



CALIBRATION GASES - EXPERTISE IN GREENHOUSE GASES



# Calibration GASES

Expertise in  
Greenhouse  
GASES



Special Calibration  
Gas Mixtures

High Purity  
Hydrocarbons,  
LNG, CNG, Refrigerants  
from cylinders to ISO tanks for  
international shipping of bulk orders

Pressure  
Regulators

Non-refillable  
cylinders

Accessories  
for oil & gas plants

World-wide export

Pure Gases & Specialty Gases

# About us



## **UmCaGas**

Umwelt Calibration Gas, in cooperation with “Umwelt-Prüfgas-Consulting von Gerhard Steininger”, specialises in the production of standard gas mixtures with up to dozens of different components in a single cylinder, with concentrations in %vol, ppm, ppb, ppt or mg/Nmc.

Our Technical Office has decades of experience in the field and works in accordance with ISO 6142 and 6143, TRG and VDI technical standards for compressed gases and the BAM-Berlin directives.

## **WHY TO CHOOSE UMCAGAS AS YOUR STRATEGIC SUPPLIER**

- guaranteed rapid delivery
- quality and high accuracy
- production of special mixtures in Oil & Gas sector
- gas cylinders for the calibration of every GC-application
- technical study and development of special and custom-made recipes

## **OUR ADDED VALUE**

- you will avoid penalties or malfunctions due to missing calibration bottles
- express production service (on request)
- dependable planning of calibration sessions
- large stock of raw materials, cylinders of every size and valves of the most common connection type
- calibration mixtures in liquid and gas phase
- export assistance
- support in the document management

# Cylinders

UMCAGAS calibration blends are supplied in high pressure **seamless steel** or **light alloy cylinders**, from a minimum geometric volume of 1 litre up to a maximum of 40 /50 litres.

3 different ways to supply gas mixtures:

**RENTAL** of cylinders

**REFILL** of CUSTOMERS' cylinders

**SALE** of NEW cylinders



# Valves

The choice between a BRASS or a STAINLESS STEEL valve depends on the type of gas or gas mixture, taking into account the material compatibility.

## VALVE CONNECTIONS

UMCAGAS can supply a number of valve connections in compliance with a wide range of standards:



STANDARD DIN	STANDARD BS	STANDARD UNI	STANDARD NEN	STANDARD CGA	STANDARD AFNOR	ETC.
GERMANY	UNITED KINGDOM	ITALY	THE NETHERLANDS	THE UNITED STATES	FRANCE	

# Calibration Gas Mixtures

## MAIN FIELDS OF APPLICATION

- Calibration gas mixtures for explosimeters
- Detectors
- Sensors

## GAS MIXTURES FOR LABORATORIES AND GAS CHROMATOGRAPHY GC

Complex multicomponent gas mixtures of extreme precision: Oil & Gas, process gas chromatography, natural gas control, IR analyser and spectrography.

	COMPONENT	NOMINAL VALUE	ANALYTICAL VALUE	ANALYTICAL ACCURACY
1	Hydrogen H <sub>2</sub>	13,5 % mol.	13,6 % mol.	+ / - 2%
2	Argon Ar	25,0 % mol.	25,05 % mol.	+ / - 2%
3	Methane CH <sub>4</sub>	6,0 % mol.	6,02 % mol.	+ / - 2%
4	Ethane C <sub>2</sub> H <sub>6</sub>	6,0 % mol.	6,02 % mol.	+ / - 2%
5	Ethylene C <sub>2</sub> H <sub>4</sub>	3,0 % mol.	2,99 % mol.	+ / - 2%
6	Propane C <sub>3</sub> H <sub>8</sub>	1,0 % mol.	0,98 % mol.	+ / - 2%
7	Propylene C <sub>3</sub> H <sub>6</sub>	3,0 % mol.	2,98 % mol.	+ / - 2%
8	Propadiene C <sub>3</sub> H <sub>4</sub>	0,3 % mol.	0,3 % mol.	+ / - 2%
9	n-Butane C <sub>4</sub> H <sub>10</sub>	4,3 % mol.	4,299 % mol.	+ / - 2%
10	i-Butane C <sub>4</sub> H <sub>10</sub>	4,3 % mol.	4,3 % mol.	+ / - 2%
11	i-Butene C <sub>4</sub> H <sub>8</sub>	2,6 % mol.	2,61 % mol.	+ / - 2%
12	Trans-2-Butene C <sub>4</sub> H <sub>8</sub>	1,6 % mol.	1,599 % mol.	+ / - 2%
13	Cis-2-Butene C <sub>4</sub> H <sub>8</sub>	0,6 % mol.	0,598 % mol.	+ / - 2%
14	1,3-Butadiene C <sub>4</sub> H <sub>6</sub>	0,8 % mol.	0,79 % mol.	+ / - 2%
15	n-Pentane C <sub>5</sub> H <sub>12</sub>	0,25 % mol.	0,255 % mol.	+ / - 2%
16	iso-Pentane C <sub>5</sub> H <sub>12</sub>	0,25 % mol.	0,25 % mol.	+ / - 2%
17	Carbon dioxide CO <sub>2</sub>	2,8 % mol.	2,79 % mol.	+ / - 2%
18	Carbon monoxide CO	3,3 % mol.	3,29 % mol.	+ / - 2%
19	Helium He	4,7 % mol.	4,68 % mol.	+ / - 2%
20	Sulphuric acid H <sub>2</sub> S	0,05 % mol.	0,049 % mol.	+ / - 2%
	Balance: Nitrogen N <sub>2</sub>			

