m^{-3}) molar mass (kg.kmol^{-1}) compression factor	Values calculated by **ISO 6976:2016** on a *real* or *ideal* gas basis assuming mixture is dry (free from water) Combustion properties can be expressed in units of the Joule (J) or in kilowatt hours (kWh)	CRM

Matrix / Artefact	Property Value(s) / Identity / Characterisation Range		Characterisation Procedure / Technique	Type* (CRM / RM)
SYNTHETIC NATURAL GAS MIXTURES (cont'd)	gross heating value net heating value relative density compressibility factor		Values calculated by methods given in **GPA 2172-19** (2019) using data tables from **GPA 2145-16**	CRM
	gross heating value net heating value relative density density compressibility factor		Values calculated by methods given in **ASTM D3588-98** (2017) using data tables from **GPA 2145-16**	CRM
SULPHUR GAS MIXTURES	amount fraction	(µmol/mol)	Production of Certified Reference Materials to in house method PR039 and value assignment by in house method TM002/UT	CRM
	hydrogen sulphide	(0.2 to 10)		
	carbonyl sulphide	(0.2 to 10)		
	methanethiol (methyl mercaptan)	(0.2 to 10)		
	ethanethiol (ethyl mercaptan)	(0.2 to 10)		
	dimethyl sulphide	(0.2 to 10)		
	1-propanethiol (n-propyl mercaptan)	(0.2 to 10)		
	2-propanethiol (iso-propyl mercaptan)	(0.2 to 10)		
	ethyl methyl sulphide (methyl ethyl sulphide)	(0.2 to 10)		
	1-butanethiol (n-butyl mercaptan)	(0.2 to 10)		
	2-methyl-2-propanethiol (tert-butyl mercaptan)	(0.2 to 10)		
	2-methyl-1-propanethiol (iso-butyl mercaptan)	(0.2 to 10)		
	1-methyl-1-propanethiol (sec-butyl mercaptan)	(0.2 to 10)		
	diethyl sulphide	(0.2 to 10)		
	n-hexyl mercaptan	(0.2 to 10)		
	tetrahydrothiophene (THT)	(0.2 to 10)		

5710

Accredited to ISO 17034:2016

Schedule of Accreditation

issued by

United Kingdom Accreditation Service

2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

EffecTech Limited

Issue No: 006 **Issue date:** 16 January 2025

Reference material production performed at the main address only

Matrix / Artefact	Property Value(s) / Identity / Characterisation Range	Characterisation Procedure / Technique	Type* (CRM / RM)
BINARY EMISSION GAS MIXTURES	amount fraction (% mol/mol) oxygen (0.5 to 25) in nitrogen methane (0.1 to 5) in nitrogen methane (0.1 to 2.5) in synthetic air	Production of Certified Reference Materials to in house method PR039 and value assignment by in house method TM014	CRM
	amount fraction (µmol/mol) carbon monoxide (10 to 1000) in nitrogen or synthetic air nitric oxide (10 to 600) in nitrogen nitrogen dioxide (5 to 500) in synthetic air sulphur dioxide (10 to 1000) in nitrogen or synthetic air	Production of Certified Reference Materials to in house method PR039 and value assignment by in house method TM014	CRM
BINARY EMISSION GAS MIXTURES	amount fraction (% mol/mol) carbon dioxide (0.1 to 15) in nitrogen or synthetic air	Production of Certified Reference Materials to in house method PR039 and value assignment by in house method TM025	CRM
	amount fraction (µmol/mol) propane (3 to 100 in nitrogen or synthetic air	Production of Certified Reference Materials to in house method PR039 and value assignment by in house method TM025	CRM
	amount fraction (% mol/mol) oxygen (0.001 to 22.5) in nitrogen	Production of Certified Reference Materials to in house method PR039 and value assignment by in house method TM026/UT	CRM

END

*** Type**

CRM = Certified Reference Material(s)
RM = Reference Material(s)

Refer to ISO 17034 for full definitions