

# ZEO STORM™ Stormwater Filter Sock - Information

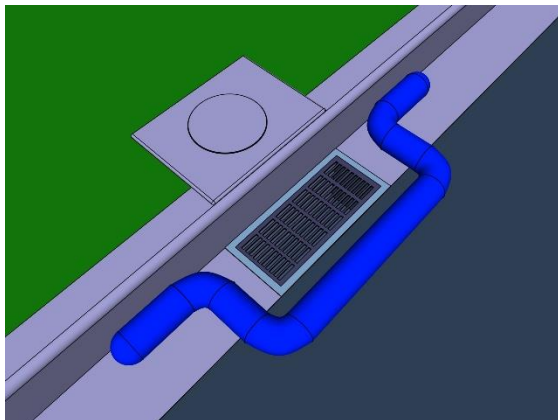
(v1.2)

## Overview

MKB Company has created a new stormwater filtration sock to be sold through on-line retailers. Each sock comes pre-packaged for shipment in a 24x30x6 box (the on-line retailer purchase unit is 36 per shipping pallet).

This product is different than current offerings in the market in several ways:

- Independent testing shows a dramatically higher hydraulic flow /sediment retention through a three-dimensional rice hull filter matrix than any other cellulose material such as switchgrass, wood chips, wood shavings, or compost. See the ASTM 5141 test results later in this document.
- Rice hulls in this product have been heat-treated which has three benefits:
  - o Reduces the risk of pathogens are being distributed with the product.
  - o Reduces the risk of degradation while inventoried - increases the self-stability to at least 2 years.
  - o Opens up the cellulose structure so it is more absorbent to waterborne pollutants.



## Product Configuration:

5-inch diameter x 10-feet long blue sock. Weighs approximately 26 lbs. Packaged in a 24x30x6 box.

## Materials:

Zeolite, heat-treated rice hulls, kenaf core, blue polypropylene netting.

## Use Instructions:

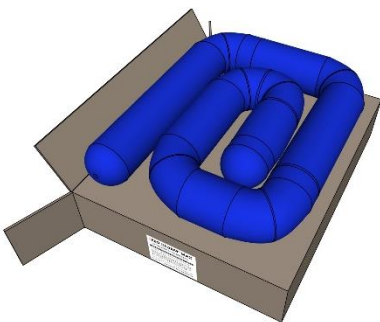
Place perpendicular to the flow of stormwater. During storm events, sediment and debris collects behind the sock, while waterborne pollutants such as grease, oil sheen, heavy metals, and dissolved nutrients are collected inside the sock. Use around stormwater drainage devices such street gutter, curb inlets, catch basins, downspouts, and dumpsters that may leak during storm events.

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(v1.2)

## General notes for resellers:

- The ZeoStorm Stormwater Filter Sock is a broad-spectrum pollution retention device for both post-construction stormwater management and erosion and sediment control applications.
- The sock comes in two versions:
  - o A “Regular” version with targeted retention for sediment, debris, and trace amounts of waterborne pollutants.
  - o A “Max” version broadens the type and amount of waterborne pollutants that can be retained while still offering excellent sediment and debris retention.
- MKB Company has filed a Provisional Patent ([63/070,891](https://www.uspto.gov/patents/publications/20180107)) related to this product.
- The reseller ordering unit is one pallet (36 30x24x6 boxes on a 48x48 pallet)
- The shipping weight of the pallet is about 975 lb. The pallet is 6 ½ feet tall.
- The shipping weight of each box is 26 lb.
- The only thing inside the box is the sock. The box label explains what the product is and how to use it – no additional sheet of paper or document should be needed.
- The product in the box is shelf-stable for at least 2 years and probably longer. Store the boxes in cool, dry conditions. Do not store boxes outside or in direct sunlight.
- Both the Regular and the Max versions use a blue netting. You can tell the difference between the versions by the small thin tag attached to one end. The Regular version is a blue with white lettering tag. The Max version is an orange with white lettering tag.
- The product will perform in the field for 12 months ±3 months depending on sediment and pollution load, rough handling, and intense UV conditions.
- The sock is not meant to be in water all the time. It will last longer if it gets wet while filtering during rain events but can dry out between rain events.
- At the end of its useful life, the fill can be composted or used as a gardening amendment.
- If it is believed that the sock has captured “contaminant” pollutants (azirine, benzene, etc.) it should be disposed of in an appropriated landfill.
- A picture library is available for resellers who wish to develop selling tools. Some examples: <https://www.dropbox.com/sh/0c96c04y8iyy65g/AACaD6-Yps7PwMS31o40tgRma?dl=0>



