

# The SIAD Group

SIAD is an international chemical group active for almost 100 years in the businesses of **Industrial Gases**, **Engineering**, **Healthcare**, **LPG** and **Natural Gas**;

in addition it offers energy solutions and environmental management services.



# Values



Research, Technology and Innovation



Experience, Tradition and Strength



Geographical and sector diversification



Commitment to Quality, Safety and the Environment



Reliability, Professionalism and Expertise



Attention to social and cultural issues

# Sections

#### **Industrial Gases**

SIAD - Production and distribution of industrial, specialty, food-grade and medical gases. Present in 16 European countries with manufacturing and trading companies. Tecnoservizi Ambientali - Services aimed at achieving environmental sustainability through the recovery and/or the disposal of hazardous and non-hazardous industrial waste.

#### Healthcare

Medigas Italia / Magaldi Life - Innovative services and products for home and hospital care.

## **Engineering**

SIAD Macchine Impianti - Design, production and installation of cryogenic air separation units, cryogenic nitrogen generators, natural gas liquefaction systems, reciprocating compressors for process gas and air, plus instrument air packages.

ESA - Systems, solutions and components for industrial combustion.

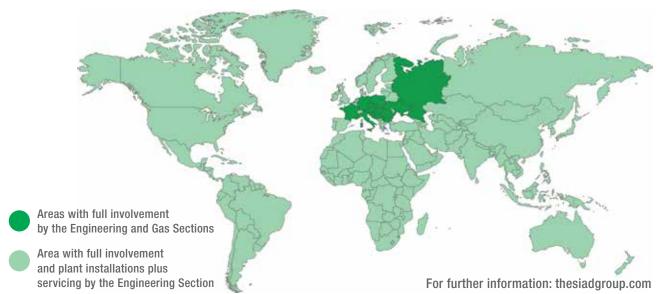
Tecno Project Industriale - Systems for the production, recovery, extraction, liquefaction and vaporization of carbon dioxide and biogas upgrading systems. Biogas upgrading plants to purify biogas produced by anaerobic digestion from organic waste, processing scrap and by-products, effluent from livestock farming, crop wastes and other biomass and plants for polishing and liquefaction of biomethane, bioLNG and bioCO<sub>2</sub>.

Pentatec - Gas analysis systems.

#### **LPG and Natural Gas**

Istrabenz plini Group - Production and sale of liquefied petroleum gas and methane gas for civil and industrial use.

# Worldwide presence





Dedicated to the production and analysis of pure gases, gas mixtures and applied research on new technological aspects



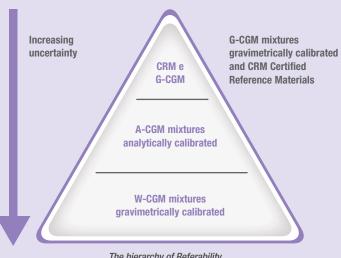
Estabilished in the 1930s, the SIAD Specialty Gases Laboratory is dedicated to the production and analysis of pure and extra pure gases and gas mixtures, as well as to applied research in the service of innovative technologies.

The Laboratory has a leading-edge filling system and a wide and diversified range of instruments and tools; it relies on a team of highly skilled technicians with long-standing experience in the field of specialty gases.

#### TYPE OF ACCREDITATIONS

Thanks to these accreditations, SIAD can produce:

- gas mixtures calibrated gravimetrically according to the standard ISO 6142-1 or according to an accredited method internally developed, these are the Accredia traceable mixture G-CGM and W-CGM, both analytically verified
- gas mixtures calibrated analytically by comparison with other traceable mixtures of the Center in accordance with standard ISO 6143, these are the traceable mixtures A-CGM
- certified reference materials (C-CRM) produced gravimetrically according to ISO 6142-1 with guarantee stated on the certificate.



The hierarchy of Referability

# LAT Calibration Center No. 143 and Reference Material Producer RMP No. 143

The LAT Center is accredited according to the ISO/IEC 17025 standard for gravimetric and analytical calibration of gas mixtures and for the calibration of equipment for analytical measurement.

