

Biopure®

ClO₂ INTEGRAL SOLUTION CHLORINE DIOXIDE



Biopure®

Safe and effective disinfection

Full range for all types of consumptions and applications

Description

Biopure® is a range of equipment and products mainly designed for water treatments with in-situ-generated chloride dioxide as the active substance. The manual and automatic systems for the preparation of the product guarantee a chlorine dioxide purity of 99 % or higher, with varying concentrations according to the products of the range.

Chlorine dioxide is also used in agriculture or aquaculture, among other sectors, as well as for the sterilization of medical and laboratory material and the disinfection of surfaces or tools.

The main features of Biopure® are:

- it is a broad spectrum disinfectant (bacteria, fungi, viruses, etc.);
- it destroys biofilms;
- it is highly effective, even in the presence of organic material;
- fast-acting, allowing for short contact times;
- it does not transfer odor or taste to water;
- no by-products from the disinfection are formed, such as THMs or chloramines;
- it can be used in a wide array of areas, regardless of the pH;
- high residual persistence.

Disinfection characteristics

Chlorine dioxide is the most effective of the known chlorine derivatives and it has a greater oxidation capacity than others.

AGENT	AVAILABLE CHLORINE (%)
Chlorine (Cl ₂)	100
Bleaching powder	35 - 37
Calcium hypochlorite (Ca(OCl) ₂)	9,2
Commercial calcium hypochlorite	70 - 74
Sodium hypochlorite (NaOCl)	95,2
Industrial bleach	12 - 15
Household bleach	3 - 5
Chlorine dioxide (ClO ₂)	263,0
Monochloramine	137,9
Dichloramine	165,0
Trichloramine	176,7

Why disinfect with Biopure®?

Decades of experience and research have revealed that much better disinfection can be achieved with chlorine dioxide, as it offers the necessary solutions for effective and safe disinfection.

The systems currently provided by **Tashia®** for the generation of ClO₂ from products from the Biopure® range are easy to handle, operate and control, and they guarantee proper disinfection in different applications, including:

- drinking-water treatment;
- waste and process water;
- water refrigeration systems;
- agriculture;
- the food industry.

The use of chlorine dioxide is increasingly replacing most of the disinfectants used up to now

Table 1. Availability of chlorine per mole.

The table shows that chlorine dioxide (ClO₂), for example, has an oxidation level 2.5 times higher than the oxidation level of chlorine.

- The disinfectant effect of chlorine dioxide is perceptibly better than chlorine in the same concentration.
- Selective effect: no chloramines or trihalomethanes (THMs) are formed.
- No odor or taste transfer to water.
- Higher oxidation potential than chlorine.
- Highly effective, even in the presence of organic material.
- Compared to other biocide products, chlorine dioxide is considerably more effective and faster in eliminating pathogens, including viruses, bacteria, spores, algae, fungi, etc. (Chart 1 and Table 2).

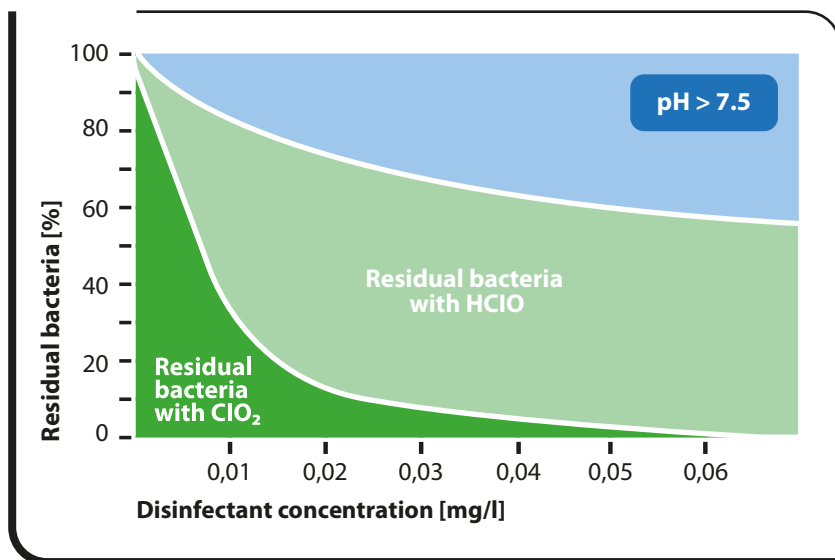


Chart 1.
Comparison of the disinfectant effect of chlorine dioxide and hypochlorous acid.