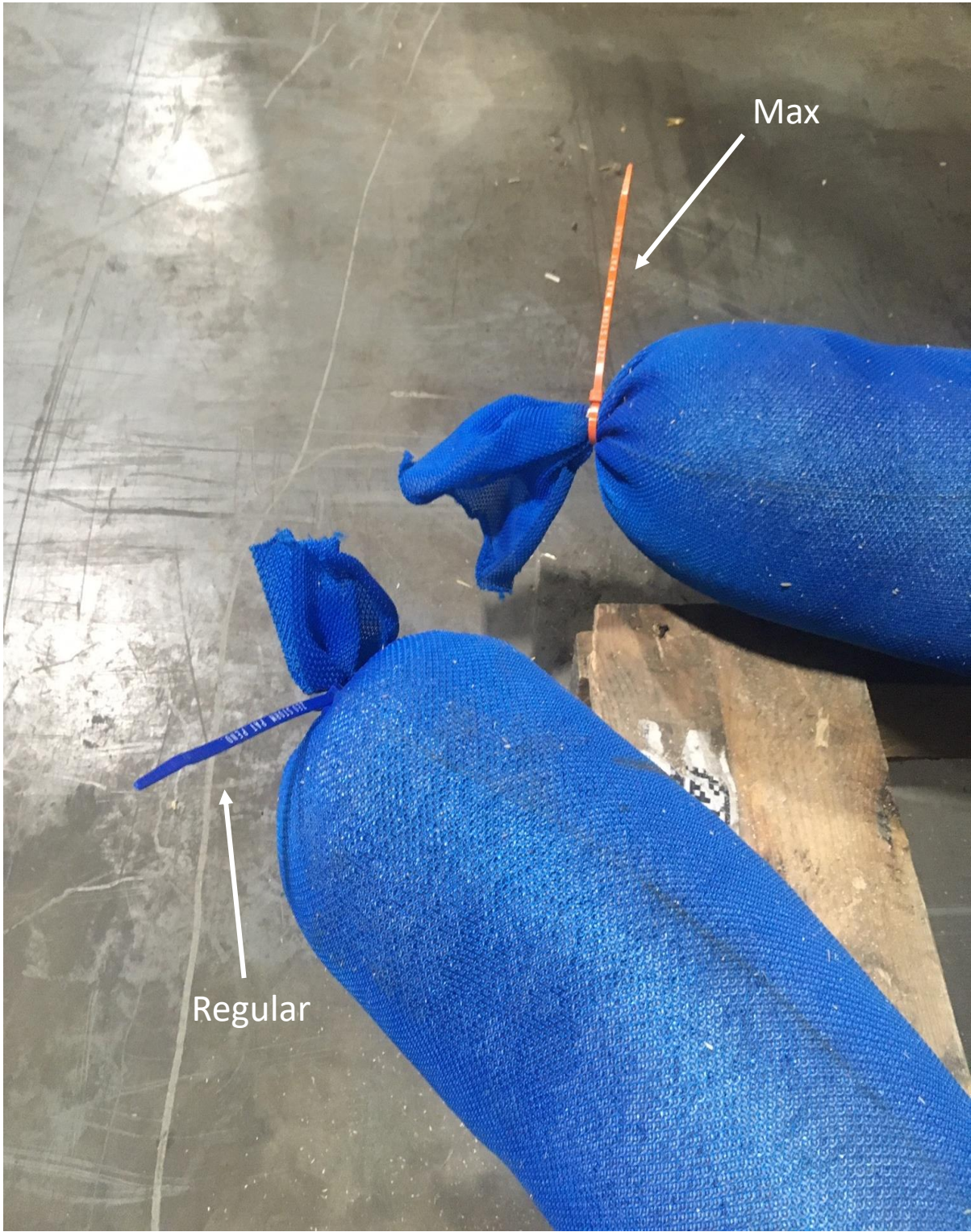
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