The RMP Producer is accredited according to the standard ISO 17034 for the production of Certified Reference Materials.



LAT Nº 143



RMP N° 143

The Centre produces traceable metrological mixtures that can be used in the environmental field, for monitoring gas emissions of vehicle or for the natural gas analysis.

# **Traceability**

Property of a measurement result whereby the result can be related to a reference through a documented unbroken chain of calibrations, each contributing to the measurement uncertainty.





# FIELDS OF APPLICATION







**FORENSICS** 

AUTOMOTIVE





**ENVIRONMENT** 



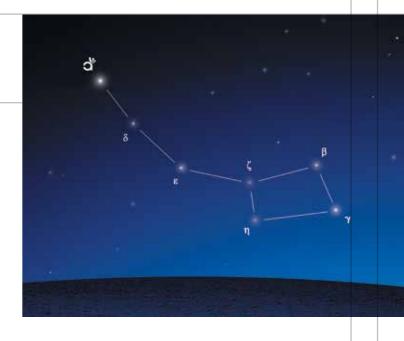
# Perfecta, the SIAD brand dedicated to metrology

Perfecta is the SIAD Group's brand of internationally traceable calibration gas mixtures, calibrated or produced in accordance with ISO 17025 or ISO 17034.

Our mixtures are produced to strict standards of safety, accuracy and quality using technologically advanced preparation systems.

SIAD laboratory researchers can use up to 400 different compounds to prepare gas mixtures having the individual components present even at very low concentrations. These preparations are used as metrological references to calibrate measurement instruments and, therefore, ensure measurements traceable to international standards.

We produce gas mixtures with extremely low concentrations for environmental analysis, for use in the automotive industry, in the petrochemical and energy field, for calibrating instruments detecting gaseous pollutants, and for medical field analysis.



# perfectà









The Gases of Life District is the new SIAD research center dedicated to the study and development of innovative gas mixtures and their automated and robotic

Gases and their mixtures are intended for use in different sectors: environment, health, pharmaceutical, agri-food, automotive and much more.



## Agri-food and medical fields

The gases present in the atmosphere have significant effects on the biology of living organisms, including humans, animals, and plants.

# **Environmental Biology** and Chemistry Laboratory

The Laboratory brings together 35 years of experience in wastewater treatment and remediation of contaminated sites. The Laboratory develops national and international research projects on biological and chemical processes for the removal of pollutants and on process optimization. In the food sector, it develops projects for the sustainability of the agricultural sector with innovative techniques for plant growth and to reduce food waste.

# **Automated Production**

A significant part of the District is dedicated to automated production. The robotic plant autonomously manages the process of filling gas mixtures into cylinders: the mixtures can consist of many components and can be prepared with compositions tailored to the user's request.

Watch the video





# **RESEARCH FIELDS**







**MEDICAL** 



**CHEMICAL** 



**FOOD AND BEVERAGE** 



**AUTOMOTIVE** 



# Laboratory for the preparation and development of metrological mixtures

Researchers at the SIAD laboratory can use 400 different compounds to prepare gas mixtures with individual components, even with very low concentrations: each gas mixture can contain up to 135 components.

These preparations are also used as metrological references to calibrate measuring instruments and therefore guarantee a measurement traceable to international systems.

The goal of the Gases of Life research is to understand how these gases interact with plant or animal cells with the aim of achieving beneficial effects.





# SIAD is a leading supplier of ultra-high purity gas mixtures, used in environmental, industrial, medical and scientific applications

SIAD's mixtures are prepared from high-purity components and produced by Research and Specialty Gases Laboratories according to strict standards of safety, precision and quality, using technologically advanced mixing systems. Thanks to a complex and diverse range of instruments and with the aid of skilled and competent staff, SIAD Laboratories are able to prepare gas mixtures which may be comprised of from 2 to over 70 components.