## CEMS - ENVIRONMENTAL ANALYSIS AND EMISSION CONTROL

- Chimney emission analysis
- Environmental analysis of direct emissions
- Calibration gas mixtures for combustion analysers
- EMS

### some examples

8 mg/Nm <sup>3</sup> Ammonia NH <sub>3</sub> Balance: Nitrogen N <sub>2</sub>	15 ppm Nitrogen Dioxide NO <sub>2</sub> Balance: Synthetic air
70 ppm Nitrogen monoxide NO Balance: Nitrogen N <sub>2</sub>	70 ppm Sulphur Dioxide SO <sub>2</sub> 35 ppm Nitrogen monoxide NO
1 % Vol. Oxygen O <sub>2</sub> Balance: Nitrogen N <sub>2</sub>	50 ppm Carbon monoxide CO Balance: Nitrogen N <sub>2</sub>
50 ppm Carbon monoxide CO Balance: Nitrogen N <sub>2</sub>	13 mg/Nm <sup>3</sup> COT Balance: Nitrogen N <sub>2</sub>

## BIOGAS, BURNERS AND BOILERS

Sulphuric compounds, Wobbe index mixtures, calorific power control of burners.

### some examples

48 % Vol. Carbon monoxide CO 10 % Vol. Methane CH <sub>4</sub> 5 % Vol. Carbon dioxide CO <sub>2</sub> Balance: Nitrogen N <sub>2</sub>	150 ppm Hydrogen sulfide H <sub>2</sub> S 885 ppm Hydrogen H <sub>2</sub> 40 % Vol. Carbon dioxide CO <sub>2</sub> Balance: Nitrogen N <sub>2</sub>
50 % Vol. Hydrogen H <sub>2</sub> 26 % Vol. Methane CH <sub>4</sub> Balance: Nitrogen N <sub>2</sub>	80 % Vol. Methane CH <sub>4</sub> 7 % Vol. Propane C <sub>3</sub> H <sub>8</sub> Balance: Nitrogen N <sub>2</sub>

## GREENHOUSE GASES

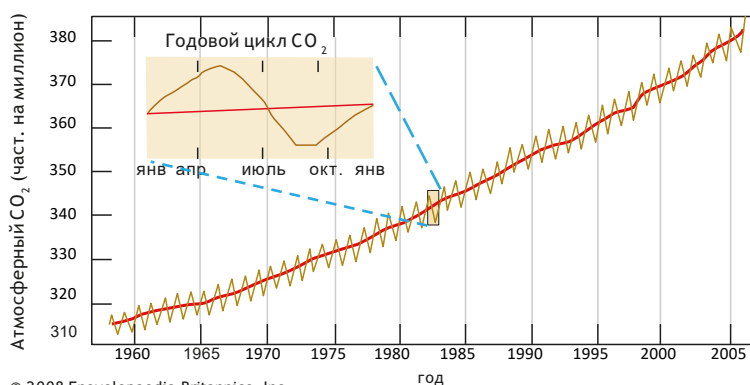
Calibration standards for compliance with international GHG monitoring requirements:

CO<sub>2</sub> + CH<sub>4</sub> + N<sub>2</sub>O + SF<sub>6</sub> in Synthetic Air or in balance Natural Air (Ar + N<sub>2</sub> + O<sub>2</sub>), calibrated against international standards.



Components	Range
Carbon dioxide (CO <sub>2</sub> )	360-420 ppm
Methane (CH <sub>4</sub> )	1700-2000 ppb
Nitrous nitrogen(N <sub>2</sub> O)	320-335 ppb
Sulfur hexafluoride(SF <sub>6</sub> )	5-9 ppt
Carbon monoxide (CO)	30-300 ppb
Argon (Ar)	
Oxygen (O <sub>2</sub> )	
Nitrogen (N <sub>2</sub> )	

## THE KEELING CURVE



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## SOLVENT MIXTURES

Calibration mixtures of liquid compounds/solvents supplied in gas phase (in a specific range of temperatures). If high concentrations (vol.%) are requested it will be necessary to use 20 or 40 litre-cylinders and to reduce the charging pressure (approx. lower than 30/40 bar) to avoid condensation of the components with a lower vapour pressure.

The following are some examples of gas mixtures, including multi-component gas mixtures in one cylinder:

## ODOURISERS

THT Tetrahydrothiophene / TBM Tert-Butyl Mercaptan in Methane CH<sub>4</sub> or in Nitrogen N<sub>2</sub>

### Some examples:

21 mg/Nm<sup>3</sup> THT in CH<sub>4</sub>

15 mg/ Nm<sup>3</sup> TBM in N<sub>2</sub>

10 mg/Smc TBM + 32 mg/Smc THT - balance: CH<sub>4</sub> high purity

## PURE GASES

High-purity gases for laboratories in cylinders of different volumes with the right pressure regulator. Different EU valve connections on request.

