

# Intersurgical

## Carbon Dioxide Absorbents

The complete choice

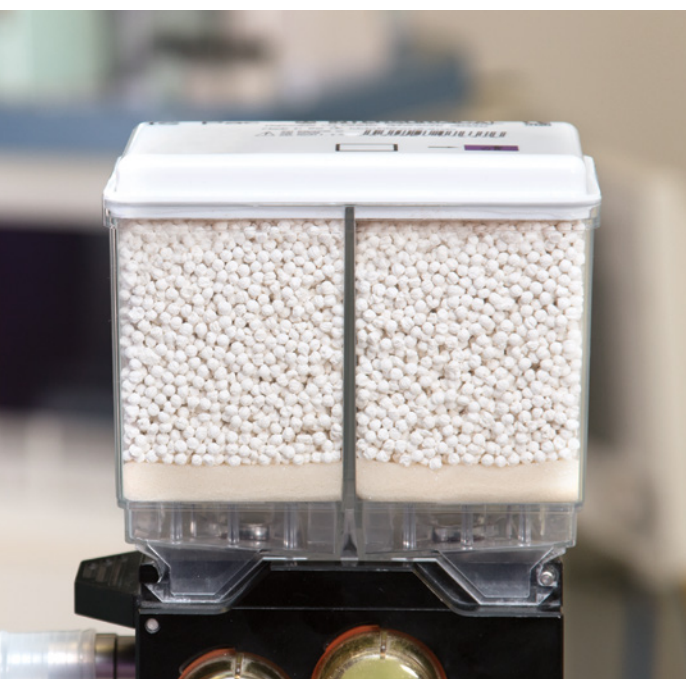
The Pyramid™



The Drum™



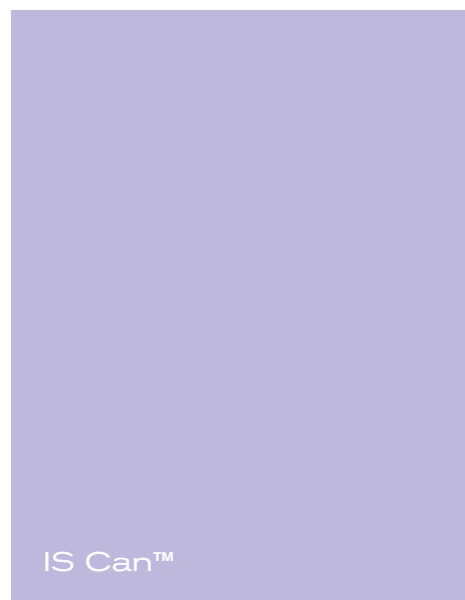
IS Pac™



Edition 5



IS Can™



**INTERSURGICAL**  
COMPLETE RESPIRATORY SYSTEMS

Quality, innovation and choice

Interact with us



[www.intersurgical.com](http://www.intersurgical.com)

## The Intersurgical absorbents range

### The highest quality, the widest choice

Intersurgical offer a choice of medical grade absorbents and standard soda lime to suit all of your clinical requirements.

LoFloSorb™, Spherasorb™ and Intersorb Plus™ have been developed to the highest standard to ensure that you receive a product that delivers consistent performance. Intersurgical are committed to offering this quality, together with innovative solutions and the widest choice possible.

Our range of absorbents is different from some other brands because it has been developed in-house. Our state-of-the-art manufacturing facility allows us to control all aspects, from design and formulation right through to the manufacture. Technical expertise is on-hand to ensure you receive a safe, high quality product every time.

## Safety first

### Why is the choice of absorbent important?

Conventional 'standard' soda lime absorbents have been used for many decades within anaesthetic re-breathing systems and have a good safety record. However, there are some safety considerations that have been raised.

There is a very low, but real risk of the absorbent drying out. If this happens, there is then the potential for unwanted interactions between the dry absorbent and the volatile anaesthetic leading to generation of chemical breakdown products and heat.

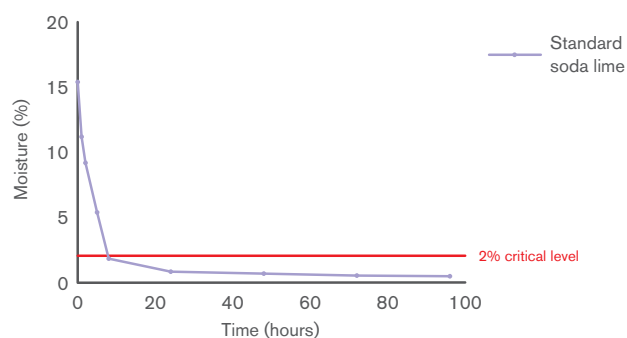
Spherasorb and LoFloSorb have been developed specifically to address such concerns and offer additional safety benefits compared with standard soda lime formulation.

### Prolonged flows of dry oxygen at a number of litres per minute can excessively dry absorbents.

### The following points should be noted:

- These incidents are very rare
- Reactions only occur when the absorbent is excessively dry. It is the alkali hydroxides (Potassium Hydroxide and Sodium Hydroxide) contained within the absorbent that reacts with the volatile anaesthetic
- Normal use during anaesthesia does not cause excessive drying out. Various studies highlight that there have been very few reported incidents during anaesthesia over the years
- Research and evidence from everyday use strongly suggest that only prolonged flows of dry oxygen/air at a number of L/min during periods of non-use cause excessive drying
- The chemical formulation of the absorbent has an influence on the potential for reaction with the volatile anaesthetic, but only if excessive drying has already occurred
- Rare cases have occurred in which thermal runaway causes an exponential rise in temperature to hundreds of degrees centigrade. Reactions at this temperature result in generation and ignition of hydrogen gas. These rare cases of thermal runaway are known to occur only with Potassium Hydroxide containing absorbents which are no longer widely available. There does not seem to be the 'thermal runaway' with dry Sodium Hydroxide containing absorbents
- Standard 3% Sodium Hydroxide absorbents when excessively dry can also react with volatile anaesthetics, however, a greater level of dryness is required and less heat and breakdown products are generated.

Drying curve. 400g of absorbent. 8 L/min oxygen flow (0% RH).  
Standard soda lime.



## What is in our products?

|                            | Spherasorb™ | LoFloSorb™ | Intersorb Plus™ | Other conventional soda limes |
|----------------------------|-------------|------------|-----------------|-------------------------------|
| Calcium Hydroxide          | 93.5%       | 92.5%      | 97%             | 97%                           |
| Sodium Hydroxide           | 1.5%        | Nil        | 3%              | 3%                            |
| Silica Synthetic/amorphous | Nil         | 7.5%       | Nil             | Nil                           |
| Zeolite                    | 5%          | Nil        | Nil             | Nil                           |
| Indicator                  | 0.03%       | 0.03%      | 0.03%           | 0.03%                         |



**NOTE: These are the dry constituents. All absorbents contain 13-17% water**

It is always recommended that colour change is used in conjunction with monitoring of Carbon Dioxide. The absorption of Carbon Dioxide is an exothermic reaction. All absorbents will generate heat, especially if exposed to higher than normal levels of Carbon Dioxide.