TYPE	DESCRIPTION	USE
Ø	Mixtures for analytical measurement equipment	Calibration or testing of analytical measurement equipment that requires binding measurement performance
NOL	Laser mixtures	Laser machining (assist and laser gases)
ICAI	"G" mixtures for burner calibration	Calibration and testing of burner operation
APPLICATIONS	Biological mixtures	Cell culture treatment in controlled atmosphere
OTHER /	Mixtures for the electronics industry	Semiconductor doping, etching of surfaces, epitaxial growth of silicon ion implantation
FOR OTH	Kill gas (mixtures based on carbon monoxide)	Reduction reactions in steel-making, separation and purification of metals (nickel), microelectronics
	Mixtures for detecting leaks	Detection of gas leaks in systems and piping
MIXTURES	Mixtures for diving	Breathing underwater and in hyperbaric chambers
X	Mixtures for lighting	Lamps
	Mixtures for the metal industry	Degassing aluminium, thermal treatments

The main types of gas mixtures SIAD offers and their respective areas of application

# **LIGHTCYL - DISPOSABLE GAS CYLINDERS**

The LIGHTCYL line can be used wherever the requirement for ease of handling and simplicity in use is essential. It is, above all, particularly well suited for use by the safety sector, for environmental monitoring and in laboratories. Gas mixtures, which are flammable, oxidising, atmospheric gases, and a wide range of pure gases are available.



	COMPONENT CONCENTRATION							
CLASS OF CERTIFICATION	0,1 ppmvol	1 ppmvol	10 ppmvol	100 ppmvol	1000 ppmvol	1 %vol	10 %vol	50 %vol
HIGH PRECISION CERTIFIED GAS MIXTURE	20%	10%	10%	5%	5%	3%	2%	1%
CERTIFIED GAS MIXTURE	40%	20%	20%	10%	10%	10%	5%	2%

Preparation tolerance

	COMPONENT CONCENTRATION							
CLASS OF CERTIFICATION	0,1 ppmvol	1 ppmvol	10 ppmvol	100 ppmvol	1000 ppmvol	1 %vol	10 %vol	50 %vol
HIGH PRECISION CERTIFIED GAS MIXTURE	6%	4%	2%	1%	1%	1%	0,5%	0,3%
CERTIFIED GAS MIXTURE	10%	6%	5%	2%	2%	2%	1%	0,5%

Certification uncertainty

# Classification

# **Certified gas mixtures**

These mixtures are prepared using gravimetric and volumetric techniques and then controlled by comparison with primary reference standards. These preparations and analysis are based on international standards ISO 6142 and ISO 6143.

# **High Precision gas mixtures**

These mixtures are used for exceptionally accurate calibrations and applications on which extremely strict tolerances are required.

The use of extremely pure gases and accurate preparation and analysis methods allow to reach a certification accuracy higher than sample gas mixtures.

# Mixtures in liquid phase

These mixtures are certified either using gravimetric data, analytical preparation data or a combination of both, according to the nature and the concentration of the matrix.

Major applications are in process control in petrochemical plants and refineries.



The mixtures can be prepared in accordance with SIAD internal procedures or agreed with the customer.

Mixture Composition	% Carbon dioxide (2.5)	% Ethylene oxide (2.5)
SIADTOX 10	90%	10%
SIADTOX 15	85%	15%
SIADTOX 20	80%	20%
SIADTOX 90	10%	90%

Valve connection: UNI 11144-4 40l cylinders

The sterilant mixtures produced by SIAD are available with different percentages of carbon dioxide and ethylene oxide (both grade 2.5), as shown in Table



# Sterilant gas mixtures

SIAD supplies mixtures based on **ethylene oxide** used for sterilizing disposable medical devices. Thanks to its biocidal properties, it is ideal for being used in thermolabile products that cannot be sterilized by using heat or steam. In addition, it has the advantage of having little impact on materials: it does not alter their appearance and, in the case of plastics, it preserves their transparency.