### Some examples:

Nitrogen N <sub>2</sub>	grade: 5.0 (99.999) – 6.0 (99,9999%)	Synthetic Air	suitable for gaschromatography
Helium H <sub>e</sub>	grade: 5.0 (99.999) – 6.0 (99,9999%)	Carbon dioxide CO <sub>2</sub>	4.8 (99,998%)
Hydrogen H <sub>2</sub>	grade: 5.0 (99.999)	Propane C <sub>3</sub> H <sub>8</sub>	2.5 (99,5) – 4.0 (99,99%)
Oxygen O <sub>2</sub>	grade: 3.5 (99.95) – 5.0 (99,9999%)	Argon Ar	5.0 (99,999)
Methane CH <sub>4</sub>	grade: 2.5 (99.5) – 4.5 (99,995%)	and soon...	



# Pressure Reducers

Our cylinders are equipped with suitable pressure reducers (or controls) compatible with the chemical and physical properties of the mixture and capable of guaranteeing dependable, precise, constant working pressure. Our reducers meet all the requirements on the market, guaranteeing a top-quality product suitable for calibrating testing instruments and for other laboratory applications.





It is essential to choose the right pressure control device:



- › Guarantee of dependable analytic results and optimal performance;
- › Protection of your instrumentation from sudden pressure changes passing through the reducer into expensive items of equipment!

## CYLINDER PRESSURE REDUCERS

DMF LINE	PHL LINE	TC LINE	
MOD. 320 AND 322	MOD. 721, 722, 741 AND 742	MOD. 801	Mod. 409
SINGLE or DOUBLE STAGE BRASS or STAINLESS STEEL P.in: 230 bar P.Out: 0,2 – 3; 0,5 – 6; 1 – 10,5; 1 – 14 bar	SINGLE or DOUBLE STAGE BRASS or STAINLESS STEEL P.in: 300 bar P.Out: 0 – 3,5; 0 – 8,5; 0 – 17; 0 – 35 bar	SINGLE STAGE with Flow-meter BRASS and plexiglass P.in: 220 bar P.Out: 1,5 bar (pre-set), Flow: 0+3 NI/min	SINGLE STAGE BRASS P.in: 300 bar P.Out: 0 – 1,5; 0 – 4; 0 – 10 bar
			




## CYLINDER PRESSURE REDUCERS FOR HIGH PURITY GASES / MIXTURES




DMF LINE	VUETH LINE	RVA LINE	SCOTT LINE
MOD. 500 AND 502	MOD. 10114 - 10120	MOD. 10062	Mod. Q1-14B/14C/14D
SINGLE or DOUBLE STAGE BRASS or STAINLESS STEEL P.in: 230 bar P.Out: 0,2 – 3; 0,5 – 6; 1 – 10,5; 1 – 14 bar	SINGLE STAGE BRASS P.in: 300 bar P.Out: 0 – 3,5; 0 – 8,5; 0 – 17; 0 – 35 bar	SINGLE STAGE with Flow-meter BRASS and plexiglass P.in: 220 bar P.Out: 1,5 bar (pre-set), Flow: 0+3 NI/min	DOUBLE STAGE BRASS P.in: 300 bar P.Out: 0 – 1,5; 0 – 4; 0 – 10 bar
			

CS LINE	CD LINE	D LINE
MOD. 82 AND 83	MOD. 82 AND 83	MOD. 32-0.1
SINGLE STAGE BRASS or STAINLESS STEEL P.in: 200/300 bar P.Out: 0 – 1,5; 0 – 4; 0 – 10; 0 – 16; 0 – 35; 0 – 50 bar	DOUBLE STAGE BRASS or STAINLESS STEEL P.in: 200/300 bar P.Out: 0 – 1,5; 0 – 4; 0 – 10; 0 – 16; 0 – 35 bar	DOUBLE STAGE BRASS or STAINLESS STEEL P.in: 200 bar P.Out: 0,01 – 0,1 bar
		



## GAS SUPPLY MANIFOLDS, CHANGEOVERS AND LINE REGULATORS

DMB LINE	DMS LINE	LINE REGULATORS
MOD. 320 AND 322	MOD. 320 AND 322	DML LINE
SEMI-AUTOMATIC SWITCHOVER SINGLE or DOUBLE STAGE BRASS or STAINLESS STEEL P.in: 230 bar P.Out: 14 bar (pre-set) * on request, available model 500 and 502	SINGLE or DOUBLE STAGE BRASS or STAINLESS STEEL P.in: 300 bar P.Out: 1 – 14 bar * on request, available model 500 and 502	Mod. DML320 SINGLE or DOUBLE STAGE BRASS or STAINLESS STEEL P.in: 230 bar P.Out: 0,2 – 3; 0,5 – 6; 1 – 14 bar * on request, available model 500 and 502
		