## Safety information

All Intersurgical Carbon Dioxide absorbents are now classified as irritant under Regulation (EC) No. 1272/2008 [CLP]

They all contain less than 4% sodium hydroxide and are not subject to transport restrictions

They are exempt from both, (ADR) under special provision 62; and IATA under special provision A16

H315: Causes skin irritation

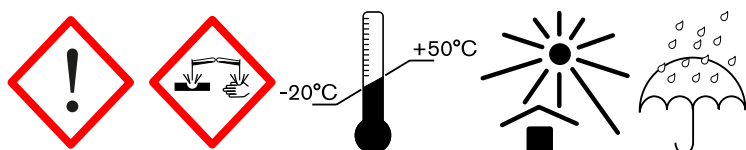
H318 Causes serious eye damage

P280 Wear protective gloves/protective clothing/eye protection/face protection

P302/P352 IF ON SKIN: Wash with plenty of soap and water

P305/351/338. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do, continue rinsing

P332/313: If skin irritation occurs: Get medical advice/attention



## What is Spherasorb™?

### A unique medical grade soda lime designed specifically for clinical use

Spherasorb has a long history of use within anaesthesia and meets all the requirements of the United States and British Pharmacopoeias. Spherasorb's chemical formulation has been developed specifically to address the potential problems of use within the medical environment, while maintaining the highest possible CO<sub>2</sub> capacity.

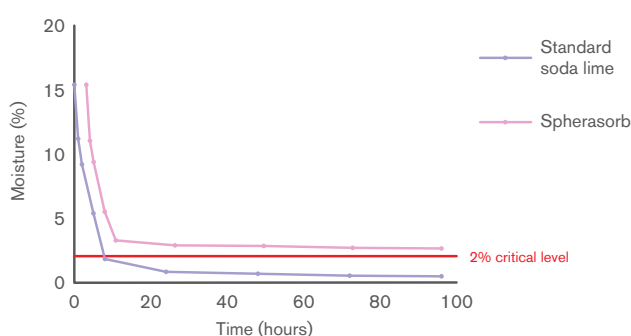
#### Features and Benefits:

- Only 1.5% Sodium Hydroxide. Less than standard soda lime
- Zeolite to reduce the risk of drying out. No other absorbents contain a zeolite
- Spherasorb is made of 3-4mm spheres processed to minimise potential dusting. Its uniform shape allows consistent bed packing, resulting in a more even flow of gases through the absorber and therefore, a very efficient absorption of CO<sub>2</sub>

Independent tests have shown that Spherasorb's unique formulation significantly reduces the risk of drying out and reaction as well as heat generation with volatile anaesthetic agents. Spherasorb exceeds the requirements of the United States Pharmacopoeia (USP).



Drying curve. 400g of absorbent. 8 L/min oxygen flow (0% RH).  
Spherasorb vs Standard soda lime.



## What is LoFloSorb™?

### A unique medical grade CO<sub>2</sub> absorbent that contains no Alkali Hydroxide

LoFloSorb has a long history of use within anaesthesia and meets all the requirements of the United States and British Pharmacopoeias. LoFloSorb eliminates the risk associated with reactions with volatile anaesthetics.

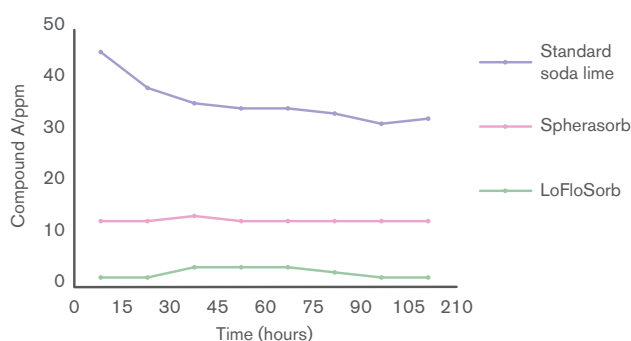
#### Features and Benefits:

- LoFloSorb contains no Potassium Hydroxide and no Sodium Hydroxide. Therefore LoFloSorb contains no aggressive chemicals that can react with the volatile anaesthetics
- LoFloSorb is made of 3-4mm spheres processed to minimise potential dusting. Its uniform shape allows consistent bed packing, resulting in a more even flow of gases through the absorber
- LoFloSorb offers a very stable green to violet colour change. This eliminates the potential for exhausted product being mistaken for fresh

Due to the absence of any Alkali Hydroxide LoFloSorb does not last as long as standard soda limes or Spherasorb. LoFloSorb meets all the requirements of the United States Pharmacopoeia (USP).



LoFloSorb eliminates the risk of reaction with Sevoflurane



Compound A is a breakdown product of Sevoflurane with dry absorbents. Independent tests have demonstrated that LoFloSorb eliminates the risk of reaction with Sevoflurane and other volatile anaesthetics.

## What is Intersorb Plus™?

### Intersorb Plus is a conventional soda lime CO<sub>2</sub> absorbent comprised of short porous 3mm diameter strands

Intersorb Plus is suitable for use within anaesthetic breathing systems. It is available in two indicator colour changes, pink to white and white to violet. Exhaustion of Intersorb Plus is clearly indicated by the colour change.



#### Features and Benefits:

- Intersorb Plus is made of 3mm strands. Its uniform shape allows for easy identification of Intersorb Plus
- Intersorb plus offers white to violet and pink to white colour change. This offers a clear indication as to when the product has become exhausted

Intersorb Plus exceeds the requirements of the United States Pharmacopia (USP).

## CO<sub>2</sub> Absorbents The choice is yours

Our range of medical grade absorbents and standard soda lime are available in a number of configurations to suit your requirements. These include loose fill, pre-filled absorbent cartridges and disposable absorbers for specific equipment.

Now it's easy to choose your absorbent online: [www.intersurgical.com/products/anaesthesia/co2-absorbents](http://www.intersurgical.com/products/anaesthesia/co2-absorbents)

Visit our site and match your machine and model to one of our canisters or loose fill options.

Spherasorb™ a unique medical grade soda lime designed specifically for clinical use. Spherasorb's chemical formulation has been developed specifically to address the potential problems of use within the medical environment.

LoFloSorb™ a unique medical grade CO<sub>2</sub> absorbent that contains no Alkali Hydroxide. LoFloSorb eliminates the risk associated with reactions with volatile anaesthetics.

Intersorb Plus™ a conventional soda lime Carbon Dioxide absorbent comprised of short porous 3mm diameter strands. Intersorb Plus is only available in loose fill 5 litre jericans.



Loose fill options



The Drum™



The Pyramid™



IS Pac™



IS Can™

## Loose fill options

| Code    | Description                                           | Size | Box Qty. |
|---------|-------------------------------------------------------|------|----------|
| 2179000 | Intersorb Plus jerican, white to violet colour change | 5L   | 2        |
| 2180000 | Intersorb Plus jerican, pink to white colour change   | 5L   | 2        |
| 2175000 | Spherasorb jerican, white to violet colour change     | 5L   | 2        |
| 2173000 | Spherasorb bag, white to violet colour change         | 1kg  | 10       |
| 2174000 | Spherasorb jerican, pink to white colour change       | 5L   | 2        |
| 2172000 | Spherasorb bag, pink to white colour change           | 1kg  | 10       |
| 2178000 | LoFloSorb jerican, green to violet colour change      | 5L   | 2        |

Make an enquiry

## The Drum™

### 1kg pre-filled disposable absorbent cartridge

The Drum is Intersurgical's easy to use, pre-filled 1kg absorbent cartridge that has been developed specifically for clinical use during anaesthesia. The Drum can be used on numerous anaesthetic machines with single or double absorbers that have been designed to take the conventional design of pre-filled cartridges.