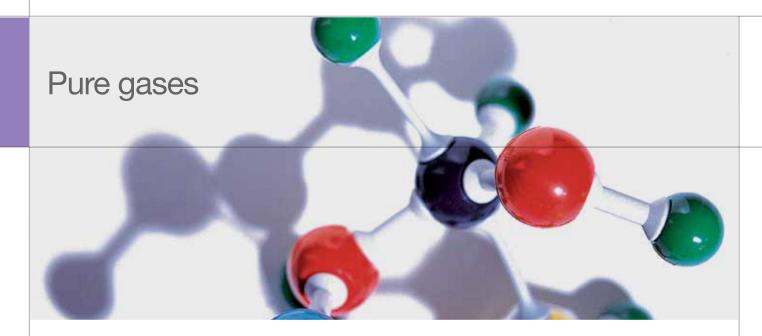
Ethylene oxide is currently used by companies in the bio-medical sector which produce sterile disposable plastic equipment for haemodialysis, heart surgery, autotransfusion, plasmapheresis, blood filtration, dressing and so on.

This gas is usually marketed mixed with carbon dioxide. Depending on the products to be treated, the sterilization cycles may have some differences related to the operating parameters:

- temperature
- duration of treatment
- concentration of gas and pressure in autoclave
- humidity.

As a result, starting with the specific requirements of the treatment, it is possible to choose between different types of mixture.

SIAD is the only manufacturer of gas mixtures based on ethylene oxide in Italy and ranks among the leading suppliers in Europe.



SIAD produces and supplies pure and high-pure gases for analysis and research laboratories and for industrial applications requiring high quality specialty gases with constant physical and chemical characteristics during the time

SIAD has been producing and selling pure gases since the early 30's, when the laboratory specialized in these products were founded.

SIAD's pure gases are intended for laboratories and industries: production and analysis methods used for their preparation ensure the maximum repeatability of results during use.

SIAD offers a wide range of pure gases to suit many applications. All pure gases are classified by grade, in order to be certain the purity level suits the customer's requirements.

SIAD high-purity gases are suitable for any application where impurity control is important, for example: process controls in chemical industry, heat treatments, chromatography or semiconductors manufacturing.

# Liquid nitrogen

The cryogenic gas that is used most widely by hospitals and industrial plants for research and analysis purposes is liquid nitrogen, an inert molecule with a boiling point at normal atmospheric pressure of -196 °C.

Here are some of the common uses of liquid nitrogen:

- cryobiology
- dermatology
- preservation of tissues, semen, plasma, etc.
- NMR
- laboratory instrumentation (electronic microscopes, gas chromatography, etc.)
- · research.

SIAD's pure gases have a purity of up to 99.9999% (grade 6.0) and their chemical and physical characteristics remain constant over time.

# **FIELDS OF APPLICATION**

In both gaseous and liquid form, helium finds many applications

GAS	FORMULA	MAX PURITY
HELIUM	He	6.0



CRYOGENICS



WELDING



SEMICONDUCTORS



GAS CHROMATOGRAPHY



BREATHING MIXTURES



AEROSPACE INDUSTRY

# Liquid and gaseous helium

Helium is the second lightest gaseous element, after hydrogen; it is characterised by being the smallest molecule and the chemical element with the lowest boiling point.

In particular, liquid helium is used to obtain temperatures very close to absolute zero in many high-tech industry, research and medical sector applications, such as superconductivity, particle acceleration particle acceleration, MRI diagnostics and NMR analysis.

# Supply mode

Helium supply mode and range of available services:



TUBE TRAILER

CYLINDERS





**CYLINDER PACKS** 

DEWAR



# **FIELDS OF APPLICATION**

The rare gases find many applications









(V)
MEDICAL



GAS	FORMULA	MAX PURITY	
AMMONIA	NH <sub>3</sub>	5.5	
CHLORINE	CI	4.0	
ETHYLENE	$C_2H_4$	3.5	
HYDROGEN CHLORIDE	HCI	4.5	
NITROUS OXIDE	N <sub>2</sub> O	5.5	
SULFUR HEXAFLUORIDE	SF <sub>6</sub>	4.3	

Other process gases

# Process gases

# Rare gases

The rare gases, which includes krypton, neon and xenon, are present in the atmosphere in very low concentrations.