Ref.: HOFF, J. C.; GELDERICH, E. E. (1981). *Comparison of the Biocida Efficiency of Alternative Disinfectants.*

Comparison of various disinfectants for water purification

Table 2. Table score values: • 0 (worst) - 5 (best) • ● optimal results

	BIOCIDE EFFECTIVENESS	ODOR AND TASTE ISSUES	PERSISTANCE	EFFECTIVENESS ACCORDING TO pH	HANDLING AND STORAGE RISKS	SPEED OF ACTION	EFFECTIVENESS IN PRESENCE OF ORGANIC MATERIAL	REDOX POTENTIAL
Biopure®	4	no	4	effective	minimum	high	effective	4
Hydrogen peroxide	2	no	3	conditional	medium	medium	requires pretreatment	2
Sodium hypochlorite	2	yes	2	conditional	medium	medium	requires pretreatment	2
Ozone	5	no	0	effective	high	high	requires pretreatment	4
Chlorine gas	3	yes	3	conditional	high	medium	requires pretreatment	3

Preparation of chlorine dioxide

Chlorine dioxide can be generated through various methods. The Biopure® range is obtained through the acid method. The reaction is stated below.

This method can be obtained with the diluted or concentrated reagents.

Acid method



REGISTRATION AND REGULATIONS

In accordance with Regulation (EC) 1272/2008 and (EC) 1907/2006 (REACH). Authorized for use in drinking water in accordance with Royal Decree 140/2003 and Royal Decree 902/2018.

