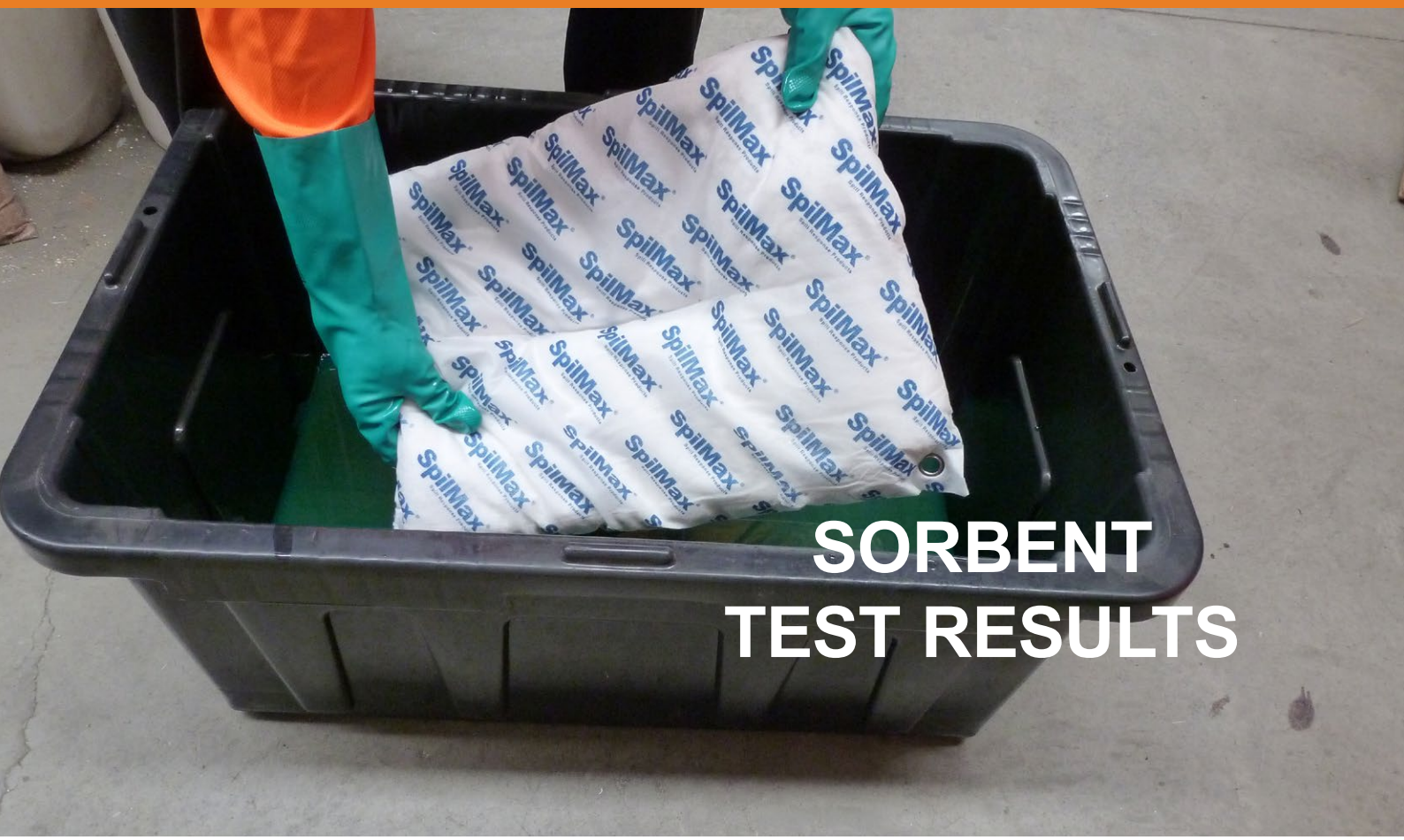
CHATOYER



SORBENT TEST RESULTS

Spill Containment on Land

Spill Containment on Water

Liquid Containment

Stormwater Protection

Silt & Sediment Control

Bags & Covers

Water Diversion

Spill Control

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INTRODUCTION

The SpilMax® range of sorbents are a high quality and cost effective range of products to assist with spill control and containment. They are manufactured from a range of different materials to provide the best spill control outcome in differing circumstances.

Our ranges of floor sweeps or loose absorbents are both manufactured within Australia using a variety of organic materials and milling processes to provide superior absorbency.