**SIAD** is one of the very few European producers of carbon monoxide, SIAD can also supply this gas in ultra-pure form.

# Carbon monoxide (CO)

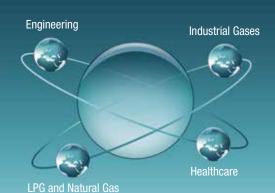
Carbon monoxide, CO, is a valuable chemical intermediate, used widely in the production of numerous chemical compounds, such as, for instance, polyurethanes and polycarbonates.

Carbon monoxide is also used:

- · by steel mills, as a reducing agent
- in metal separation and purification processes, especially for nickel
- in microelectronics applications (requiring higher purity levels)
- in environmental monitoring and process control mixtures.



# The SIAD Group



#### **Industrial Gases**

SIAD S.p.A. Via San Bernardino, 92 IT-24126 BERGAMO Tel. +39 035 328111 www.siad.com - siad@siad.eu GPS: N 45 40.57 - E 9 39.44

GPS: N 45 4U.57 - E 9 353-74
AUSTRIA
SIAD Austria GmbH
Bergwerkstrasse 5
AT-5120 ST. PANTALEON
Tel. +43 (6277) 7447-0
www.siad.at - siad.austria@siad.eu
GPS: N 48 01.34 - E 12 51.36

BUI GARIA

BULGARIA SIAD Bulgaria EOOD 4, Amsterdam str. P. O. Box 28 BG-1528 SOFIA Tel. +359 (2) 9785636 www.siad.bg - siad@siad.bg GPS: N 42 39.15 - E 23 24.43

CZECH REPUBLIC

SIAD Czech spol. s r.o. Prague Office Park II - K Hájům 2606/2b CZ-155 00 PRAGUE 5 Tel. +420 235097520 www.siad.cz - siad@siad.cz GPS: N 50 03.21 - E 14 19.32

FRANCE
SIAD France SAS
Parc d'activité de Signes, espace Arusha
Avenue de Berlin
FR-83870 SIGNES
Tel. +33 (0) 498181463
www.siad.com - siad france@siad.eu
GPS: N 43 25.68 - E 5 80.05

GERMANY

GERMANY
SIAD Germany GmbH
Zifling 1
DE-93497 Willmering bei CHAM
Tel. +49 (0)9971 858010
www.siad.com - siad\_germany@siad.eu
GPS: N 49 23.78 - E 12 67.81

HUNGARY SIAD Hungary Kft. Zsigmondy u. 38. HU-3527 MISKOLC Tel. +36 (46) 501130 - Fax +36 (46) 501131 www.siad.hu - siad\_hungary@siad.eu GPS: N 48 07.25 - E 20 48.07

POLAND

SIAD Poland sp. z o o ND Poland sp. z o.o. ul. Kokotek 66 PL-41-700 RUDA ŚLĄSKA Tel. +48 32 7711650 www.siad.pl - siad@siad.pl GPS: N 50 18.25 - E 18 51.55

ROMANIA

ROMANIA SIAD Romania s.r.l. Drumul Osiei, 75-79, Sector 6 RO-062395 BUCURESTI Tel. +40 (21) 3103658 - Fax +40 (21) 3149806 www.siad.ro - siad@siad.ro GPS: N 44 26.26 - E 25 59.10

BUSSIA BULC SIAD Rus
LLC SIAD Rus
Bolshaya Dmitrovka street 12/1 - build 1, 3 floor
RU-107031 MOSCOW
Tel. + 7 (495) 7213026
www.siad.ru - siad@siad.ru
GPS: N 55 45.41 - E 37 36.53

SLOVAKIA

Rožňavská č. 17 SK-831 04 BRATISLAVA Tel. +421 (2) 44460347 www.siad.sk - siad@siad.sk GPS: N 48 10.29 - E 17 09.47

UKRAINE LLC SIAD Ukraine Konstantinovskaya street, 2A UA-04071 KIEV Tel. +7 495 9871217

LLC Remtekhgaz Kolomoytsevskaya street, 28 UA-50106 KRIVOY ROG Tel. +38 093 3978017 www.rtg.com.ua

Arroweld Italia S.p.A. Via Monte Pasubio, 137 IT-36010 ZANÈ - VI Tel. +39 0445 804444 www.arroweld.com - arroweld@arroweld.com GPS: N 45 43.18 - E 11 26.21

Bieffe Saldatura S.r.l.