▼ MANUAL GENERATION

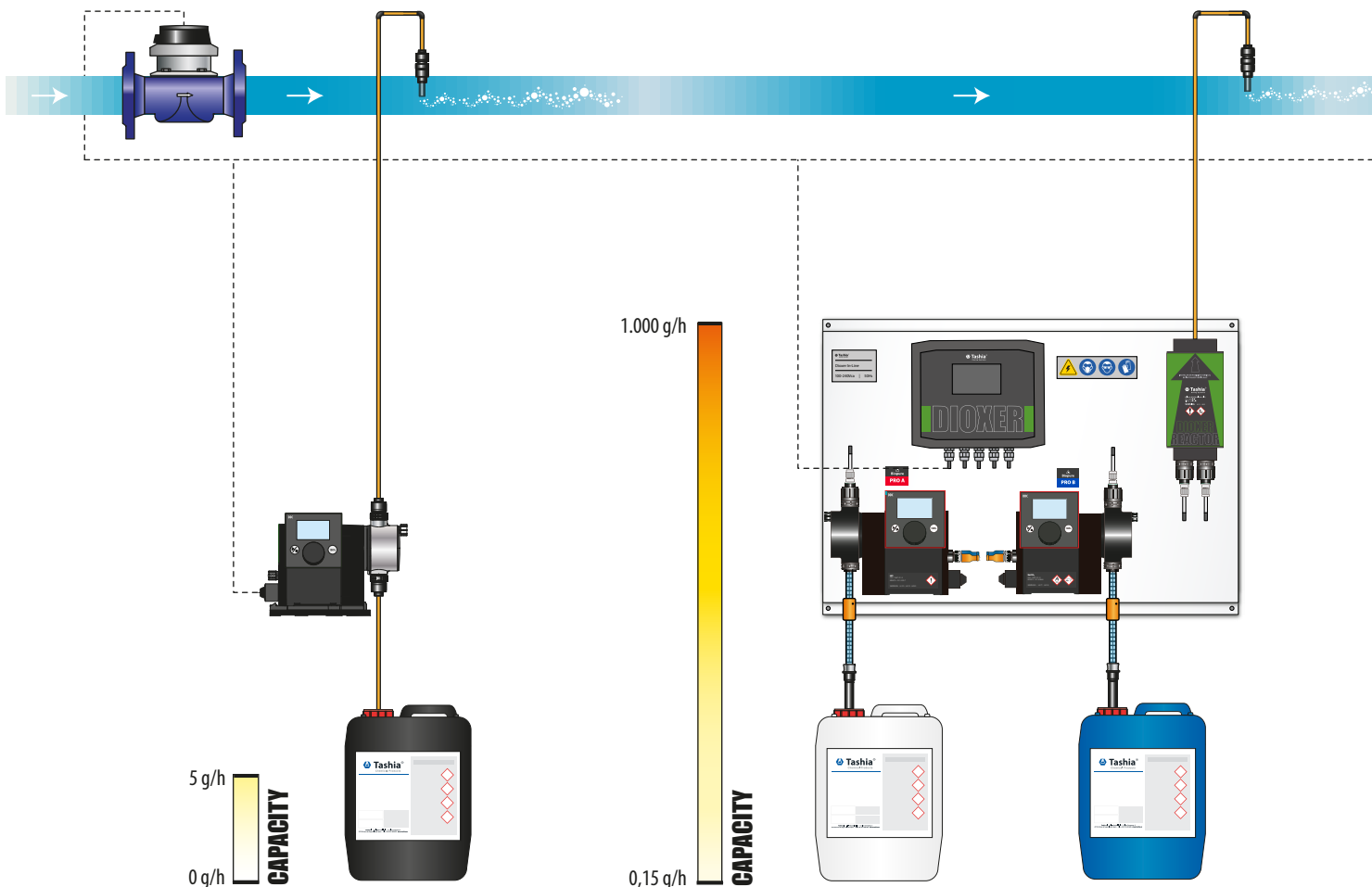
Biopure® Ready

The product is supplied in two components: reagent in stabilized solution in a 25 kg container and activating reagent in a 750 g container.

The ClO₂ is generated by pouring the product into the original 25 kg container, mixing, and following the protocol attached to each container.

Biopure® Plus

This product is formed of a stabilized chlorine dioxide solution, specially designed to quickly and safely disinfect water and effectively eliminate biofilm in water pipes. No special equipment is required for dispensing, but it should be applied in the correct manner.



Biopure® Ready & Plus

Manual chlorine dioxide generation system Preparation is very easy and safe: add the precursors to a volume of water using the Starter kit preparation solutions.

▼ AUTOMATIC GENERATION

Biopure® Pro

ClO₂ is generated by means of two precursors, Biopure® Pro A and Biopure® Pro B, exclusively formulated to be used with the Dioxer automatic equipment, designed for the generation and dispensing of ClO₂.

Biopure® Pro systems are divided into two groups:

In-Line:

An in-Line generation and dispensing system for chlorine dioxide.

Batch:

Chlorine dioxide is generated in a reactor and, once complete, it is transferred to a storage tank for subsequent dispensing.

Biopure® Pro In-Line

The In-Line systems allow us to treat large volumes of water while, maintaining a very good quality-price-efficiency ratio. Available models: Dioxer.

How to select the ideal equipment

Basic equation for equipment selection:

Water flow rate (m³/h) · [concentration of ClO₂ required (ppm)] = **minimum system production**.

Example to follow for choosing equipment in drinking water:

Flow rate of water to be treated =

20 m³/h, concentration of ClO₂ = 0.5 ppm

This equation gives: 20 (m³/h) · 0,5 (ppm) = 10 (g/h)

It follows that the equipment to be selected must be capable of producing at least 10 g/h.