### Quick and convenient exchange of absorbent

The Drum eliminates the time consuming task of pouring loose granules into the absorber and removing when exhausted



### Intersurgical absorbents

The Drum is available filled with Spherasorb™ or LoFloSorb™

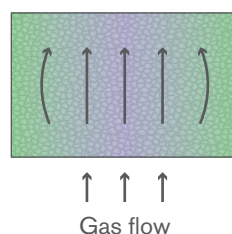
### Unique design with central baffle and dispersion channels

### Reduced channelling and coring

With the Drum optimum flow and dispersion is achieved resulting in a better utilisation of the soda lime granules and a more visible colour change from the outside.

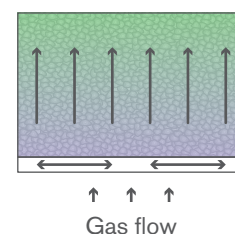
### Standard cartridge

Coring



### The Drum

Improved gas flow



| Code    | Description                                                                                    | Box Qty. |
|---------|------------------------------------------------------------------------------------------------|----------|
| 2186000 | The Drum, <b>Spherasorb</b> CO <sub>2</sub> absorbent cartridge, white to violet colour change | 10       |
| 2187000 | The Drum, <b>Spherasorb</b> CO <sub>2</sub> absorbent cartridge, pink to white colour change   | 10       |
| 2188000 | The Drum, <b>LoFloSorb</b> CO <sub>2</sub> absorbent cartridge, green to violet colour change  | 10       |

Make an enquiry

## The Pyramid™

### 1kg pre-filled disposable carbon dioxide absorber

The Pyramid is an easy to use disposable absorber specifically developed for clinical use during anaesthesia to absorb carbon dioxide within an anaesthetic breathing system. The Pyramid is compatible with the following Dräger® anaesthetic workstations providing it is used in conjunction with the CLIC™ adaptor: Fabius®, Julian®, Primus®, Zeus®, Perseus®.

It is essential that the user follows the instructions for use of the Dräger anaesthetic workstation concerned. Refers to the instructions for use supplied with each box of Intersurgical Pyramid absorbers.



### An air-tight seal for storage

The Pyramid is fitted with an air-tight cap to protect the absorbent from moisture and carbon dioxide within the air

### Fast and easy exchange

The Pyramid enables fast exchange of absorbent without the need for time consuming pouring of loose granules

### Clip to indicate the correct location

For the MX50090 CLIC adaptor. See Instructions for use

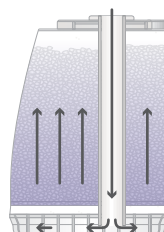
### No dust emission

Foam filters ensure that any fine particles or dust are retained within the Pyramid and not allowed to escape into the breathing system or into the atmosphere during handling, providing a safe solution for the user



### Efficient CO<sub>2</sub> absorption.

A gas dispersion chamber at the base of the Pyramid provides optimum flow and dispersion resulting in a better utilization of the soda lime granules and a more visible colour change from the outside.



| Code    | Description                                                                                        | Box Qty. |
|---------|----------------------------------------------------------------------------------------------------|----------|
| 2191001 | The Pyramid, <b>Spherasorb™</b> disposable CO <sub>2</sub> absorber, white to violet colour change | 6        |
| 2192001 | The Pyramid, <b>Spherasorb</b> disposable CO <sub>2</sub> absorber, pink to white colour change    | 6        |
| 2193001 | The Pyramid, <b>LoFloSorb™</b> disposable CO <sub>2</sub> absorber, green to violet colour change  | 6        |

Make an enquiry

• Dräger is a registered trademark of Drägerwerk AG & Co. KGaA. • CLIC is a trademark of Dräger Medical GmbH.  
• Fabius, Julian, Primus, Zeus and Perseus are registered trademarks of Dräger Medical GmbH.

## IS Pac™

### 0.5kg pre-filled disposable carbon dioxide absorber

The IS Pac is a disposable carbon dioxide absorbent offering ease of exchange with minimal handling and providing a further option for customers who have made the choice to use pre-fills. The IS Pac is compatible with GE Healthcare® ADU™ machines.

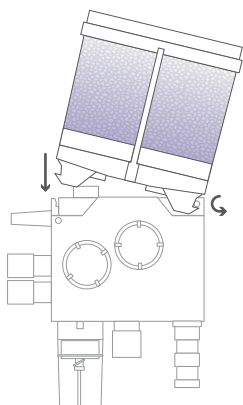
Before using the IS Pac it is essential to do the following:

- Become familiar with and follow the Instructions for use of the anaesthetic workstation concerned.
- Refer to the Instructions for use supplied with each box of Intersurgical IS Pac canisters.



### Fast and easy exchange

The IS Pac enables fast exchange of absorbent without the need for time consuming pouring of loose granules, or the risk of contamination



### Airtight seals for storage

The IS Pac is fitted with airtight caps to protect the absorbent from moisture and carbon dioxide within the air



### No dust emission

Foam filters ensure that any fine particles or dust are retained within the IS Pac and not allowed to escape into the breathing system or into the atmosphere during handling, therefore, providing a safe solution for the user

| Code    | Description                                                                                    | Box Qty. |
|---------|------------------------------------------------------------------------------------------------|----------|
| 2183003 | IS Pac, <b>Spherasorb</b> ™ disposable CO <sub>2</sub> absorber, white to violet colour change | 10       |
| 2183004 | IS Pac, <b>Spherasorb</b> disposable CO <sub>2</sub> absorber, pink to white colour change     | 10       |
| 2183005 | IS Pac, <b>LoFloSorb</b> ™ disposable CO <sub>2</sub> absorber, green to violet colour change  | 10       |

[Make an enquiry](#)

## IS Can™

### 1kg pre-filled disposable carbon dioxide absorber

The IS Can offers ease of exchange with minimal handling and provides a further option for customers who have made the choice to use pre-fills. The IS Can is compatible with GE Healthcare® anaesthetic machines; Aisys®, Aespire® and Avance® and also the GE® ADU™ machine.

Video available at [www.intersurgical.com](http://www.intersurgical.com)



### Fast and easy exchange

The IS Can enables fast exchange of absorbent without the need for time consuming pouring of loose granules, or the risk of contamination

### No dust emission

Foam filters ensure that any fine particles or dust are retained within the IS Can and not allowed to escape into the breathing system or into the atmosphere during handling

### Efficient CO<sub>2</sub> absorption

A gas dispersion chamber at the base of the IS Can allows for optimum flow up through the absorbent



| Code    | Description                                                                                   | Box Qty. |
|---------|-----------------------------------------------------------------------------------------------|----------|
| 2196000 | IS Can, <b>Spherasorb™</b> disposable CO <sub>2</sub> absorber, white to violet colour change | 6        |
| 2197000 | IS Can, <b>Spherasorb</b> disposable CO <sub>2</sub> absorber, pink to white colour change    | 6        |
| 2198000 | IS Can, <b>LoFlosorb™</b> disposable CO <sub>2</sub> absorber, green to violet colour change  | 6        |

Make an enquiry

• GE Healthcare and GE are registered trademarks of General Electric Company. • Aisys, Aespire and Avance are registered trademarks of Datex-Ohmeda, Inc. • ADU is a trademark of Datex-Ohmeda, Inc. Datex-Ohmeda, Inc. is a General Electric company.