CMC LINE	CC LINE	
MOD. 82 AND 83	MOD. 482 AND 483	MOD. 582 AND 583
SINGLE or DOUBLE STAGE BRASS or STAINLESS STEEL P.in: 230/300 bar P.Out: 0 – 10; 0 – 16; 0 – 35; 0 – 50 bar	SEMI-AUTOMATIC SWITCH OVER SINGLE STAGE BRASS or STAINLESS STEEL P.in: 230/300 bar P.Out: 10; 16; 35 bar	SEMI-AUTOMATIC SWITCH OVER DOUBLE STAGE BRASS or STAINLESS STEEL P.in: 230/300 bar P.Out: 1,5; 5,5; 10 bar
		



# Non-Refillable Cylinders

PRODUCT	GEOM. VOLUME	FILL PRESSURE	GAS CONTENT
12 L. TEST CAN:	1.00L.	12 bar	12Ltr
34 L. TEST CAN:	0.95L.	35 bar	34 Ltr
58 L. TEST CAN:	1.65L.	35 bar	58 Ltr
110 L. TEST CAN:	1.65L.	68 bar	110Ltr

Do not hesitate to request our complete e-catalogue.

## AVAILABILITY OF TEST CAN GAS MIXTURES

<b>NON reactive gases</b>	Acetylene C <sub>2</sub> H <sub>2</sub> Argon Ar Nitrogen N <sub>2</sub> Benzene C <sub>6</sub> H <sub>6</sub> Butane C <sub>4</sub> H <sub>10</sub> i-Butane i-C <sub>4</sub> H <sub>10</sub> i-Butylene C <sub>4</sub> H <sub>8</sub> Carbon dioxide CO <sub>2</sub> Helium He Heptane C <sub>7</sub> H <sub>16</sub> Sulfur hexafluoride SF <sub>6</sub> Hexane C <sub>6</sub> H <sub>14</sub>	Ethane C <sub>2</sub> H <sub>6</sub> Ethylene C <sub>2</sub> H <sub>4</sub> Hydrogen H <sub>2</sub> Methane CH <sub>4</sub> Carbon monoxide CO Oxygen O <sub>2</sub> Pentane C <sub>5</sub> H <sub>12</sub> Propane C <sub>3</sub> H <sub>8</sub> Propylene C <sub>3</sub> H <sub>6</sub> Nitrous oxide N <sub>2</sub> O Toluene C <sub>7</sub> H <sub>8</sub>
<b>Reactive gases</b>	Ammonia NH <sub>3</sub> Sulphurdioxide SO <sub>2</sub> Ethanol C <sub>2</sub> H <sub>6</sub> O	Hydrogen sulphide H <sub>2</sub> S Nitric oxide NO
<b>Highly-reactive gases Category 1</b>	Nitrogen dioxide NO <sub>2</sub>	Vinyl chloride (VCM) C <sub>2</sub> H <sub>3</sub> Cl
<b>Highly-reactive gases Category 2</b>	Chlorine Cl <sub>2</sub> Hydrogen chloride HCl Hydrogen cyanide HCN	Phosphine PH <sub>3</sub> Ethylene oxide C <sub>2</sub> H <sub>4</sub> O Silane SiH <sub>4</sub>

## GAS RELEASE EQUIPMENT AND FLOW REGULATORS FOR TEST CANS

- › On/off valve in brass (not chrome plated), max pressure 20 bar.
- › S-Flow valve with floating sphere and adjustable flow meter (ex. 0,5 - 1,5 l/min), without manometer - model Mini-Flo in BRASS STEEL (not chrome plated).
- › Valve with floating sphere and adjustable flow meter (ex. 0,2 - 1,0 l/min), with manometer - model S-Flow in NICKEL PLATED BRASS.
- › Single stage regulator with fixed set flow (ex. 0,5 l/min, 1,0 l/min or 2,5 l/min), with manometer, hose fitting - model HPC - available in chrome plated brass for non-reactive gases or in stainless steel for reactive/unstable gas mixtures.



# High Purity And Specialty Gases

High Purity Hydrocarbons, LNG, CNG, Refrigerants from cylinders to ISO tanks for international shipping of bulk orders.

## High Pressure Packaging



<b>Ethane</b>	99.0% to 99.5%
<b>Ethylene</b>	99.0% to 99.95%
<b>Methane</b>	99.0% to 99.999%
<b>Carbon Monoxide</b>	99.0% to 99.99% +
<b>CNG</b>	94.0% +
<b>LNG</b>	94.0% +
<b>HCL Anhydrous</b>	99.0% to 99.999%



## Low Pressure Packaging



<b>Propane</b>	99.0% to 99.999%
<b>Propylene</b>	99.0% to 99.99%
<b>Pentene-1</b>	99.0% to 99.999%
<b>Iso-Pentane</b>	99.0% to 99.5%
<b>n-Pentane</b>	94.0% to 99.5%
<b>n-Butane</b>	94.0% to 99.99%
<b>Butene-1</b>	99.0% to 99.99%
<b>Isobutane</b>	99.0% to 99.999%
<b>Isobutylene</b>	99.0% to 99.9%
<b>R-290 (UL Classified)</b>	99.5% +
<b>R-600a (UL Classified)</b>	99.5% +
<b>R-600</b>	99.5% +
<b>Cis-2-Butene</b>	99.0% to 99.5%
<b>trans-2-Butene</b>	99.0% to 99.5%
<b>Mixed-2- Butenes</b>	99.0% to 99.5%
<b>Other Gases on Request</b>	



Cylinders



Packs



ISO Containers



Tube Trailers



Cylinders



Bulk Tanks



Tankers



21 DS  
CGA 600



#11 Threaded  
Valve



221 ds  
CGA 165



# World Wide References

UMCAGAS cylinders  
can reach you wherever you need!

