

## **Proposed Package Insert**

Caution: Federal law restricts this device to sale by or on the order of a physician (or properly licensed practitioner (Rx ONLY))

### **PRODUCT DESCRIPTION**

REPEL-CV Bioresorbable Adhesion Barrier is a sterile, single use, synthetic, bioresorbable polymeric clear film designed to act as a barrier to adjunctively reduce the formation of post-operative adhesions. REPEL-CV is composed of poly-lactic acid (PLA) and polyethylene glycol (PEG), components used extensively in implantable, absorbable medical devices. REPEL-CV has a faint caramel-like aroma.

### **INDICATIONS**

REPEL-CV is a surgical adjuvant indicated for reducing the incidence, severity and extent of post-operative adhesion formation in patients undergoing cardiac surgery via sternotomy.

### **CONTRAINDICATIONS**

REPEL-CV is contraindicated in patients in whom a Ventricular Assist Device (VAD) is implanted.

### **WARNING**

This device is an adjunct to good surgical technique and is not to be used to replace it.

### **PRECAUTIONS**

The safety and performance of REPEL-CV have not been established in pregnant women.

As with other surgically implanted foreign material, REPEL-CV should not be used in the presence of frank infection.

Do not use if pouch is damaged or opened prior to use.

Single use only.

Do not resterilize.

### **ADVERSE EVENTS**

In a multi-center, randomized, evaluator-masked, parallel comparative study to evaluate the safety and effectiveness of REPEL-CV, safety was evaluated in 142 pediatric

cardiovascular surgery patients requiring staged median sternotomy procedures for surgical corrections of congenital heart malformations. The primary inclusion criterion was patients requiring two staged cardiovascular sternotomy procedures. Table I lists the Adverse Events for the REPEL-CV treated and Control groups where the frequency of occurrence was  $\geq 2\%$ . The results are similar between the two treatment groups and representative of adverse events expected for this high-risk patient population.

**Table I. Adverse Events  $\geq 2\%$  by Descending Frequency\*\*\***

	REPEL-CV (N=73)	Control (N=69)
MedDRA Preferred Term	N (%)	N (%)
Cardio-Respiratory Arrest	4 (5.5%)	2 (2.9%)
Pleural Effusion	4 (5.5%)	3 (4.3%)
Wound Dehiscence*	4 (5.5%)	3 (4.3%)**
Ascites	3 (4.1%)	0
Cardiac Arrest	3 (4.1%)	4 (5.8%)
Bronchiolitis	3 (4.1%)	0
Cardiac Output Decreased	3 (4.1%)	1 (1.4%)
Hypoxia	3 (4.1%)	2 (2.9%)
Pulmonary Artery Stenosis	3 (4.1%)	1 (1.4%)
Mediastinitis*(prior to 2nd sternotomy)	2 (2.7%)	1 (1.4%)**
Mediastinitis* (after 2nd sternotomy)	2 (3.6%)	0
Wound Infection *	2 (2.7%)**	3 (4.3%)
Cyanosis	2 (2.7%)	1 (1.4%)
Coarctation of the Aorta	2 (2.7%)	3 (4.3%)
Necrotising Colitis	2 (2.7%)	3 (4.3%)
Bacteraemia	2 (2.7%)	2 (2.9%)
Respiratory Syncytial Virus Infection	2 (2.7%)	0
Convulsion	2 (2.7%)	7 (10.1%)
Atelectasis	2 (2.7%)	0
Diaphragmatic Paralysis	2 (2.7%)	1 (1.4%)
Respiratory Distress	2 (2.7%)	3 (4.3%)
Haemodynamic Instability	2 (2.7%)	0
Hypotension	2 (2.7%)	0
Pyrexia	1 (1.4%)	2 (2.9%)
Gastroenteritis	1 (1.4%)	2 (2.9%)
Oxygen Saturation Decreased	1 (1.4%)	7 (10.1%)
Chylothorax	1 (1.4%)	2 (2.9%)



$\geq$

In considering all adverse events, the average number of adverse events on a per patient basis was similar between the treatment groups.

## CLINICAL STUDIES

### U.S. Multi-Center Study

The Intent-to-Treat patient population in this multi-center, randomized, evaluator-masked, parallel comparative study that evaluated the effectiveness and safety of REPEL-CV included 110 (56 REPEL-CV; 54 Control) pediatric patients undergoing cardiovascular surgery via median sternotomy for surgical corrections of congenital heart malformations. The primary inclusion criterion was patients requiring sequential cardiovascular median sternotomy procedures. This allowed for adhesion formation to be evaluated at the time of the second sternotomy.

The primary effectiveness endpoint was the mean percent of the study-defined surface area with Grade 3 (Severe) adhesions at the time of the second sternotomy. The secondary effectiveness endpoint included the percentage of patients with Grade 3 adhesion at the time of the second sternotomy. Grade 3 (Severe) adhesions were defined as dense, cohesive adhesions, requiring extensive sharp dissection to separate the space between the epicardium and the sternum.

The results for the primary clinical endpoint are presented in Table II.

**Table II. Investigational Surgical Site Adhesion Assessment at Second Sternotomy**

		REPEL-CV (N=56)	Control (N=54)	*p- value
% Area with Grade 3 (Severe) Adhesions	Mean ± SD	21.3 ± 36.50	47.3 ± 42.73	0.0008
	Median	0.0	35.0	0.0001

\*A t-test was used to compare treatment means and the Wilcoxon rank sum test for the medians

REPEL-CV was successful in reducing the % area with Grade 3 (Severe) adhesions from 47.3% to 21.3% (p=0.0008). For the secondary effectiveness endpoint, the percentage of patients with Grade 3 (Severe) adhesions at the investigational site was 30.4% for the REPEL-CV and 72.2% for the control treatment group (p<0.0001; Fisher's exact test p-value).

### **HOW SUPPLIED**

REPEL-CV is supplied as a sterile, single use only.  
The 18 cm x 13.5 cm x 137 microns film is packaged in a sterile foil pouch.

### **STORAGE CONDITIONS**

REPEL-CV is to be refrigerated between 2-8 degrees Centigrade.

### **DIRECTIONS FOR USE**

#### **Preparation and Application of REPEL-CV**

1. Trim REPEL-CV to the required size (see below)
2. Remove all irrigation fluids and instillates from the pericardial cavity
3. Soak REPEL-CV for approximately two (2) minutes but no longer than five (5) minutes in Ringer's lactate or saline solution prior to placement
4. Just prior to chest closure, apply REPEL-CV to the epicardium, and suture it to the pericardium (4-0 or larger suture with a tapered needle, 2 to 3 tack sutures per edge) as follows:

Apply the trimmed continuous piece of REPEL-CV to fit between the pericardial edges and lying directly below the sternum. The material should extend at least 1.5 cm laterally beyond the pericardial edges between the pericardium and the heart to facilitate suturing to the pericardium. If desired, the material should extend further to cover the surface where intrapericardial adhesion protection is desired.

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