## Dräger® compatibility guide

| Machine                                  | Loose fill | The Drum™ | The Pyramid™ | IS Pac™ | IS Can™ |
|------------------------------------------|------------|-----------|--------------|---------|---------|
| Perseus® with CLIC™ adaptor              | –          | –         | ✓            | –       | –       |
| Perseus® with refillable absorber        | ✓          | –         | –            | –       | –       |
| Zeus® with CLIC™ adaptor                 | –          | –         | ✓            | –       | –       |
| Zeus® with refillable absorber           | ✓          | –         | –            | –       | –       |
| Primus®/Apollo® with CLIC™ adaptor       | –          | –         | ✓            | –       | –       |
| Primus®/Apollo® with refillable absorber | ✓          | –         | –            | –       | –       |
| Fabius Tiro® with CLIC™ adaptor          | –          | –         | ✓            | –       | –       |
| Fabius Tiro® with refillable absorber    | ✓          | –         | –            | –       | –       |
| Fabius® GS with CLIC™ adaptor            | –          | –         | ✓            | –       | –       |
| Fabius® GS with refillable absorber      | ✓          | –         | –            | –       | –       |
| Fabius® CE with CLIC™ adaptor            | –          | –         | ✓            | –       | –       |
| Fabius® CE with refillable absorber      | ✓          | –         | –            | –       | –       |
| Julian® with CLIC™ adaptor               | –          | –         | ✓            | –       | –       |
| Julian® with refillable absorber         | ✓          | –         | –            | –       | –       |
| Cicero™ with CLIC™ adaptor               | –          | –         | ✓            | –       | –       |
| Cicero™ with refillable absorber         | ✓          | –         | –            | –       | –       |
| Cato® with CLIC™ adaptor                 | –          | –         | ✓            | –       | –       |
| Cato® with refillable absorber           | ✓          | –         | –            | –       | –       |
| Narkomed® 2B                             | ✓          | ✓         | –            | –       | –       |
| Narkomed® 4                              | ✓          | ✓         | –            | –       | –       |
| Narkomed® GS                             | ✓          | ✓         | –            | –       | –       |
| Narkomed® Mobile                         | ✓          | ✓         | –            | –       | –       |
| Other                                    | ✓          | –         | –            | –       | –       |

## GE Healthcare® compatibility guide

| Machine                                       | Loose fill | The Drum™ | The Pyramid™ | IS Pac™ | IS Can™ |
|-----------------------------------------------|------------|-----------|--------------|---------|---------|
| Aisys® using the pre-filled Multiabsorber     | –          | –         | –            | –       | ✓       |
| Aisys® using the refillable Multiabsorber     | ✓          | –         | –            | –       | ✓       |
| Avance® using the pre-filled Multiabsorber    | –          | –         | –            | –       | ✓       |
| Avance® using the refillable Multiabsorber    | ✓          | –         | –            | –       | ✓       |
| Aespire® reusing the pre-filled Multiabsorber | –          | –         | –            | –       | ✓       |
| Aespire® using the refillable Multiabsorber   | ✓          | –         | –            | –       | ✓       |
| ADU™ using the pre-filled Compact absorber    | –          | –         | –            | ✓       | ✓       |
| ADU™ using the refillable Compact absorber    | ✓          | –         | –            | ✓       | ✓       |
| Aestiva®                                      | ✓          | ✓         | –            | –       | –       |
| Excel®                                        | ✓          | ✓         | –            | –       | –       |
| Modulus™                                      | ✓          | ✓         | –            | –       | –       |
| Other                                         | ✓          | D.o.M.    | –            | –       | –       |

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 • Cicero and CLIC are trademarks of Dräger Medical GmbH. • Aisys, Avance, Aespire, Aestiva and Excel are registered trademarks of Datex-Ohmeda, Inc. • Modulus is a trademark of Datex-Ohmeda, Inc.  
 • ADU is a trademark of Datex-Ohmeda, Inc. • Datex-Ohmeda, Inc. is a General Electric company. • GE Healthcare is a registered trademark of General Electric Company. • D.o.M.: Depends on Machine.

## Maquet® (formerly Siemens®) compatability guide

| Machine                          | Loose fill | The Drum™ | The Pyramid™ | IS Pac™ | IS Can™ |
|----------------------------------|------------|-----------|--------------|---------|---------|
| KION®-i                          | ✓          | ✓         | –            | –       | –       |
| FLOW™-i with refillable absorber | ✓          | –         | –            | –       | –       |
| Other                            | D.o.M.     | –         | –            | –       | –       |

## Spacelabs® compatability guide

| Machine    | Loose fill | The Drum™ | The Pyramid™ | IS Pac™ | IS Can™ |
|------------|------------|-----------|--------------|---------|---------|
| ARKON®     | D.o.M.     | –         | ✓            | –       | –       |
| Focus™     | ✓          | ✓         | –            | –       | –       |
| Frontline™ | ✓          | ✓         | –            | –       | –       |
| Sirius™    | ✓          | ✓         | –            | –       | –       |
| Other      | ✓          | D.o.M.    | –            | –       | –       |

## Penlon® compatability guide

| Machine             | Loose fill | The Drum™ | The Pyramid™ | IS Pac™ | IS Can™ |
|---------------------|------------|-----------|--------------|---------|---------|
| A100™               | ✓          | ✓         | –            | –       | –       |
| SP100™              | ✓          | ✓         | –            | –       | –       |
| SP200™              | ✓          | ✓         | –            | –       | –       |
| Other               | ✓          | D.o.M.    | –            | –       | –       |
| Other manufacturers | D.o.M.     | D.o.M.    | D.o.M.       | D.o.M.  | D.o.M.  |

## Mindray®

| Machine | Loose fill | The Drum™ | The Pyramid™ | IS Pac™ | IS Can™ |
|---------|------------|-----------|--------------|---------|---------|
| A5      | ✓          | ✓         | –            | –       | –       |
| A7      | ✓          | ✓         | –            | –       | –       |

## Other manufacturers compatability guide

| Machine                     | Loose fill | The Drum™ | The Pyramid™ | IS Pac™ | IS Can™ |
|-----------------------------|------------|-----------|--------------|---------|---------|
| Other manufacturers machine | D.o.M.     | D.o.M.    | D.o.M.       | D.o.M.  | D.o.M.  |

## Intersurgical

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[www.intersurgical.com](http://www.intersurgical.com)



**Distributor:**

[www.intersurgical.com/distributors](http://www.intersurgical.com/distributors)

## SDS Hazard Communication Safety Data Sheet according to Regulation (EC) No. 1272/2008 [CLP] Carbon Dioxide absorbents, Spherasorb, Intersorb Plus, LoFloSorb and canisters containing these materials.