Some foreign Countries to which our products have been shipped:

- > ALGERIA
- > AZERBAIJAN
- > CONGO
- > INDIA
- > IRAN
- > IRAQ
- > KAZAKHSTAN
- > KUWAIT
- > LIBYA
- > MALAYSIA
- > MALTA
- > MEXICO
- > OMAN
- > PAKISTAN
- > RUSSIA
- > SAUDI ARABIA
- > SINGAPORE
- > THAILAND
- > TUNISIA
- > U.A.E.

...and many European Countries.

UMCAGAS, your reliable, dynamic  
and experienced partner

# Some of the projects employing UMCAGAS cylinders

YOUR RELIABLE PARTNER FOR BIG PROJECTS ALL OVER THE WORLD...

## ...for Oil & Gas



Rumalia Oilfield  
IRAQ



Yamal Pipeline  
RUSSIA



Turaif Refinery  
SAUDI ARABIA



Sumgayit Refinery  
AZERBAIJAN



Mellitah Oil & Gas  
LIBYA



Gas and Power  
plants Refineries  
ITALY



Temparossa Project  
ITALY



Sarroch Refinery  
ITALY



Val d'Agri Oil Center  
ITALY



Priolo Gargallo  
& Augusta  
MUSANDAM – OMAN



Gas storage plants  
ITALY



Offshore  
ITALY



Offshore platforms  
Mediterranean Sea  
ITALY

## ...for Power Generation Plants



Pembroke  
Power Plant  
UNITED KINGDOM



West Damietta  
Power Station  
EGYPT



Thermal Power  
Plant  
ALMEIRA – SPAIN



Thermoelectric  
Power Plant  
VADO LIGURE  
ITALY



Biomass Plant  
SANT'AGATA DI  
PUGLIA  
ITALY

# ...for Chemical Industries



Chemical & Fertilizer Industry  
**EGYPT**



LDPE Plant  
**BRATISLAVA**  
**SLOVAK REPUBLIC**



Sulphur-based chemicals Production Plant  
**ITALY**

# ...and more!



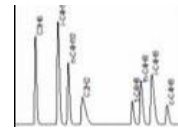
Leading manufacturer of Automation Solutions  
**ROMANIA**