Via Canubia, 9/1
IT-12100 MADONNA DELL'OLMO - CN
Tel. +39 0171 414711
www.bieffesaldatura.com
GPS: N 44 25.30 - E 7 33.36

Tecnoservizi Ambientali S.r.I. Via San Bernardino, 92 IT-24126 BERGAMO Tel. +39 035 328111 www.tecnoserviziambientali.eu - info@tasrl.com GPS: N 45 40.57 - E 9 39.44

Roboteco S.p.A. Via Carlinga, 43 IT-24035 CURNO - BG Tel. +39 035 5780303 www.roboteco-italargon.it - info@roboteco-italargon.it GPS: N 45 40.35 - E 9 36.25

#### Engineering

SIAD Macchine Impianti S.p.A.

Via Canovine, 2/4 IT-24126 BERGAMO Tel. +39 035 327611 www.siadmi.com - siadmi@si GPS: N 45 40.53 - E 9 39.44

SIAD Americas LLC

Engineered Equipment 2001 Timberloch Place Suite 500 The Woodlands, TX 77380 Tel. +1 346 380 1268 www.siad-americas.com - info@siad-americas.com GPS: N 30 15 7.4 - W 95.46 76.188

SIAD Engineering (Hangzhou) Co., Ltd.
17/F, Yizhan Business Bld., No.1 Wenyi West Rd., Xihu District
Hangzhou, 310012, Zhejiang Province, CHINA
Tel. +86 0571 85880480
www.siadmi.cn/tz - sad\_cn@siad.eu
GPS: N 30 29 32.47 - E 120 12 43.68

SIAD Engineering Trading (Shanghai) Co., Ltd. Rm.412, No. 5 building, No. 999 Ningqiao Rd. Shanghai Pudong, 201206, CHINA Tel. +86 021 50550066

www.siadmi.cn/sh - siad\_cn@siad.eu GPS: N 31 15.19 - E 121 37.4

SIAD Macchine Impianti Middle East F.Z.C. Warehouse H1-03, Gate 1 P.O. Box 1248 Ajman Free Zone - UAE Tel. +971 (0) 6 7427339 www.siadmi.com - siadmi\_me@e.siad.eu GPS: N 25 24.47 - E 55 27.12

Russian Branch of SIAD Macchine Impianti S.p.A. Bolshaya Dmitrovka street 12/1 - build 1, 3 floor RU-107031 MOSCOW Tel. +7 (495) 7213026 www.siadmir.u - siad@siad.ru GPS: N 55 45.41 - E 37 36.53

SIAD Macchine Impianti S.p.A. Sucursal de España Pl. El Cascajal, Calle Urogallos 1-3 ES-28320 Pinto - MADRID Tel. +34 673 789513 www.siadmi.com - siadmi\_es@siad.eu GPS: N 40 25.02 - E 3 71.31

ESA S.p.A.

A S.p.A. Via Enrico Fermi, 40 IT-24035 CURNO - BG Tel. +39 035 6227411 www.esapyronics.com - esa@esacombustion.it GPS: N 45 41.11 - E 9 37.19

Belgian Branch of ESA S.p.A.
Zoning Industriel, 4ème rue
BE-6040 JUMET
Tel. +32 71 256970
www.esapyronics.com - marketing@pyronics.be
GPS: N 50 27.9 - E 4 27.14

ESA Manufacturing Pvt. Ltd. Plot No. J-17, MIDC, Bhosari IN-411 026 PUNE Tel. +91 9822601452 www.esapyronics.com - esaindia@esapyronics.com GPS: N 18 63.14 - E 73 83.32

Tecno Project Industriale S.r.l.