SDS Ref MH02042020ABS

Issue 3: 2/4/2020

### 1.1 Product identifier: This Safety data sheet covers the following carbon dioxide absorbent products.

See note 16.1 relating to issue number and changes to previous documents

#### Trade name / designation

2172000 Spherasorb bag Pink to white colour change.  
 2173000 Spherasorb bag White to violet colour change.  
 2174000 Spherasorb jerican Pink to white colour change.  
 2175000 Spherasorb jerican White to violet colour change.  
 2169001 Spherasorb SmartCan disposable CO2 absorber White to violet colour change.  
 2169002 Spherasorb SmartCan disposable CO2 absorber Pink to white colour change.  
 2199001 Spherasorb AbCan disposable CO2 absorber White to violet colour change.  
 2199002 Spherasorb AbCan, disposable CO2 absorber Pink to white colour change.  
 2186000 Spherasorb Drum, CO2 absorbent cartridge White to violet colour change.  
 2187000 Spherasorb Drum, CO2 absorbent cartridge Pink to white colour change.  
 2191001 Spherasorb Pyramid, disposable CO2 absorber White to violet colour change.  
 2192001 Spherasorb Pyramid, disposable CO2 absorber Pink to white colour change.  
 2196000 Spherasorb IS Can, disposable CO2 absorber White to violet colour change.  
 2197000 Spherasorb IS Can, disposable CO2 absorber Pink to white colour change.  
 2130000, Spherasorb Clear-Flo anaesthetic breathing system, 1.6m absorber, pink to white colour change  
 2131000, Spherasorb Clear-Flo anaesthetic breathing system, 1.6m absorber, white to violet colour change  
 2132000, Spherasorb Clear-Flo anaesthetic breathing system with inner lumen, 1.6m absorber, pink to white colour change  
 2133000, Spherasorb Clear-Flo anaesthetic breathing system with inner lumen, 1.6m absorber, white to violet colour change  
 2179000 Intersorb Plus jerican White to Violet colour change.  
 2180000 Intersorb Plus jerican Pink to White colour change.  
 2178000 LoFloSorb jerican Green to violet colour change.  
 2199003 LoFloSorb AbCan, disposable CO2 absorber Green to violet colour change.  
 2188000 LoFloSorb Drum, CO2 absorbent cartridge Green to violet colour change.  
 2193001 LoFloSorb Pyramid, disposable CO2 absorber Green to violet colour change.  
 2198000 LoFloSorb IS Can, disposable CO2 absorber Green to violet colour change.  
 2199003 LoFloSorb AbCan, disposable CO2 absorber Green to violet colour change.  
 2169003 LoFloSorb SmartCan, disposable CO2 absorber Green to violet colour change.

|                                                                                   |                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.2 Relevant identified uses of the substance or mixture and uses advised against | For medical, veterinary or laboratory use to remove carbon dioxide from gas streams.<br>Uses advised against: Not available                                                                                     |
| 1.3 Details of the supplier of the safety data sheet                              | Intersurgical Ltd, Crane House, Molly Millars Lane, Wokingham, Berkshire, RG41 2RZ, United Kingdom<br>Tel 0044 (0)1189 656300 Fax 0044 (0)1189 656356 Email info@intersurgical.co.uk Web: www.intersurgical.com |
| 1.4 Emergency contact:                                                            | Tel 0044 (0)1189 656300 Email info@intersurgical.co.uk                                                                                                                                                          |

| 2. Hazards identification                      | For all product codes shown in section 1.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2.1 Classification of the substance or mixture | <p>Classification according to Regulation (EC) No. 1272/2008 [CLP]</p> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> <div style="display: flex; justify-content: space-between;"> <div> <p>Classification</p> <p>H315</p> <p>H318</p> </div> <div> <p>Hazard statements</p> <p>Causes skin irritation</p> <p>Causes serious eye damage</p> </div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 2.2 Label elements                             | <p>Labeling according to Regulation (EC) No. 1272/2008 [CLP]</p> <p>Hazard pictogram(s)</p> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> <div style="display: flex; justify-content: space-between;"> <div> <p>Signal word</p> <p>Class</p> <p>Product identifiers</p> <p>Classification</p> <p>H315</p> <p>H318</p> </div> <div> <p>Warning</p> <p>Irritant</p> <p>Calcium Hydroxide; Sodium Hydroxide</p> <p>Hazard statements</p> <p>Causes skin irritation</p> <p>Causes serious eye damage</p> </div> </div> <p>Precautionary statements:</p> <div style="display: flex; justify-content: space-between;"> <div> <p>P280</p> <p>P302/P352</p> <p>P305/351/338.</p> <p>P332/313:</p> </div> <div> <p>Wear protective gloves/protective clothing/eye protection/face protection</p> <p>IF ON SKIN: Wash with plenty of soap and water</p> <p>IF IN EYES: Rinse cautiously with water for several minutes.</p> <p>Remove contact lenses, if present and easy to do.</p> <p>Continue rinsing. If skin irritation occurs: Get medical advice/attention</p> </div> </div> |
| 2.3 Other hazards                              | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