Our selection of pads, booms and pillows are made from melt blown polypropylene and imported since 2007 from the same manufacturer ensuring the highest of quality control. These adsorbents are hydrophobic in nature and very robust to their environmental surrounds. This means they can be used in a wide range of applications and will not deteriorate or wear, even when under extreme use. Our polypropylene materials are chemical resistant and will adsorb a wide variety of petro chemicals and petroleum based solvents without degrading or reacting.

Chatoyer Environmental is committed to deliver a quality range of spill response products under the SpilMax® brand. Our products have undergone extensive absorbency testing to ensure its performance meets the expectations required by your organisation.

HOW ARE THEY TESTED?

Our sorbency range carried both absorbents and adsorbents. As a result, different testing methods are required with the two relevant test standard being:

- ASTM F726 - Standard Test Method for Sorbent Performance of Adsorbents
- ASTM F716 - Standard Test Method for Sorbent Performance of Absorbents

There are two different standards for testing as the products approach spill control in two different ways. An Adsorbent material attracts the liquid to the surface of the object, hence the success of the product is a feature of its adhesion. An Absorbent brings the liquid collectively into the volume of the object, therefore the ability of the substance to swell and contain the liquid within is the factor to evaluate.

The product types are spilt into four Types:

1. Floor Sweep (loose organic absorbent)
2. Polypropylene sorbent Rolls
3. Polypropylene sorbent Pads & Pillows
4. Polypropylene sorbent Mini Booms

FLOOR SWEEPS

IThe SpilMax® selection of Floor Sweeps (loose absorbent material) has been extensively tested as per Australian Standards, USEPA, ASTM, ISO, APHA, CHSB and others to demonstrate that they meet or exceed all pertinent standards. The tests conducted are summarised below:

TEST NAME	TEST
Environmental Toxicity	ASTM D5560 (Microtox)
TCLP Leachate Test	USEPA 1311, USEPA 8015B
Sorption Capacity / Paint Filters Test	USEPA 9095
Proof of Absorbtion	ASTM F716-82 (11.2)
Pressure Release Test	USEPA 9096A
Human Toxicity	EPS 1/RM/10
Vapour Reduction	TVOC by GC/MS
Flammability	USEPA 1030
Pathogenic Bacteria	AS 1766
Pesticide Residues	USEPA 8270C
Particle Size	ISO 13320-1:1999
Permissable Exposure Limit	NOHSC, ACGIH, or NIOSH
Nutrient Content	Alpha 4500

POLYPROPYLENE SORBENTS

Chatoyer Environmental has conducted adsorbency testing to ensure the SpilMax® polypropylene sorbent range meets our stringent quality assurance standards. The capacity of polypropylene sorbent relates directly to the mass of polypropylene contained within the object. Quite simply, polypropylene is a polymer with a set sorbency capacity per gram. Therefore, Chatoyer Environmental ensures that each sorbent product has a full weight of polypropylene to create the greatest capacity. We do not believe that capacity results should be subjected to an assumption of 'reuse', so these results below illustrate the sorbency capacity based on a single use.

CODE	PRODUCT	CAPACITY
CH1308	Polypropylene Sorbent Rolls	320L / roll
CH1320	Polypropylene Sorbent Pads	1L / pad
CH1514	Polypropylene Sorbent Pillows	4L / pillow
CH1506	Polypropylene Sorbent 1.2m Mini Booms	4L / mini boom
CH1507	Polypropylene Sorbent 1.8m Mini Booms	6L / mini boom
CH1509	Polypropylene Sorbent 3.0m Mini Booms	8L / mini boom
CH1726	Polypropylene Sorbent Large Marine Booms	20L / boom

ASTM F726 - 09 STANDARD TEST METHOD FOR SORBENT PERFORMANCE

Sorbent Performance - Short Test

ASTM Test Method F726 - 09 Standard Test Method for for Sorbent Performance of Adsorbents gives idealised labratory data to test an adsorbent's maximum oil sorberncy capacity. Under these guidelines, representative samples of the SpilMax® polypropylene sorbent range (Type 3 and Type 4) were treated with two solutions of 50 weight motor oil and diesel fuel.

Each product Type was tested three (3) times with each solution and the results of the tests averages to obtain a representation of the sorbent capacity of the SpilMax® polypropylene range.

