NIPPON GASES

Sanarc®

Gas mixtures designed to increase the productivity of your processes

Index

Who is Nippon Gases? 4
Smarter processes through shared expertise 5

Supply Forms 6

Welding shielding gases 8

Combinations:
Shielding gas - Welding process 10
Process - Material 12
Process - Application 13

LaserSan® 17

Where does Safety begin and end? 20

Who is Nippon Gases?

Nippon Gases, part of the Global Nippon Sanso Holdings Corporation, is one of the leading industrial and medical gases companies in Europe.

We specialise in providing safe, reliable gas-based solutions tailored to a variety of markets, drawing on our technological expertise.

Whether is fume reduction, productivity enhancement, process reliability or metal industrial gas technology for metal processing, our state-of-the art and customised solutions make us a strategic partner for the industry.

We make life better through gas technology

Smarter processes through shared expertise

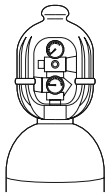
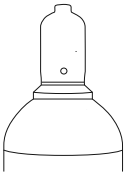
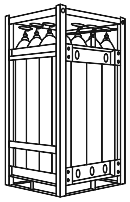
Our team of “Gas Professionals” support and guide you on your way to an optimised use of the available resources and more efficient welding processes.

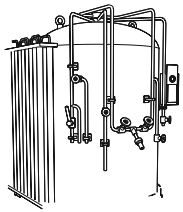
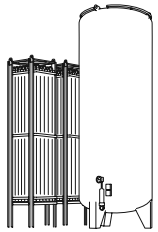
Their experience, combined with an analysis of your needs, will not only reduce costs, but also improve process quality, whether manual or robotic welding is used.

It is thanks to technical advice based on many years of global experience, excellent service and high-quality products that we are able to build up a relationship of trust with our customers.

In addition, safety is always central to our thinking and actions. It is not only part of our corporate culture, but also of our commitment to protect the environment and to act in a sustainable and ethical manner.

Supply forms

Supply Forms	Consumption per month	Application
 **Plug&Work® cylinders** Gas extraction made easy	≥ 1 Cylinder	Plug&Work® cylinders are a Nippon Gases supply form which meet the highest safety requirements. Thanks to their integrated pressure reducer, they are not only ready for use in just three steps, but also very easy to operate with.
 **Cylinder** The most versatile	≥ 1 Cylinder	It is the standard for the wide range of shielding gases. The gases are available in 10L, 20L and 50L. Each available in 200 and 300 bar versions - smaller on request.
 **Bundle** The medium ones	150 - 600 m^3	Bundles can be connected to the central gas supply. A bundle is about the size of a Euro-pallet and consists of several individual cylinders, which are piped together having a common outlet. Bundles are available in 200 and 300 bar, depending on the product. We also offer flex bundles, where the inlets are opposite each other, and we can offer 200 and 300 bar in the same bundle.

Supply Forms	Consumption per month	Application
 **MicroBulk®** The little big ones	> 500 m³	With average consumption, a MicroBulk® is a cost-effective solution. It can be used for argon, nitrogen and oxygen. The product is suitable for centralised supply systems and is supplied in liquid form in small tanks of up to 2,000 litres. They offer all the advantages of a liquid supply with lower installation and licensing costs.
 **Tanks** The big ones	> 2000 m³	When there is a constantly high demand for atmospheric gases and a connection is made to a central gas supply system, a vacuum insulated tank is the most advantageous form of delivery. In this case, the product is stored in liquid form and in large quantities on site.

Welding shielding gases
An overview (according to ISO 14175)

The table below lists the welding shielding gases most frequently supplied by Nippon Gases, with their composition and designation according to ISO 14175.

Can't find what you're looking for?
Then don't hesitate to contact us.
We offer many other welding shielding gases.

Designation	Type of gas	Designation according to ISO 14175	Ar %	He %	O_2 %	CO_2 %	H_2 %	N_2 %
Argon 4.6	Ar	ISO 14175-I1-Ar	> 99.996					
Argon 5.0	Ar	ISO 14175-I1-Ar	> 99.999					
Helium 4.8	He	ISO 14175-I2		> 99.996				
Sanarc® C2	Ar-CO_2	ISO 14175-M12-ArC-2	98			2		
Sanarc® C8	Ar-CO_2	ISO 14175-M20-ArC-8	92			8		
Sanarc® C15	Ar-CO_2	ISO 14175-M20-ArC-15	85			15		
Sanarc® C18	Ar-CO_2	ISO 14175-M21-ArC-18	82			18		
Sanarc® C20	Ar-CO_2	ISO 14175-M21-ArC-20	80			20		
Sanarc® C3 01	Ar-CO_2-O_2	ISO 14175-M14-ArCO-3/1	96			3		
Sanarc® C5 05	Ar-CO_2-O_2	ISO 14175-M23-ArCO-5/5	90			5		
Sanarc® C7 03	Ar-CO_2-O_2	ISO 14175-M24-ArCO-7/3	90			7		