Dosage in probe control tank:

$$\frac{\text{Daily consumption (m}^3\text{)} \cdot \text{concentration of ClO}_2 \text{ required (ppm)}}{\text{hours of consumption}} = \text{minimum system production}$$

Example:

Water consumption: 100 m³/day

Dioxide concentration in water = 0,5 ppm

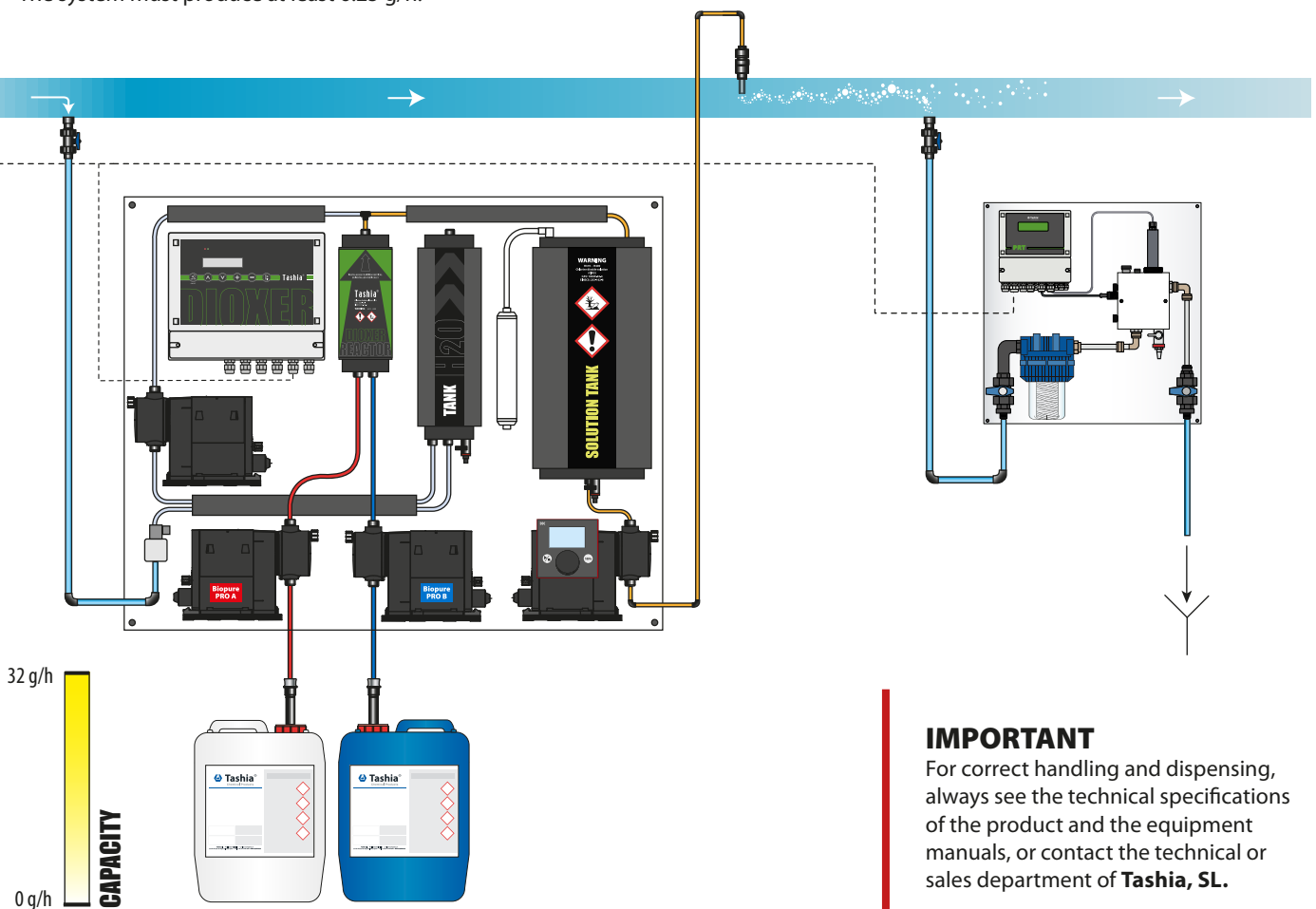
Hours of consumption: 8

The system must produce at least 6.25 g/h.

$$\frac{100}{8} \cdot 0,5 = 6,25 \text{ g/h}$$

Some advantages of the equipment

- Compact and robust systems.
 - Low maintenance cost.
 - For the production of chlorine dioxide, a smart method is used that makes it possible to save up to 40 % of chemical substances, compared to other systems.
 - Use of stable substances.
 - Production of chlorine dioxide at the time of application. Chlorine dioxide solutions in water are not stable, and they degrade faster or slower depending on the concentrations and precursors used.
 - Possible connection to new devices (pH, Redox, etc.) for system automation.
 - Easy and safe installation.
- The system can be manipulated while it is in operation, without interrupting the water supply.