Steel Plants  
**POLAND**



Major manufacturers of safety products  
**GERMANY & ITALY**

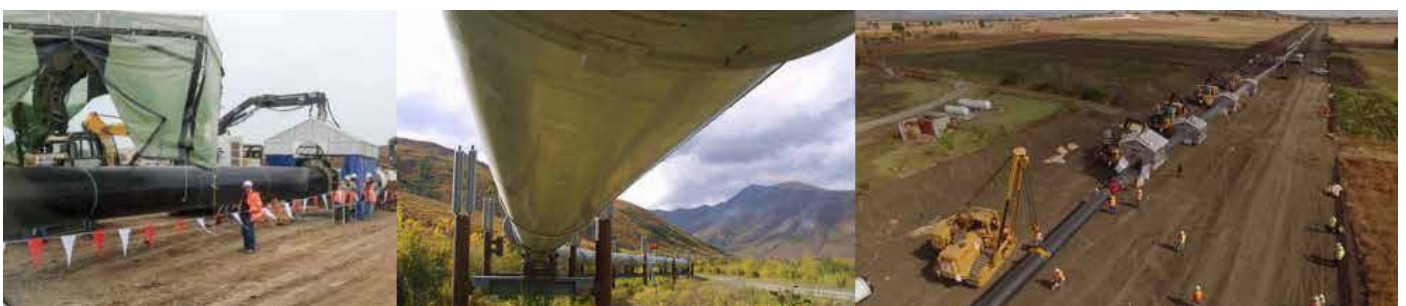


Major manufacturers of gas analysers  
**GERMANY & ITALY**



Leading Company in Safety Technology  
**ITALY**

# TAP project



# Examples of special productions

## GERMAN VALVE DIN477 no. 14

Proj. 2016 \_ Libya

COMPONENT	NOMINAL VALUE
Hydrogen H <sub>2</sub>	24,3 % mol.
Argon Ar	3,3 % mol.
Methane CH <sub>4</sub>	5,0 % mol.
Ethane C <sub>2</sub> H <sub>6</sub>	5,0 % mol.
Ethylene C <sub>2</sub> H <sub>4</sub>	1,7 % mol.
Propane C <sub>3</sub> H <sub>8</sub>	9,0 % mol.
Propylene C <sub>3</sub> H <sub>6</sub>	2,0 % mol.
Propadiene C <sub>3</sub> H <sub>4</sub>	0,3 % mol.
n-Butane C <sub>4</sub> H <sub>10</sub>	4,3 % mol.
i-Butane C <sub>4</sub> H <sub>10</sub>	4,3 % mol.
1-Butene C <sub>4</sub> H <sub>8</sub>	1,7 % mol.
iso-Butene C <sub>4</sub> H <sub>8</sub>	1,7 % mol.
trans 2-Butene C <sub>4</sub> H <sub>8</sub>	1,7 % mol.
cis 2-Butene C <sub>4</sub> H <sub>8</sub>	1,7 % mol.
1,3-Butadiene C <sub>4</sub> H <sub>6</sub>	0,3 % mol.
n-Pentane C <sub>5</sub> H <sub>12</sub>	0,3 % mol.
i-Pentane C <sub>5</sub> H <sub>12</sub>	0,3 % mol.
Carbon dioxide CO <sub>2</sub>	1,7 % mol.
Carbon monoxide CO	4,3 % mol.
Helium He	3,3 % mol.
Hydrogen sulfide H <sub>2</sub> S	1,7 % mol.
Balance: Nitrogen N <sub>2</sub>	

## BRITISH VALVE BS341 no. 4

Proj. 2017 \_ Turkey

COMPONENTS	NOMINAL VALUE
t-Butyl Mercaptan TBM	0,2 ppm
Isopropyl mercaptan C <sub>3</sub> H <sub>8</sub> S	0,2 ppm
Dimethyl sulphide C <sub>2</sub> H <sub>6</sub> S	0,3 ppm
sec-Butyl mercaptan C <sub>4</sub> H <sub>10</sub> S	0,2 ppm
Ethyl mercaptan C <sub>2</sub> H <sub>6</sub> S	0,8 ppm
Carbonyl Sulphide COS	1,0 ppm
Methyl mercaptan CH <sub>4</sub> S	3,0 ppm
Hydrogen sulphide H <sub>2</sub> S	3,0 ppm
Propane C <sub>3</sub> H <sub>8</sub>	2,0 ppm
Ethane C <sub>2</sub> H <sub>6</sub>	5,0 % vol.
<b>Balance: Methane CH<sub>4</sub></b>	

## ITALIAN VALVE UNI 11144-1H

Proj. 2018 \_ Priolo Gargallo (ITALY)

COMPONENTS	NOMINAL VALUE	ANALYTICAL VALUE	ACCURACY
n-Pentane C <sub>5</sub> H <sub>12</sub>	1.500 ppm Mol.	1490,8 ppm Mol.	2%
Hexane C <sub>6</sub> H <sub>14</sub>	1.000 ppm Mol.	984,8 ppm Mol.	2%
n-Butane C <sub>4</sub> H <sub>10</sub>	7.000 ppm Mol.	6850,1 ppm Mol.	2%
Propane C <sub>3</sub> H <sub>8</sub>	4 %-Mol.	3,95 %-Mol.	1%
Propylene C <sub>3</sub> H <sub>6</sub>	3 %-Mol.	2,98 %-Mol.	1%
Acetylene C <sub>2</sub> H <sub>2</sub>	1.200 ppm Mol.	1184,7 ppm Mol.	2%
Carbon dioxide CO <sub>2</sub>	500 ppm Mol.	499,8 ppm Mol.	2%
Propadiene C <sub>3</sub> H <sub>4</sub>	2.000 ppm Mol.	2015,5 ppm Mol.	2%
Propyne (methylacetylene) C <sub>3</sub> H <sub>4</sub>	1.000 ppm Mol.	981,0 ppm Mol.	2%
Carbon monoxide CO	100 ppm Mol.	99,8 ppm Mol.	2%
Ethane C <sub>2</sub> H <sub>6</sub>	10 %-Mol.	9,98 %-Mol.	1%
Ethylene C <sub>2</sub> H <sub>4</sub>	15 %-Mol.	15,40 %-Mol.	1%
Nitrogen N <sub>2</sub>	10 %-Mol.	9,94 %-Mol.	1%
Methane CH <sub>4</sub>	15 %-Mol.	14,86 %-Mol.	1%
Balance: Hydrogen H <sub>2</sub>			