Designation	Type of gas	Designation according to ISO 14175	Ar %	He %	O_2 %	CO_2 %	H_2 %	N_2 %
Sanarc® C8 O1	Ar-CO_2-O_2	ISO 14175-M24-Ar-CO-8/1	91		1	8		
Sanarc® O_2	Ar-O_2	ISO 14175-M13-ArO-2	98		2			
Sanarc® O4	Ar-O_2	ISO 14175-M22-ArO-4	96		4			
Sanarc® H2	Ar-H_2	ISO 14175-R1-ArH-2	98				2	
Sanarc® H5	Ar-H_2	ISO 14175-R1-ArH-5	95				5	
Sanarc® H35	Ar-H_2	ISO 14175-R2-ArH-35	65				35	
Sanarc® H1 C3	Ar-H_2-CO_2	ISO 14175-M11-Ar-HC-1/3	96			3	1	
Sanarc® He5	Ar-He	ISO 14175-I3-ArHe-5	95	5				
Sanarc® He30	Ar-He	ISO 14175-I3-ArHe-30	70	30				
Sanarc® He50	Ar-He	ISO 14175-I3-ArHe-50	50	50				
Sanarc® He7 C2	Ar-He-CO_2	ISO 14175-M12-Ar-HeC-7/2	91	7		2		
Sanarc® He30 C10	Ar-He-CO_2	ISO 14175-M20-Ar-HeC-30/10	60	30		10		
Sanarc® ALU	Ar-x-x	ISO 14175-Z						
Forming gas 5	N_2-H_2	ISO 14175-N5-NH-5					5	95
Forming gas 10	N_2-H_2	ISO 14175-N5-NH-10					10	90
CO_2	CO_2	ISO 14175-C1-C				100		

Combination:
Shielding gas - Welding process

The table below gives an overview of the most common welding shielding gases from Nippon Gases and their suitability for different welding processes.

Designation	Type of gas	TIG	MIG	MAG	Plasma	Forming
Argon 4.6	Ar	X	X		X	X
Argon 5.0	Ar	X	X			X
Helium 4.8	He	X	X			
Sanarc® C2	Ar-CO_2			X		
Sanarc® C8	Ar-CO_2			X		
Sanarc® C15	Ar-CO_2			X		
Sanarc® C18	Ar-CO_2			X		
Sanarc® C20	Ar-CO_2			X		
Sanarc® C3 O1	Ar-CO_2-O_2			X		
Sanarc® C5 O5	Ar-CO_2-O_2			X		
Sanarc® C7 O3	Ar-CO_2-O_2			X		
Sanarc® C8 O1	Ar-CO_2-O_2			X		
Sanarc® O_2	Ar-O_2			X		

Designation	Type of gas	TIG	MIG	MAG	Plasma	Forming
Sanarc® O4	Ar-O_2			X		
Sanarc® H2	Ar-H_2	X			X	
Sanarc® H5	Ar-H_2	X			X	
Sanarc® H35	Ar-H_2				X	
Sanarc® H1 C3	Ar-H_2-O_2			X		
Sanarc® He5	Ar-He	X	X		X	
Sanarc® He30	Ar-He	X	X		X	
Sanarc® He50	Ar-He	X	X			
Sanarc® He7 C2	Ar-He-CO_2			X		
Sanarc® He30 C10	Ar-He-CO_2			X		
Sanarc® ALU	Ar-x-x	X		X		
Forming gas 5	N_2-H_2					X
Forming gas 10	N_2-H_2					X
CO_2	CO_2			X		

Combination: Process - Material

Detailed information on the shielding gases and their properties can be found in our gas table "Welding shielding gases"