Calculation Method

Calculate oil sorbency as the ratio of oil adsorbed to dry adsorbent weight"

Oil Adsorbency = S_S/S_O

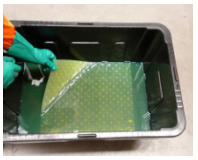
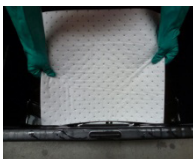
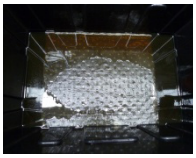
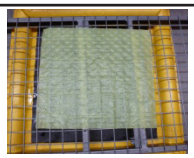
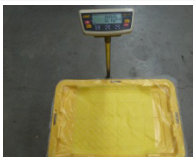
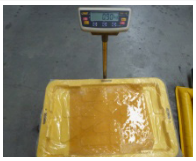
Where:

S_O - initial dry adsorbent dry weight

S_{ST} = weight of adsorbent samples at end of test

$S_S = (S_{ST} - S_O)$ net oil adsorbed

Testing Method

	PROCEDURE	DIESEL FUEL (Pad Test Shown)	MOTOR OIL (Pad Test Shown)
1	Product samples were weighed (dry weight calculations recorded)		
2	Cells were filled with 10L of solution - Test A: Diesel Fuel - Test B: Motor Oil		
3	Samples were placed into the cells of solution		
4	Samples were left for 15 minutes in the solution to allow for saturation		
5	Once saturated, the samples were removed from each cell and left to drain on a rack for 30 seconds only		
6	The oil saturated weight of samples were then re-corded		
7	Steps above were repeated for other products - Pillow application shown in photo 1 - Boom application shown in photo 2		

Test Date: 1 December 2011

Test was conducted under controlled conditions in 23°C temperature

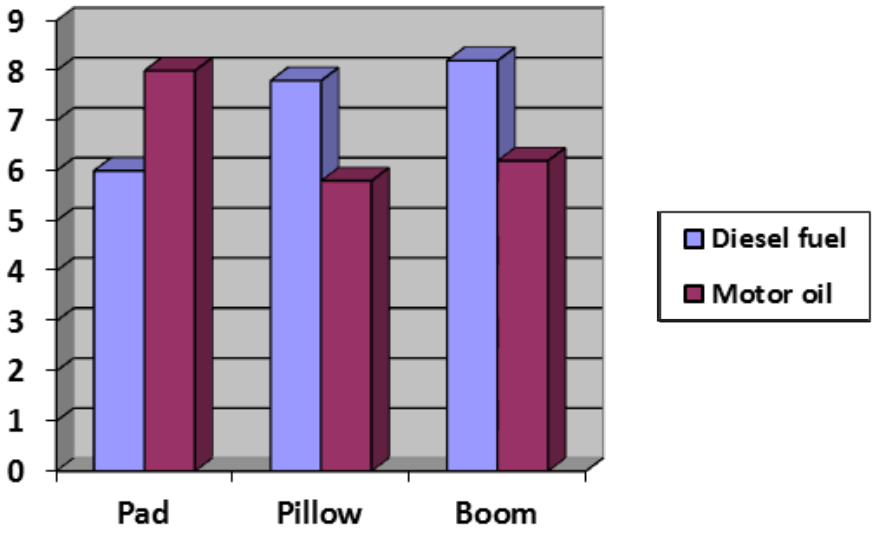
Test Results - Diesel Fuel

PRODUCT TYPE	TYPE 3 - PAD (480mm x 430mm)	TYPE 3 - PILLOW (400mm x 500mm x 50mm)	TYPE 4 - BOOM (1.2m x 75mmDia)
Dry weight of product (S_O)	100g	550g	300g
Oil saturated weight (S_{ST})	700g	4,850g	2,750g
Weight of oil (S_S)	600g	4,300g	2,450g
Adsorbtion Ratio (S_S/S_O)	6 : 1	7.8 : 1	8.2 : 1

Test Results - Motor Oil

PRODUCT TYPE	TYPE 3 - PAD (480mm x 430mm)	TYPE 3 - PILLOW (400mm x 500mm x 50mm)	TYPE 4 - BOOM (1.2m x 75mmDia)	TYPE 4 - BOOM (3.0m x 125mmDia)
Dry weight of product (S_O)	100g	550g	300g	2,200g
Oil saturated weight (S_{ST})	900g	3,750g	2,150g	9,400g
Weight of oil (S_S)	800g	3,200g	1,850g	7,200g
Adsorbtion Ratio (S_S/S_O)	8 : 1	5.8 : 1	6.2 : 1	3.27:1

Adsorbtion Ratio



OTHER

Quality Assurance

We have an extensive quality assurance system in place to monitor the quality of each batch of absorbent products.

Samples and Demonstrations

We are able to provide you with product and video demonstrations or samples within any of our product range under your consideration as required.

Technical Support

Our technical staff are on-call to assist you with any product enquires or to provide you with any technical support on our dedicated 1300 line.

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