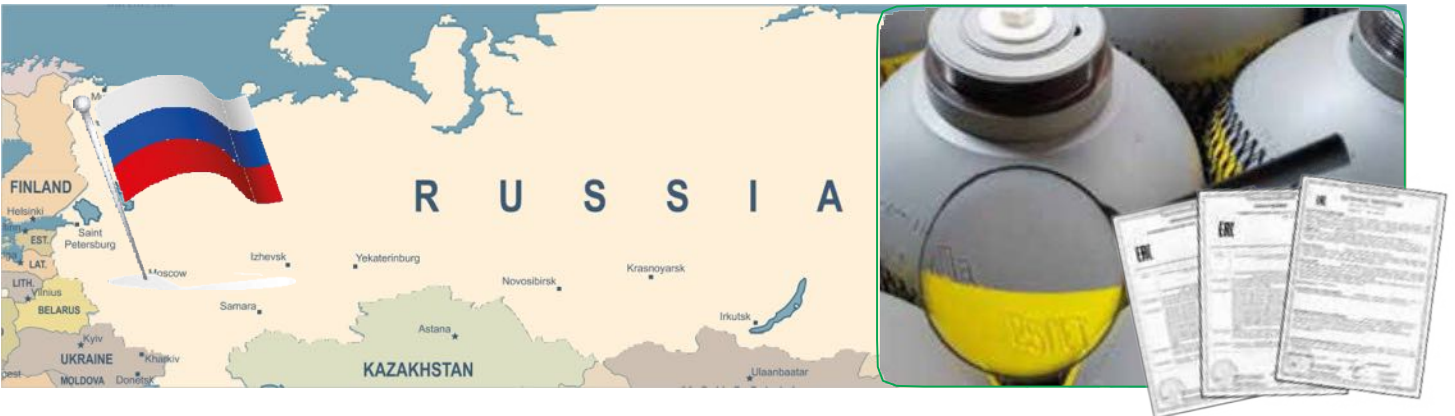
# Export & Documentation

We can assist you with your export-projects with T-PED, DNV, TR-CU, DOT,... certified cylinders.

## TR-CU

Cylinders suitable for the Russian market and related documents.

- Technical Passport for Russia, Belarus, Kazakhstan



## ARH DOSSIER

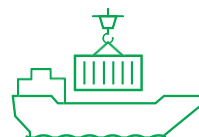
Risam Gas can provide you with the documents needed for the Algerian and Tunisian market.

- Dossier ARH for Algeria (witnessed test INCLUDED)
- Dossier for Tunisia (witnessed test INCLUDED)



## PRESSURE REGULATORS AND VALVES FOR EXPORT

We can supply Valves and Pressure Regulators in compliance with the major international standards: UNI, DIN, BS, CGA, AFNOR, NEN,...





# Packaging & Transport

UMCAGAS can support you with suitable packaging for dangerous goods and with our logistic partners. We can provide solutions with all means of transport.