| <b>3. Composition/ Information on ingredients</b>            |                               |                        |                                       |                                                                                                                                                                           |                                                                                                                                                                         |                                                                            |                                                                          |                                                                                                                                                         |
|--------------------------------------------------------------|-------------------------------|------------------------|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|--------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3.1 Ingredients of Carbon Dioxide granules: As manufactured. |                               |                        |                                       |                                                                                                                                                                           |                                                                                                                                                                         |                                                                            |                                                                          |                                                                                                                                                         |
| Substance                                                    | CAS No                        | EINECS/ELINCS          | Classification (EC 1272/2008)         | Spherasorb<br>Soda Lime<br>White to Violet<br>Colour change<br>2173000<br>2175000<br>2183003<br>2186000<br>2191001<br>2196000<br>2199001<br>2169001<br>2130000<br>2132000 | Spherasorb<br>Soda Lime<br>Pink to White<br>Colour change<br>2172000<br>2174000<br>2183004<br>2187000<br>2192001<br>2197000<br>2199002<br>2169002<br>2131000<br>2133000 | Intersorb Plus<br>Soda Lime<br>White to Violet<br>Colour change<br>2179000 | Intersorb Plus<br>Soda Lime<br>Pink to White<br>Colour change<br>2180000 | LoFloSorb<br>CO <sub>2</sub> absorbent<br>Green to Violet<br>Colour change<br>2178000<br>2183005<br>2188000<br>2193001<br>2198000<br>2199003<br>2169--3 |
|                                                              |                               |                        |                                       | Content<br>( % weight )                                                                                                                                                   | Content<br>( % weight )                                                                                                                                                 | Content<br>( % weight )                                                    | Content<br>( % weight )                                                  | Content<br>( % weight )                                                                                                                                 |
| Calcium Hydroxide                                            | 1305-62-0                     | 215-137-3              | Skin Irritant H315<br>Eye Damage H318 | 75 – 80 %                                                                                                                                                                 | 75 – 80 %                                                                                                                                                               | 80 – 85 %                                                                  | 80 – 85 %                                                                | 75 – 80 %                                                                                                                                               |
| Sodium Hydroxide                                             | 1310-73-2                     | 215-185-5              | Skin Corrosion. 1A: H314              | Under 2 %                                                                                                                                                                 | Under 2 %                                                                                                                                                               | Under 4 %                                                                  | Under 4 %                                                                | ZERO                                                                                                                                                    |
| Zeolite                                                      | 1318-02-1                     | 215-283-8              | Not applicable                        | 4 – 5 %                                                                                                                                                                   | 4 – 5 %                                                                                                                                                                 | ZERO                                                                       | ZERO                                                                     | ZERO                                                                                                                                                    |
| Silica                                                       | 112926-00-8                   | 231-545-4              | Not applicable                        | ZERO                                                                                                                                                                      | ZERO                                                                                                                                                                    | ZERO                                                                       | ZERO                                                                     | 6 % - 7 %                                                                                                                                               |
| Ethyl Violet                                                 | 2390-59-2                     | 219-231-5              | Not applicable                        | Under 0.1 %                                                                                                                                                               | ZERO                                                                                                                                                                    | Under 0.1 %                                                                | ZERO                                                                     | Under 0.1 %                                                                                                                                             |
| Titan yellow                                                 | 1829-00-1                     | 217-377-4              | Not applicable                        | ZERO                                                                                                                                                                      | Under 0.1 %                                                                                                                                                             | ZERO                                                                       | Under 0.1 %                                                              | ZERO                                                                                                                                                    |
| Pigment Green                                                | 1328-53-6<br>and<br>5102-83-0 | 215-524-7<br>228-787-8 | Not applicable                        | ZERO                                                                                                                                                                      | ZERO                                                                                                                                                                    | ZERO                                                                       | ZERO                                                                     | Under 0.1 %                                                                                                                                             |
| Water                                                        |                               |                        |                                       | 13.5% - 17.5%                                                                                                                                                             | 13.5% - 17.5%                                                                                                                                                           | 13.5% - 17.5%                                                              | 13.5% - 17.5%                                                            | 13.5% - 17.5%                                                                                                                                           |

| 4 First-aid measures                                                            | For all product codes shown in section 1.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4.1 Description of first aid measures                                           | <p>General information<br/>           In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).<br/>           Remove victim out of the danger area.<br/>           Keep affected person warm, still and covered.<br/>           Do not leave affected person unattended.</p> <p>Following inhalation<br/>           Remove person to fresh air and keep comfortable for breathing.<br/>           If unconscious but breathing normally, place in recovery position and seek medical advice.<br/>           No mouth-to-mouth or mouth-to-nose resuscitation. Use Ambu bag or ventilator.</p> <p>Following skin contact<br/>           Remove contaminated, saturated clothing immediately.<br/>           After contact with skin, wash immediately with plenty of water and soap.<br/>           Take off immediately all contaminated clothing.<br/>           In case of skin irritation, consult a physician.<br/>           Immediate medical treatment required because corrosive injuries that are not treated are hard to cure.</p> <p>Following eye contact<br/>           Remove contact lenses, if present and easy to do. Continue rinsing.<br/>           In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist.</p> <p>Following ingestion<br/>           Never give anything by mouth to an unconscious person or a person with cramps.<br/>           IF SWALLOWED: rinse mouth.<br/>           Do NOT induce vomiting.</p> <p>Self-protection of the first aider<br/>           First aider: Pay attention to self-protection!</p> |
| 4.2. Most important symptoms and effects, both acute and delayed                | Eye irritation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 4.3. Indication of any immediate medical attention and special treatment needed | Notes for the doctor<br>Treat symptomatically.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

| <b>5. Firefighting measures</b> For all product codes shown in section 1.1 |                                                                                                                                                                                               |
|----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5.1 Extinguishing media                                                    |                                                                                                                                                                                               |
| Suitable extinguishing media                                               | Extinguishing powder.                                                                                                                                                                         |
| Unsuitable extinguishing media                                             | Strong water jet. DO NOT USE Carbon dioxide (CO <sub>2</sub> ).                                                                                                                               |
| 5.2. Special hazards arising from the substance or mixture                 | Formation of toxic gases is possible during heating or in case of fire.<br>Extreme exothermic reactions with pure / high concentrations of carbon dioxide.<br>Reacts aggressively with acids. |
| 5.3. Advice for fire fighters                                              | Wear a self-contained breathing apparatus and chemical protective clothing.                                                                                                                   |

| <b>6. Accidental release measures</b> For all product codes shown in section 1.1 |                                                                                                                                                                                                                                                             |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6.1. Personal precautions, protective equipment and emergency procedures         | Use personal protection equipment.<br>Remove persons to safety.<br>Use appropriate respiratory protection.<br>Provide adequate ventilation.                                                                                                                 |
| 6.2 Environmental precautions                                                    | Ensure waste is collected and contained.<br>Do not allow product to enter into surface water or drains.                                                                                                                                                     |
| 6.3 Methods and material for containment and cleaning up                         | Treat the recovered material as prescribed in the section on waste disposal.<br>Collect in closed and suitable containers for disposal.<br>Clean contaminated objects and areas thoroughly observing environmental regulations.<br>Ventilate affected area. |
| 6.4. Reference to other sections                                                 | Safe handling: see section 7<br>Disposal: see section 13<br>Personal protection equipment: see section 8                                                                                                                                                    |

| <b>7. Handling and storage</b> For all product codes shown in section 1.1 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7.1 Precautions for safe handling                                         | Handle in accordance with good hygiene and safety practice.<br>Avoid the raising and deposition of dust.<br>Do not ingest or inhale                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 7.2 Conditions for safe storage, including any incompatibilities          | Store in a tightly closed/sealed container.<br>Store in dry, well-ventilated area away from incompatible substances.<br>Do not store in direct sunlight.<br>Keep away from strong acids.<br>Store protected from moisture.<br><br>Store ideally at room temperature, but not outside temperatures ranging from $-20^{\circ}\text{C}$ to $+50^{\circ}\text{C}$ .<br>Do not allow to desiccate (dry out).<br>Facilities storing or utilizing this material should be equipped with an eyewash facility.<br>Store in a safe place away from children and not together with or near food, animal feed. |
| 7.3 Specific end use(s)                                                   | For absorbing Carbon Dioxide                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

| <b>8. Exposure controls / Personal protection.</b> For all product codes shown in section 1.1 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |                                |
|-----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------------------------|
| 8.1 Control Parameters                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |                                |
| Occupational exposure limits                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |                                |
| Substance                                                                                     | Value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Unit              | Type                           |
| Calcium Hydroxide 1305-62-0                                                                   | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | mg/m <sup>3</sup> | Short term exposure limit      |
|                                                                                               | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | mg/m <sup>3</sup> | Long term exposure limit (TWA) |
| Sodium Hydroxide 1310-73-2                                                                    | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | mg/m <sup>3</sup> | Short term exposure limit      |
| 8.2 Exposure controls                                                                         | <p>Engineering controls: Provide adequate ventilation as well as local exhaust at critical locations.</p> <div style="display: flex; justify-content: space-around; align-items: center;">    </div> <p>Personal protective equipment</p> <p>Eye / face protection: Use approved safety goggles or face shield.</p> <p>Skin protection: Use protective gloves made of: Rubber or plastic.</p> <p>Protective clothing: Wear appropriate clothing to prevent reasonably probable skin contact</p> <p>Respiratory protection: Work in fume cupboard if possible Wear respirator if there is dust formation. Dust filter P2 (for fine dust).</p> <p>Additional information: Wash hands before breaks and after work. Avoid contact with skin and eyes. When using do not eat, drink or smoke. have eye shower equipment available.</p> |                   |                                |