Via Enrico Fermi, 40 IT-24035 CURNO - BG Tel. +39 035 4551811 www.tecnoproject.com - info@tecnoproject.com GPS: N 45 41.11 - E 9 37.19

PENTATEC S.r.I.
Via Aldo Moro, 7
IT-24035 CURNO - BG
Tel. +39 035 461673
www.pentatecsrl.com - commerciale@pentatecsrl.com
GPS: N 45 41.06 - E 9 37.17

Tecno Project Industrial Ltda Rua País de Gales, 161

Dist. Ind. Bandeirantes SALTO - SP - CEP 13.326-195 BRAZIL Tel. +55 11 40215654 www.tecnoproject.com.br - tpi@tecnoproject.com.br GPS: S 23 11.32 - W 47 19.08

#### Healthcare

MEDIGAS ITALIA S.r.I.

Via Edison, 6 IT-20057 ASSAGO - MI Tel. +39 02 4888111 www.medigas.it - info@medigas.it GPS: N 45 24.17 - E 45 24.17

MAGALDI LIFE S.r.I.

Via Case Rosse, 19/ IT-84131 SALERNO Tel. +39 089 383004 www.magaldilife.it - info@magaldilife.it GPS: N 40 38.42 - E 14 51.52

## LPG, Natural Gas and Biomethane

ISTRABENZ PLINI d.o.o. Sermin 8/a SI-6000 KOPER Tel. +386 5 6634600 - Fax +386 5 6634699 www.istrabenzplini.si - info@istrabenzplini.si GPS: N 45 33.10 - E 13 45.53

GPS: N 49 33. I.O = 13 49.33 PLINARNA MARIBOR d.o.o. Plinarniška ulica 9 SI-2000 MARIBOR Tel. +386 2 2284300 - Fax +386 2 2522272 www.plinarna-maribor.si - info@plinarna-maribor.si GPS: N 46 55.92 - E15 65. 71

GTG Plin d.o.o. Bukovžlak 65b SI-3000 CELJE Tel. +386 (0)3 42 60 760 www.gtg-plin.com - prodaja@gtg-plin.com GPS: N 46 24.15 - E 15 30.02

GPS: N 40 24.15 - E 15 30.02
BOSNIA AND HERZEGOVINA
ISTRABENZ PLINI d.o.o.
Poltraj bb
BiH-71370 BREZA
Tel. +387 32 789300 - Fax +387 32 789302
www.istrabenzplini.ba - istrabenzplini@istrabenzplini.si
GPS: N 44 00.17 - E 18 15.1

CROATIA ISTRABENZ PLINI d.o.o.

Pristanište Podbok 3 HR-51222 BAKAR Tel. +385 51 455300 - Fax +385 51 761175 www.istrabenzplini.hr - istrabenzplini@istrabenzplini.hr GPS: N 45 17.37 - E 14 33.54

SERBIA
ISTRABENZ PLINI d.o.o.
Despota Stefana 12
RS-BECOGRAD
Tel. +381 11 3340949 - Fax +381 11 3341199
GPS: N 44 48.59 - E 20 27.47

DIME Società Agricola S.r.I. Via San Bernardino, 92 IT-24126 BERGAMO Tel. +39 035 328111 GPS: N 45 40.57 - E 9 39.44



SOCIETÀ ITALIANA ACETILENE E DERIVATI S.I.A.D. S.p.A. Società unipersonale IT-24126 Bergamo - Via S. Bernardino, 92

V.A.T. and Fiscal Number 00209070168 Share Capital euro 25.000.000 i.v. N. 00209070168 Reg. delle Imprese di Bergamo R.E.A. Bergamo N. 15532

Telephone +39 035 328111

siad.com - siad@siad.eu



© 2024 SIAD S.p.A. All rights reserved

The information, images and data contained herein are published for information purposes only. According to product technical development, SIAD reserves the right to modify the contents of this document without prior notice. CLPUK 007 01/24