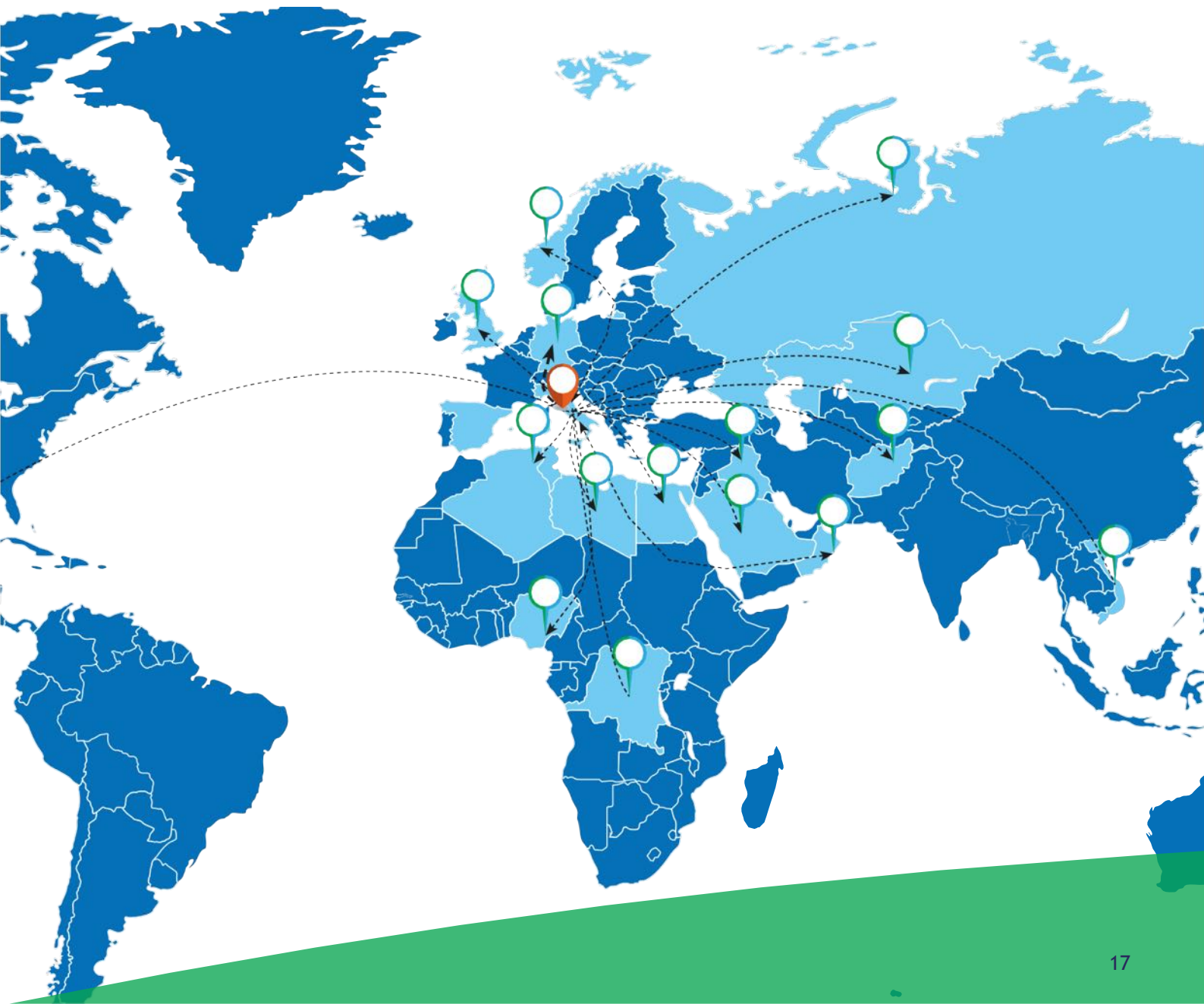
Proj. 2018 \_ Azerbaijan



Proj. 2018 \_ Malaysia



Proj. 2016/2017/2018 \_ Yamal



# Accessories For Oil & Gas



**ATEX**

MADE IN GERMANY



## GAS BOTTLE HEATERS

### ATEX gas bottle heaters series WEXHB

Gas bottle heaters are used for protection against frost, temperature maintenance and process heating in the temperature range from -40 °C to +50/60 °C

### Features

- > Robust, flexible and dissipative construction for indoor and outdoor use
- > Standard and customer-oriented solutions; the heating jacket is customised according to the required gas bottle dimensions
- > System-approved with an EC-type examination certificate according to RL 2014/34/EU appendix III
- > Documentation for the explosion protection document according to §6 para. 9 of the German Ordinance on Hazardous Materials (GefStoffV)

### Explosion protection marking

Marking

Gas II 2G Ex e mb IIC T3 Gb

Dust II 2D Ex mb IIC T120 °C Db

-40 °C ≤ Ta ≤ +60 °C (ambient temperature)

EC-type examination certificate

TPS 11 ATEX 29587 011 X

*Note: Please consider the technical rules*

*TRG310/ TRBS3145/ TRGS745 Maximum operating temperature 50 °C (cylinder temperature)*

## EXCLUSIVE DISTRIBUTOR OF GERMAN MADE EXPANSION JOINTS AND HOSES



Certified quality Made in Germany

Among Europe's leading manufacturers, the product range covers a wide spectrum, from simple standard expansion joints through to individually realized special expansion joints.



Certificates of approval such as DVGW, Germanischer Lloyd, Lloyds Register, Bureau Veritas, RMRS and DNV confirm the high quality of our products, likewise the TÜV HP0 welding licence, the certification from DGRL Category III Module H and certifications for ISO 9001, ISO 3834-2 and ASME-U-Designator and EAC.

Our expansion joints and hoses are used worldwide today in over 50 countries.

## NON-SPARKLING TOOLS

Designed and manufactured according to the standard requirements indicated by the Certifying Authority. They are specifically for safe work in environments with a potential risk of explosion, where flammable liquids or gases are used, or for applications that require the use of perfectly non-magnetic tools, with high resistance against corrosion. These tools avoid the possibility of generating any sparks created while using the tool: their special composition in Copper-Beryllium (Cu-Be) or aluminium-copper (Al-Cu) guarantees the perfect combination between non-sparking characteristics and mechanical resistance.

### Applications:

petrochemical refineries, oil tankers, chemical industries, gas and fuel stations and depots, powder storage, mines, distilleries, flour and grain silos, aerospace industries, navy, pharmaceutical industries, and magnetic applications.

They are also particularly useful in work in contact with fresh or salt water, in alkaline solutions and some acid solutions, thanks to their particular resistance to oxidation and corrosion.



### Technical specifications of the construction material for non-sparking tools:

#### Copper-Beryllium (Cu-Be)

**Composition:** Be 1,5- 2,3% - Co+Ni min.0,2% - Co+Ni+Fe max. 1,2% - Cu to compensation

**Hardness:** 283 - 365 Brinell

**Resistance to traction:** 1117 - 1326 N/mm<sup>2</sup>

**Yield point:** 840 - 880 N/mm<sup>2</sup>

**Magnetism:** 0

**Expansion coefficient:** 0,000012%

**Specific weight:** 8,60

**Extensibility:** 1,0%

**Resistivity:** 8 - 6



#### Aluminium-Copper (Al-Cu)

**Composition:** Al 10% - 12% - Ni 4,6% - Fe+Mn < 5,8% - Cu to compensation

**Hardness:** 229 ÷ 291 Brinell

**Resistance to traction:** 782 - 989 N/mm<sup>2</sup>

**Yield point:** 450 ÷ 550 N/mm<sup>2</sup>

**Magnetism:** 1,2

**Expansion coefficient:** 0,000015%

**Specific weight:** 8,10

**Extensibility:** 5,0%

**Resistivity:** 8 - 12





# Chemicals in the ATMOSPHERE



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