IMPORTANT

For correct handling and dispensing, always see the technical specifications of the product and the equipment manuals, or contact the technical or sales department of **Tashia, SL**.

MEASURING & CONTROL

All systems can include measuring and control equipment to improve effectiveness, with the possibility to perform external controls, record data, etc.

Biopure® Pro Batch

The Batch systems are capable of producing a dioxide with a purity of 99 % or higher, thereby optimizing the use of substances. Its high accuracy allows us to treat very low volumes of water.

Available models: Dioxer Pro.

Biopure®

DIOXER PRO IN-LINE

Simple, efficient, and safe In-line generation systems, for ongoing treatments and for all types of consumption.



- ▶ Large volumes of water to be treated.
- ▶ Good quality-price-efficiency ratio.
- ▶ Pumps with stepper motor for low-volume applications with In-Line equipment.
- ▶ Clear and intuitive interface for easy handling.
- ▶ Multiple external control options: tank control, management with in line analyzers, gas detectors...
- ▶ Remote control through different communication protocols depending on the model.

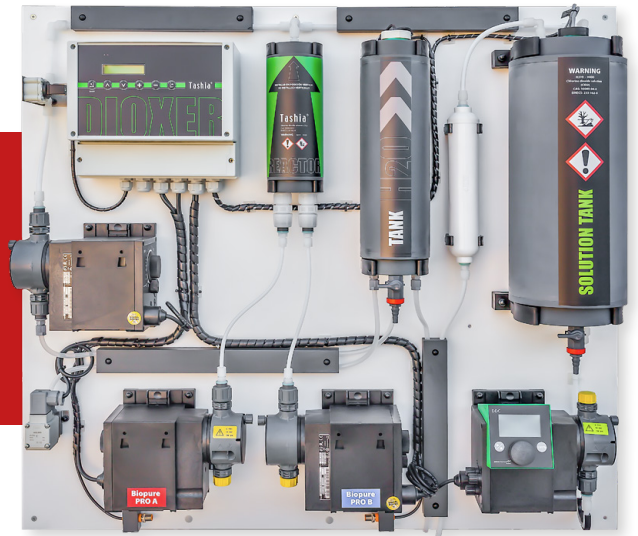
Model	ClO ₂ capacity (g/h)	Max p. (bar)	Reagents
Dioxaer In-Line 15	0,15 - 15	10	diluted
Dioxaer In-Line 40	0,40 - 40	10	
Dioxaer In-Line 80	0,80 - 80	10	
Dioxaer In-Line 120	1,20 - 120	10	
Dioxaer In-Line 220	2,20 - 220	10	
Dioxaer In-Line XL 600	6 - 600	7	diluted
Dioxaer In-Line XL 1000	10 - 1000	7	

ClO₂

DIOXER PRO BATCH

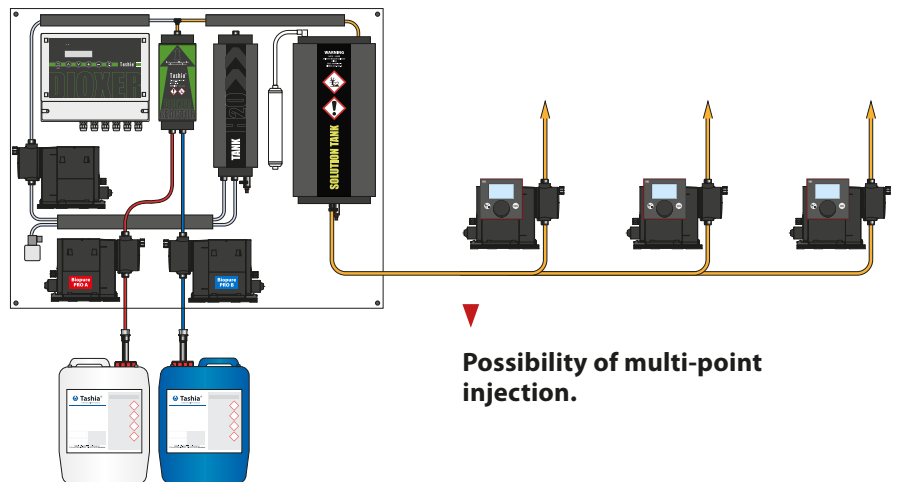
Efficient and safe Batch generation systems, for the treatment of small and medium consumptions.