Material	TIG	MIG	MAG	Plasma	Forming
Non- and low-alloy steel	Argon 4.6		CO_2 Sanarc® C8 Sanarc® C15 Sanarc® C18 Sanarc® C20 Sanarc® C8 01 Sanarc® C5 05 Sanarc® H30 C10	Oxygen	Argon 4.6 Forming gas 5 Forming gas 10
High-alloy rust-, acid-, heat-resistant, cold-resistant and heat-proof steel	Argon 4.6 Sanarc® H2* Sanarc® H5*	Argon 4.6	Sanarc® C2 Sanarc® O2 Sanarc® He7 C2	Sanarc® H35	Argon 4.6 Forming gas 5 Forming gas 10
Aluminium and Aluminium alloys	Argon 4.6 Sanarc® ALU	Argon 4.6	Sanarc® ALU	Argon 4.6 Nitrogen	Argon 4.6
Copper and copper alloys	Argon 4.6 Sanarc® He5 Sanarc® He50	Argon 4.6 Sanarc® He5 Sanarc® He50			
Nickel and nickel alloys	Argon 4.6 Sanarc® H2 Sanarc® H5	Argon 4.6		Sanarc® H5	Argon 4.6
Gas-sensitive materials: titanium, niobium, tantalum, etc.	Argon 5.0	Argon 5.0		Argon 50	Argon 5.0

Combination:
Process - Application

Designation	Composition %		Materials	Properties
Argon 4.6	Ar	99.996	All weldable materials, except for gas-sensitive materials	Inert shielding gas. No chemical reaction with welding material. Good arc ignition.
Argon 5.0	Ar	99.999	(Preferably) Gas-sensitive materials	Same as Argon 4.6. Thanks to its high purity, suitable for gas-sensitive materials.
Sanarc® C2	Ar CO_2	98 2	High-alloy steel	Suitable for MAG welding with a stable arc. Good ignition. Few spatters. Possibility of welding in position.
Sanarc® C8	Ar CO_2	92 8	Non- and low-alloy steel	Suitable for MAG welding from thin to average plate thicknesses. Flat weld. High welding speed, especially in combination with cored wire.
Sanarc® C15	Ar CO_2	85 15	Non- and low-alloy steel	Suitable for MAG welding with good gap bridging. Good penetration, both with short-circuit arc and spray arc. Possibility of welding in position.

Designation	Composition %		Materials	Properties
Sanarc® C18	Ar CO_2	82 18	Non- and low-alloy steel	Same as Sanarc® C15.
Sanarc® C20	Ar CO_2	80 20	Non- and low-alloy steel	Same as Sanarc® C15 and C18.
Sanarc® O2	Ar CO_2	98 2	High-alloy steel	Suitable for MAG welding with fine-pitch transition. Good flank humidification thanks to thin liquid weld pool, flat welds result. No carbonisation at the weld.
Sanarc® O4	Ar O_2	98 4	Non- and low-alloy steel	Suitable for MAG welding with soft arc. Few splashes. Good humidification thanks to the thin liquid weld pool. Smooth appearance of the weld.
Sanarc® C3 O1	Ar O_2	96 3 1	High-alloy steel	Suitable for MAG welding with stable arc. Thanks to oxygen percentage, weld with fine scales results.
Sanarc® C5 O5	Ar CO_2 O_2	90 5 5	Non- and low-alloy steel	Suitable for MAG welding with soft, stable arc. Flat weld with fine scales results. Thanks to high welding speed, highly suitable for automatic and robotic welding.
Sanarc® C7 O3	Ar CO_2 O_2	90 7 3	Non- and low-alloy steel	Same as Sanarc® C5 O5, but better suited to manual welding.

Designation	Composition %		Materials	Properties
Sanarc® C8 01	Ar CO_2 O_2	91 8 1	Non- and low-alloy steel	Same as Sanarc® C7 03.
Sanarc® H2	Ar H_2	98 2	High-alloy steel, nickel and nickel alloys	Thanks to the reducing effect of hydrogen, oxidation of the weld or cutting edges is prevented. Ability to weld at high speed or burn deeper due to greater heat transfer and thinner liquid weld pool. Preferably used for manual welding.
Sanarc® H5	Ar H_2	98 2	High-alloy steel, nickel and nickel alloys	Same as Sanarc® H2 Thanks to higher heat input, suitable to mechanised processes.
Sanarc® He5	Ar H_2	95 5	All weldable metals. Particularly suitable for aluminium, aluminium alloys, copper and copper alloys.	Suitable for TIG and MIG welding of metals with high thermal conductivity coefficient. Increase in helium provides more heat and a wider penetration.
Sanarc® He30	Ar He	70 30	All weldable metals. Particularly suitable for aluminium, aluminium alloys, copper and copper alloys.	Same as Sanarc® He5.
Sanarc® He50	Ar He	50 50	All weldable metals. Particularly suitable for aluminium, aluminium alloys, copper and copper alloys.	Same as Sanarc® He5 and He30.