| 9. Physical and chemical properties For all product codes shown in section 1.1 |                                                          |
|--------------------------------------------------------------------------------|----------------------------------------------------------|
| 9.1 Information on basic physical and chemical properties of granules          |                                                          |
| Appearance                                                                     | Solid porous granules 3- 4 mm.                           |
| Odour:                                                                         | Slight chemical smell                                    |
| Odour threshold                                                                | No data available                                        |
| pH                                                                             | pH14                                                     |
| Melting point/freezing point                                                   | Not applicable.                                          |
| Initial boiling point and boiling range                                        | Not applicable.                                          |
| Flash point                                                                    | No data available                                        |
| Evaporation rate                                                               | Not applicable                                           |
| Flammability:                                                                  | The product is not considered to be an explosive hazard. |
| Vapour pressure                                                                | No data available                                        |
| Vapour density                                                                 | No data available                                        |
| Relative density                                                               | 0.70 – 0.85 g/ml                                         |
| Solubility                                                                     | Only slightly soluble in water.                          |
| Auto-ignition temperature                                                      | No data available                                        |
| Decomposition temperature                                                      | Thermal decomposition to oxides at over 500 deg C        |
| Viscosity                                                                      | Not applicable                                           |
| Explosive properties                                                           | The product is not considered to be an explosive hazard. |
| Oxidising properties                                                           | Not applicable                                           |
| 9.2 Other safety information                                                   | Not available                                            |

| <b>10. Stability and reactivity</b> For all product codes shown in section 1.1 |                                                                                                                                                                             |
|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10.1 Reactivity                                                                | Extreme exothermic reactions with pure / high concentrations of carbon dioxide.<br>React aggressively with acids.<br>Variable reactivity with different acidic gases.       |
| 10.2 Chemical stability                                                        | Stable when stored correctly.                                                                                                                                               |
| 10.3 Possibility of hazardous reactions:                                       | Extreme exothermic reactions with pure / high concentrations of carbon dioxide.<br>Reacts aggressively with acids. Potentially toxic fumes can be produced with some acids. |
| 10.4 Conditions to avoid:                                                      | Avoid contact with acids.<br>Do not use with trichloroethylene and chloroform.<br>Avoid contact with pure / high concentration of Carbon Dioxide.                           |
| 10.5 Incompatible materials.                                                   | The product will corrode some metal and may degrade condensation polymers.                                                                                                  |
| 10.6 Hazardous decomposition products                                          | Fire or high temperatures create can create harmful fumes of sodium oxide and calcium oxide.                                                                                |

| <b>11. Toxicity Information.</b> For all product codes shown in section 1.1 |                                                                                                          |
|-----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| 11.1 Acute oral toxicity                                                    | Date for mixture<br>Not available<br>Data for Calcium Hydroxide<br>Oral LD50> 2000 mg/kg (OECD 425, rat) |
| 11.2 Acute dermal toxicity                                                  | Severe to moist skin tissue, eyes and exposed cuts                                                       |
| 11.3 Acute inhalation toxicity                                              | Irritant to respiratory system and nasal passage.                                                        |
| 11.4 Skin corrosion/irritation                                              | Severe to moist skin tissue                                                                              |
| 11.5 Serious eye damage/irritation                                          | Causes serious eye damage                                                                                |
| 11.6 Respiratory or skin sensitisation                                      | No data available                                                                                        |
| 11.7 STOT-repeated exposure (STOT RE)                                       | No data available                                                                                        |
| 11.8 STOT-single exposure (STOT SE)                                         | No data available                                                                                        |
| 11.9 Carcinogenicity                                                        | No data available. Not expected                                                                          |
| 11.10 Reproductive toxicity                                                 | No data available. Not expected                                                                          |
| 11.11 Germ cell mutagenicity                                                | No data available. Not expected                                                                          |

|                                                                              |                                                                                                                                                                                             |
|------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>12. Ecological information</b> For all product codes shown in section 1.1 | Summary:<br>Ecotoxicity Not regarded as dangerous for the environment.<br>Bioaccumulative potential No bioaccumulation expected.<br>Acute fish toxicity No acute toxicity of fish expected. |
| 12.01. Short term aquatic toxicity                                           | Data for mixture Not available                                                                                                                                                              |
| 12.02. Long term aquatic toxicity                                            | Data for mixture Not available                                                                                                                                                              |
|                                                                              | Data for mixture Not available                                                                                                                                                              |
| 12.03. Short term sediment toxicity                                          | Data for mixture Not available                                                                                                                                                              |
| 12.04. Long term sediment toxicity                                           | Data for mixture Not available                                                                                                                                                              |
| 12.05. Persistence and degradability                                         | Data for mixture Not available                                                                                                                                                              |
| 12.06. Abiotic degradation                                                   | Data for mixture Not available: Not relevant for inorganic mixture                                                                                                                          |
| 12.07. Bioaccumulative potential                                             | Data for mixture Not available: Not relevant for inorganic mixture                                                                                                                          |
| 12.08. Mobility in soil                                                      | Data for mixture Not available: Expected to be low due to low solubility                                                                                                                    |
| 12.09. Results of PBT and vPvB assessment                                    | Data for mixture Not available: Not relevant for inorganic mixture                                                                                                                          |
| 12.08. Other adverse effects                                                 | Data for mixture Not available                                                                                                                                                              |

|                                    |                                            |
|------------------------------------|--------------------------------------------|
| <b>13. Disposal considerations</b> | For all product codes shown in section 1.1 |
|------------------------------------|--------------------------------------------|

