

# Intersurgical

## Carbon Dioxide Absorbents

The complete choice

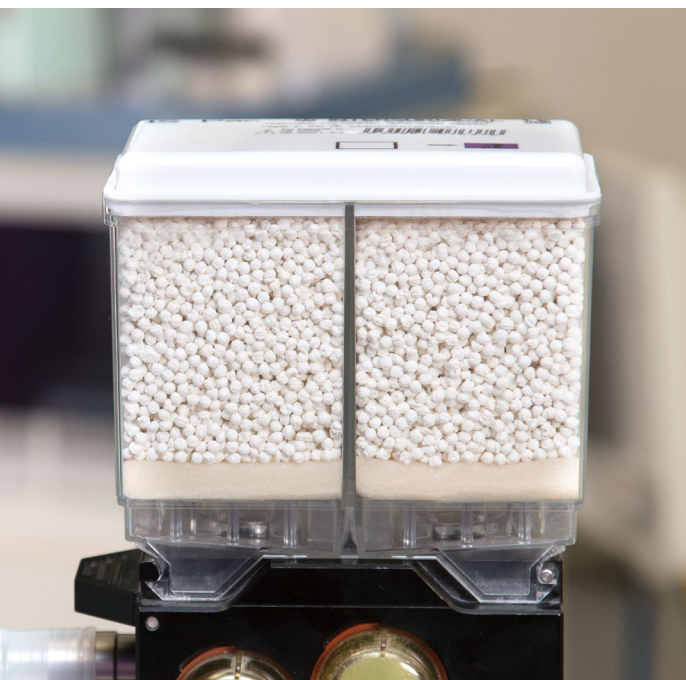
The Pyramid™



The Drum™

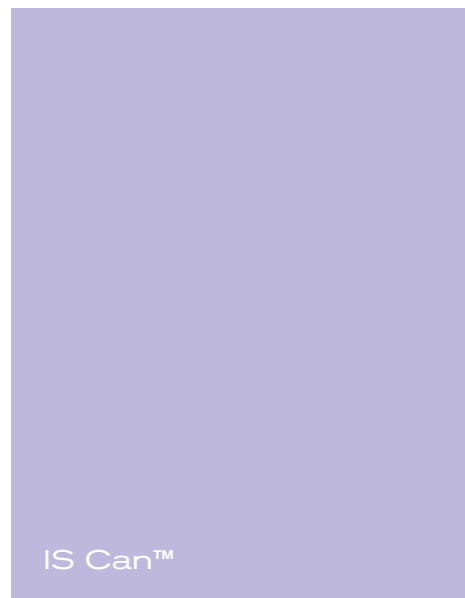


IS Pac™



Edition 2

IS Can™



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?

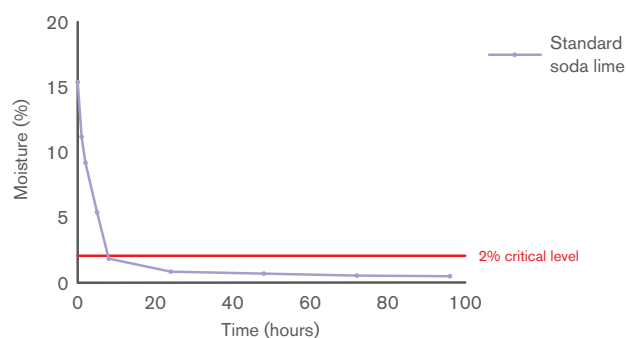
Conventional 'standard' soda lime absorbents have been used for many decades within anaesthetic re-breathing systems and have a good safety record. However, there are some safety considerations that have been raised.

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.

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



### 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.

## 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 corrosive 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

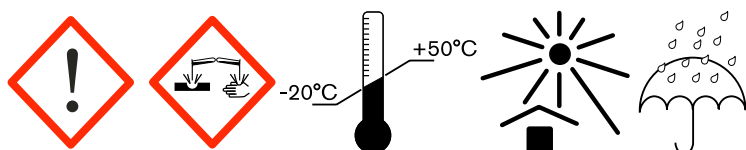
H318 Causes serious eye damage

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.

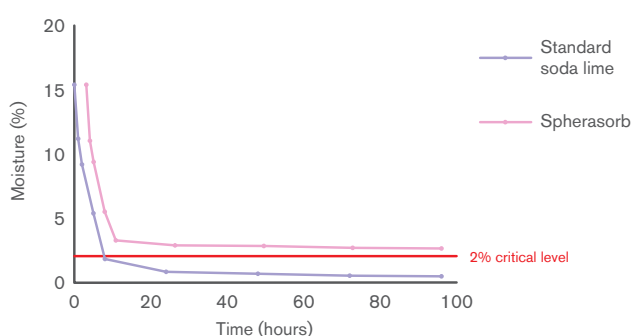
#### Features and Benefits:

- 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.

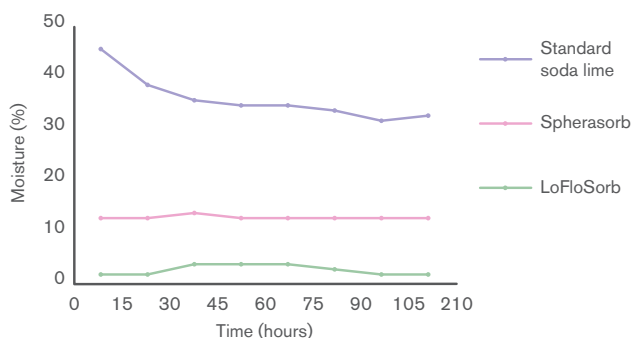
#### Features and Benefits:

- 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™

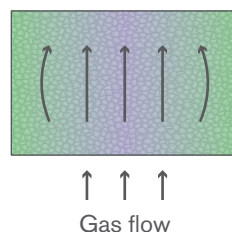
### Unique design with central baffle and dispersion channels

### 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.

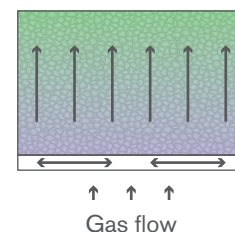
#### Standard cartridge

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

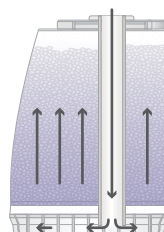
### No dust emission

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.

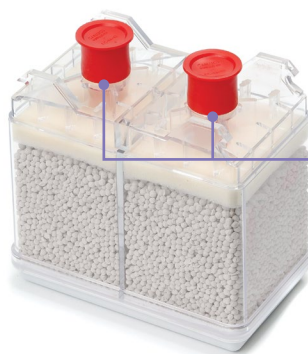
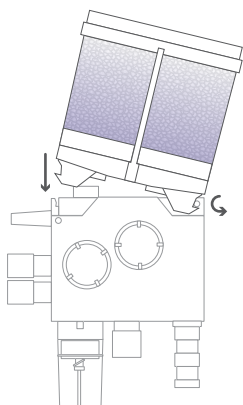
Before using the IS Pac it is essential to do the following:

- 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

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## Dräger® compatability 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® compatability 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®) compatibility guide

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

## Spacelabs® compatibility guide

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

## Penlon® compatibility 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 compatibility 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.