Designation	Composition %		Materials	Properties
Sanarc® He7 C2	Ar He CO_2	91 7 2	High-alloy steel	Due to the higher thermal conductivity of helium, this blend provides deeper penetration and/or higher welding speed when MAG welding. A small quantity of carbon dioxide ensures a stable arc, good ignition and few splashes.
Sanarc® He30 C10	Ar He CO_2	60 30 10	Non- and low-alloy steel	Due to the higher thermal conductivity of helium, this blend provides deeper penetration and/or higher welding speed.
Sanarc® H1 C3	Ar He CO_2	96 1 4	High-alloy steel, nickel and nickel alloys	The use of hydrogen provides a very high heat transfer when MAG welding.
Sanarc® ALU			Aluminium and aluminium alloys	Shielding gas developed exclusively for aluminium welding. Suitable for both TIG and MIG welding. Compared with pure argon, this blend provides better arc stability and a cleaning effect. Highly suitable for automatic processes with increased welding quality and time savings as a result.
Forming gas 5	N_2 H_2	5 95	All weldable materials, except for gas-sensitive materials	Shielding gas when welding all non-gas-sensitive materials such as titanium, zirconium, molybdenum, etc.
Forming gas 10	N_2 H_2	10 90	All weldable materials, except for gas-sensitive materials	Same as Forming gas 5

LaserSan®

High-purity gases and quality solutions for your laser

Our strengths - your benefits

— LaserSan® gases are produced in our ISO-certified filling plant, therefore this product line guarantees optimal quality, long lifetime of the optical elements and low maintenance costs.

— LaserSan® gases are characterised by their constant homogeneity over the entire service life.

— Nippon Gases supplies gases in the quantities required, from cylinders to cryogenic storage tanks.

Productivity at its best

In addition to the gases, Nippon Gases supplies all the equipment needed for the trouble-free operation of your laser machines. Discover a selection from our total package here:

— All our laser gases are analysed as standard, but in many cases impurities are introduced via incorrectly designed gas supply systems. A reliable and low-maintenance laser therefore requires leaving the selection of components and installation to our Nippon Gas specialists. Our systems are tested and certified, guaranteeing not only productivity but also the safety of you and your employees.

— We keep an eye on your consumption and deliver when necessary, both for your gas cylinders and for your bulk installation.

— Containers are tailored to your needs; our people will be happy to assist you with this.

— Our team of professional salespeople, engineers and service technicians offer you the right support quickly and competently, and provide you with cost-saving and practice-tested solutions. If something does go wrong, our technical service is available to help you as quickly as possible.

— We are at your side worldwide with production sites, sales outlets, services and application technology.

Below you can find some common compositions, is your composition not listed? No problem!
Contact us and we will be happy to help.

Resonator gases/ start-up gases	**He**	**N_2**	**CO_2**	**CO**	**O_2**	**H_2**	**Xe**
Nitrogen 5.0		100					
CO_2 4.6			100				
Helium 4.6	100						
LaserSan P51	81	15.6	3.4				
LaserSan 53	82	13.5	4.5				
LaserSan P61	74.9	23.4	1.7				
LaserSan 66	60	35	5				
LaserSan L702	67.6	27	5.4				
LaserSan 81	80.8	15	4			0.2	
LaserSan 83	40	55	5				
LaserSan 831	28	60	8	4			
LaserSan L201	65	19	4	6	3		3

Welding and cutting gases	**N_2**	**O_2**	**Ar**
Nitrogen 4.7	99.997		
Oxygen Laser		99.95	
Argon 4.8			99.998

* Composition in %
* Other welding blends can be found in our welding brochure

All accidents can be prevented and efforts in safety yield results in safety.

(Fragment from the Nippon Gases safety principles)

Safety, a top priority

Safety is our number 1 priority. Nippon Gases is committed to ensuring the safety of our employees, products, facilities, environment and our customers and their processes.

Our strong focus on safety is supported and strengthened by our safety principles. These principles go so far as to require us to stop work if it cannot be carried out safely. Through these principles, every employee is encouraged to strive for absolute safety.

In addition to safety, Nippon Gases attaches great importance to quality and the protection of the environment. From our certificates, according to the international standards ISO 9001, 14001 and 50001, you can conclude that we take your requirements and those of the environment very seriously.

Social Media
youtube.com/NipponGases
linkedin.com/company/nippon-gases/
info@nippongases.com

info@nippongases.com