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 13.1 Waste treatment methods | <p>The following information is a guideline only. Disposal of waste Carbon Dioxide absorbents must be in accordance with local authority regulations and following a risk analysis by the user.</p> <p>Intersurgical carbon dioxide absorbents do not contain any toxic materials and are not classified as dangerous materials, according to the United Nations Dangerous Goods List 2010.</p> <p>Contents (Composition will vary depending upon product and whether it is used or unused and the conditions of use.)</p> <ul style="list-style-type: none"> <li>•Calcium Carbonate (zero up to major proportion)</li> <li>•Calcium Hydroxide (significant to major proportion)</li> <li>•Sodium Carbonate (zero to minor proportion depending on product and usage)</li> <li>•Sodium Hydroxide (varying minor proportion depending on product and usage)</li> </ul> <p>Zeolite (zero to minor proportion depending on product and usage)</p> <p>Silica (zero to minor proportion depending on product and usage)</p> <ul style="list-style-type: none"> <li>•Water (varying major proportion)</li> <li>•There will also be a trace of indicator dye.</li> <li>•There may be residual traces of volatile anaesthetics.</li> </ul> <p>Used and unused product has the property of HP4, with the disposal European Waste Catalogue number 18 01 06* ('Chemical consisting of or containing hazardous substances').</p> <p>Intersurgical recommends that following clinical use during anaesthesia, especially with an infectious patient (which will not always be known), a risk assessment should be conducted as a consequence of clinical use. This is to assess whether the waste product also requires further classification under the European Waste Catalogue number 18 01 03* (waste whose collection and disposal is subject to special requirements in order to prevent infection).</p> <p>However, disposal of waste must be in accordance with local authority regulations and following a risk analysis by the user.</p> |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| <b>14: Transport information</b> For all product codes shown in section 1.1    |                                                                                                                                      |
|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| 14.1. UN number                                                                | The product is not hazardous and is exempt according to the applicable transport regulations (ADR / RID / ADN / IMDG / ICAO / IATA). |
| 14.2. UN proper shipping name                                                  | Non applicable                                                                                                                       |
| 14.3. Transport hazard class(es)                                               | Non applicable                                                                                                                       |
| 14.4. Packing group                                                            | Non applicable                                                                                                                       |
| 14.5. Environmental hazards                                                    | Non applicable                                                                                                                       |
| 14.6. Special precautions for user                                             | Non applicable                                                                                                                       |
| 14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code | Non applicable                                                                                                                       |

|                                                                                                      |                                                                                                                                                              |
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| <b>15. Regulatory Information.</b> For all product codes shown in section 1.1                        |                                                                                                                                                              |
| 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture | The product is classified in accordance with EC Regulation 1272/2008 (CLP). Other regulatory information and provisions are not applicable for this product. |
| 15.2. Chemical Safety Assessment                                                                     | A chemical safety assessment has not been performed for this substance                                                                                       |

|                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>16. Other information</b> For all product codes shown in section 1.1 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 16.1 Date of issue                                                      | <p>This safety data sheet has been revised in accordance to EC regulation 1272/2008 (CLP), by Intersurgical, to the best of its knowledge.</p> <p>Version date: 22/02/2018</p> <p>Printing date: 22/02/2018</p> <p>Data changed compared with the previous version:</p> <p>This safety data sheet is a generic document for all Intersurgical documents and replaces all previous separate Intersurgical carbon dioxide absorbent safety data sheets prior to the above date.</p> <p>Being the first generic safety data sheet for Intersurgical absorbents, this has been given Issue Number 1</p> <p>The products are unchanged, but all sections from 1 to 16 have been updated to provide up-to-date information.</p> |
| 16.2. Abbreviations and acronyms                                        | <p>ADN/ADNR: Regulations concerning the transport of dangerous substances in barges on inland waterways.</p> <p>ADR/RID: European Agreement concerns the International Carriage of Dangerous Goods by Road/ Regulations concerning the international carriage of dangerous goods by rail.</p> <p>CAS No.: Chemical Abstract Service Number</p> <p>CLP: Classification, Labelling and Packaging</p> <p>IATA: International Air Transport Association</p>                                                                                                                                                                                                                                                                   |

|                                                                                                           |                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                          |                             |
|-----------------------------------------------------------------------------------------------------------|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-----------------------------|
|                                                                                                           |                                         | IMDG: International Maritime Dangerous Goods code<br>N°UN: United Nations Number<br>N°EC: European Commission Number<br>vPvB: Very Persistent, very Bioaccumulative                                                                                                                                                                                                                                                                                            |                                                                                          |                             |
| 16.3. Key literature references and sources for data                                                      |                                         | Guidance on Labeling and Packaging under the CLP regulation 2011<br>Guidance on the compilation of safety data sheets version 3.1 November 2015<br>Globally Harmonized System of Classification, Chapter 2<br>European Waste Catalogue (2001/118/EC as amended),<br>Safety data sheets of raw materials and packaging.<br>Other supplier safety data sheets.                                                                                                   |                                                                                          |                             |
| 16.4. Classification for mixtures and used evaluation method according to regulation (EC) 1272/2008 [CLP] |                                         | REACH Regulation EC 1907/2006, Regulation (EC) 1272/2008 and Regulation (EC) 453/2010).<br>Intersurgical carbon dioxide absorbents are mixtures of component chemicals and as such, they do not need to be registered for REACH. However, the components chemicals used within them do need to be registered by our suppliers, unless they are manufactured or imported at less than 1 tonne per year, per manufacturer/importer                               |                                                                                          |                             |
| Ingredient                                                                                                | Product                                 | CAS No                                                                                                                                                                                                                                                                                                                                                                                                                                                         | EINECS/ELINCS                                                                            | REACH registration No       |
| Calcium Hydroxide                                                                                         | Spherasorb LoFloSorb and Intersorb Plus | 1305-62-0                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 215-137-3                                                                                | 01 - 2119475151 - 45 – 0135 |
| Sodium Hydroxide                                                                                          | Spherasorb and Intersorb Plus           | 1310-73-2                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 215-185-5                                                                                | 01-2119457892-27            |
| Zeolite                                                                                                   | Spherasorb                              | 1318-02-1                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 215-283-8                                                                                | 01-2119429034-49-0010       |
| Silica                                                                                                    | LoFloSorb                               | 112926-00-8                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 231-545-4                                                                                | 01-2119379499-16-0446       |
| 16.5. Relevant R-, H- and EUH-phrases (Number and full text)                                              |                                         | H315 Causes skin irritation<br>H318 Causes serious eye damage<br>Precautionary statements:<br>P280 Wear protective gloves/protective clothing/eye protection/face protection<br>P302/P352 IF ON SKIN: Wash with plenty of soap and water<br>P305/351/338. IF IN EYES: Rinse cautiously with water for several minutes.<br>P332/313: Remove contact lenses, if present and easy to do. Continue rinsing.If skin irritation occurs: Get medical advice/attention |                                                                                          |                             |
| 16.6. Training advice                                                                                     |                                         | Refer to sections 4, 5, 6, 7 and 8 of this safety data sheet.                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                          |                             |
| 16.7 Shelf life                                                                                           |                                         | Five years<br>2172000<br>2173000<br>2174000<br>2175000<br>2183003<br>2183000<br>2186000<br>2187000<br>2191001<br>2192001                                                                                                                                                                                                                                                                                                                                       | Three years<br>2178000<br>2183005<br>2188000<br>2193001<br>2198000<br>2199003<br>2169003 |                             |

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|                 | 2196000<br>2197000<br>2179000<br>2180000<br>2199001<br>2199002<br>2169001<br>2169002                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| 16.8 Disclaimer | <p>This version of the SDS supersedes all previous versions. Its contents are intended as a guide to the appropriate handling of the materials listed in section 1.1. It is the responsibility of recipients of this SDS to ensure that the information contained therein is properly read and understood by all people who may use, handle, dispose or in any way come in contact with these products. This SDS should not be construed as any guarantee of technical performance, suitability for particular applications and does not establish a legally valid contractual relationship.</p> <p>This version of the SDS supersedes all previous versions. The information is based on our present state of knowledge and is intended to describe our product from the point of view of the safety requirements.</p> |  |

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