- ▶ Excellent price-quality-accuracy ratio.
- ▶ Ideal for very low volumes of water to be treated and for non-continuous applications.
- ▶ The multi-point injection system allows for great accuracy and optimizes costs in multiple installations.



- ▶ Clear and intuitive interface for easy handling.
- ▶ Multiple external control options: tank control, management with in line analyzers, gas detectors...
- ▶ Remote control through different communication protocols depending on the model.

Batch chlorine dioxide generator



Model	Capacity ClO ₂ (g/h)	Batch tank capacity (liters)	Max p. (bar)	Reagents
Dioxer Pro 12	0 - 12	6,50	10	diluted
Dioxer Pro 32	0 - 32	6,50	4	

Add-ons Biopure® Ready & Plus

Dosing pump

- Membrane dosing pump.
- Volumetric.
- Flow rate: from 0.006 to 15 l/h.
- Maximum pressure: 4 or 10 bar (depending on the model).
- Head material: PVC.
- Seal material: PTFE.
- Ball material: ceramic.
- Voltage: 100-240 V, 50/60 Hz.
- Digital dial with adjustable color settings.
- Manual speed control and pulse control.
- SlowMode (anti-cavitation) function, calibration, and event logging.
- Input for external stop, pulse control, low level signal, and empty tank signal.



Installation kits

Model	Code	Thread (in inches)	Meter model	Flow rates l/h	
				Min. q	Max. q
Kit PT20/120-C	17220020	1/2	120-C 15.115	30	2.500
Kit PT20/620-C	17220120	1/2	620-C 15.115	3	2.500
Kit PT25/120-C	17220025	3/4	120-C 20.115	50	4000
Kit PT25/620-C	17220125	3/4	620-C 20.190	6	4.000
Kit PT32/420PC	17220032	1	420PC 25.260	50	6.300
Kit PT40/420PC	17220040	1¼	420PC 30.260	90	10.000
Kit PT50/420PC	17220050	1½	420PC 40.300	150	16.000

Accessories

- Suction set.
- 60- or 210-liter Starter kit.
- Injection valves.
- Contact cable.



Starter kit 60- and 210-liter preparation solutions for Biopure® Plus

Our manual preparation solutions for Biopure® Plus provide easy, safe preparation of the product that greatly reduces waste production and allows for a concentrated, long-lasting, high-power stabilized solution product, guaranteeing linearity from start to finish.



Analyzers

- We offer a wide range of analyzers for checking different water parameters.



Reagents

BIOPURE® PLUS

PACKAGING

Biopure® Plus is sold in a pack of 2 components: Biopure® Plus A and Biopure® Plus B

FORMAT

Biopure® Plus E-2 kg 30077001	Biopure® Plus E-2 kg (Pack of 6u.) 30077006	
Biopure® Plus E-12 kg 30077012		



BIOPURE® READY

PACKAGING

Large bottle 26 kg
30076026

FORMAT



BIOPURE® PRO A

PACKAGING

Large bottle 20 kg
30085020

FORMAT



Drum 60 kg
30085060



Drum 200 kg
30085200



Container 1000 kg
30085999



BIOPURE® PRO B

PACKAGING

Large bottle 20 kg
30086020

FORMAT



Drum 60 kg
30086060



Drum 200 kg
30086200



Container 1000 kg
30086999





www.tashia.es

Tashia s.l. Pol. Industrial El Pla, C/Lluís Companys, 5 · Artesa de Segre 25730 (Lleida) Spain
customer Service tel. (34) 973 400 840 · comercial@tashia.es