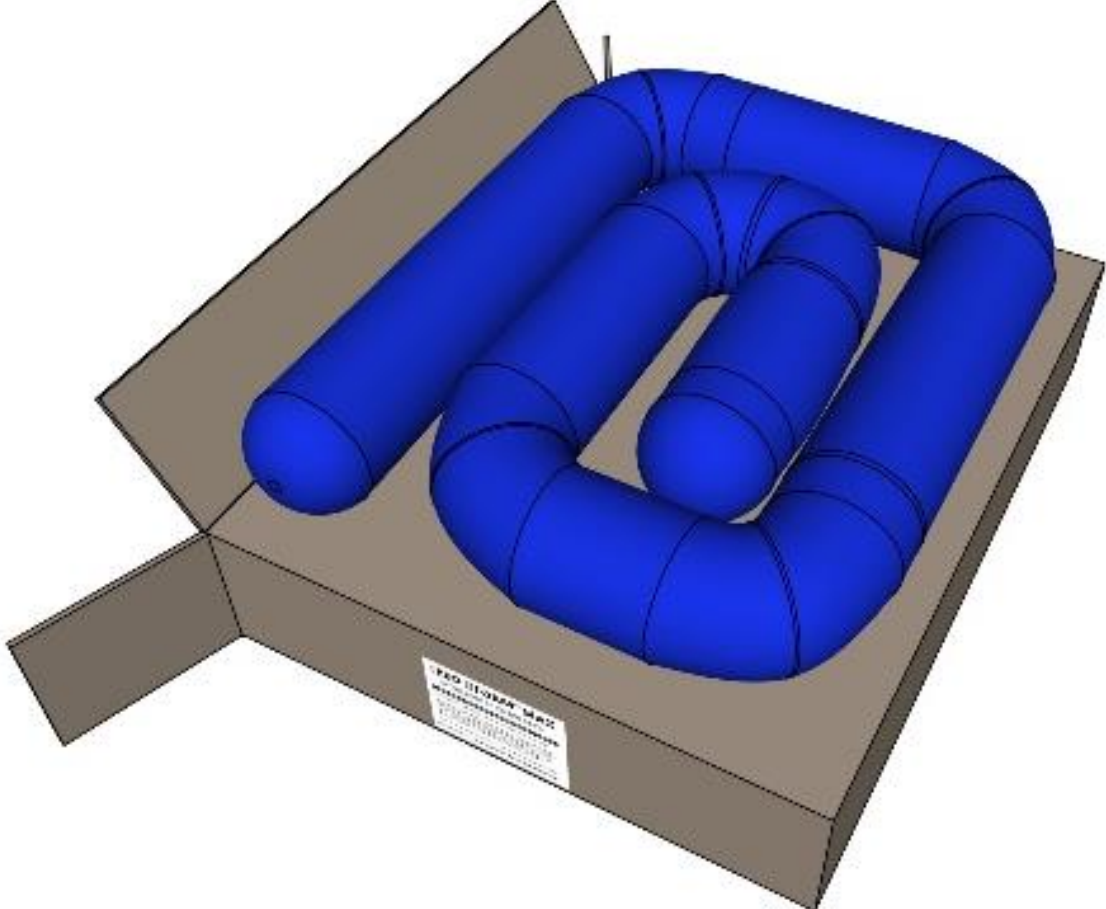
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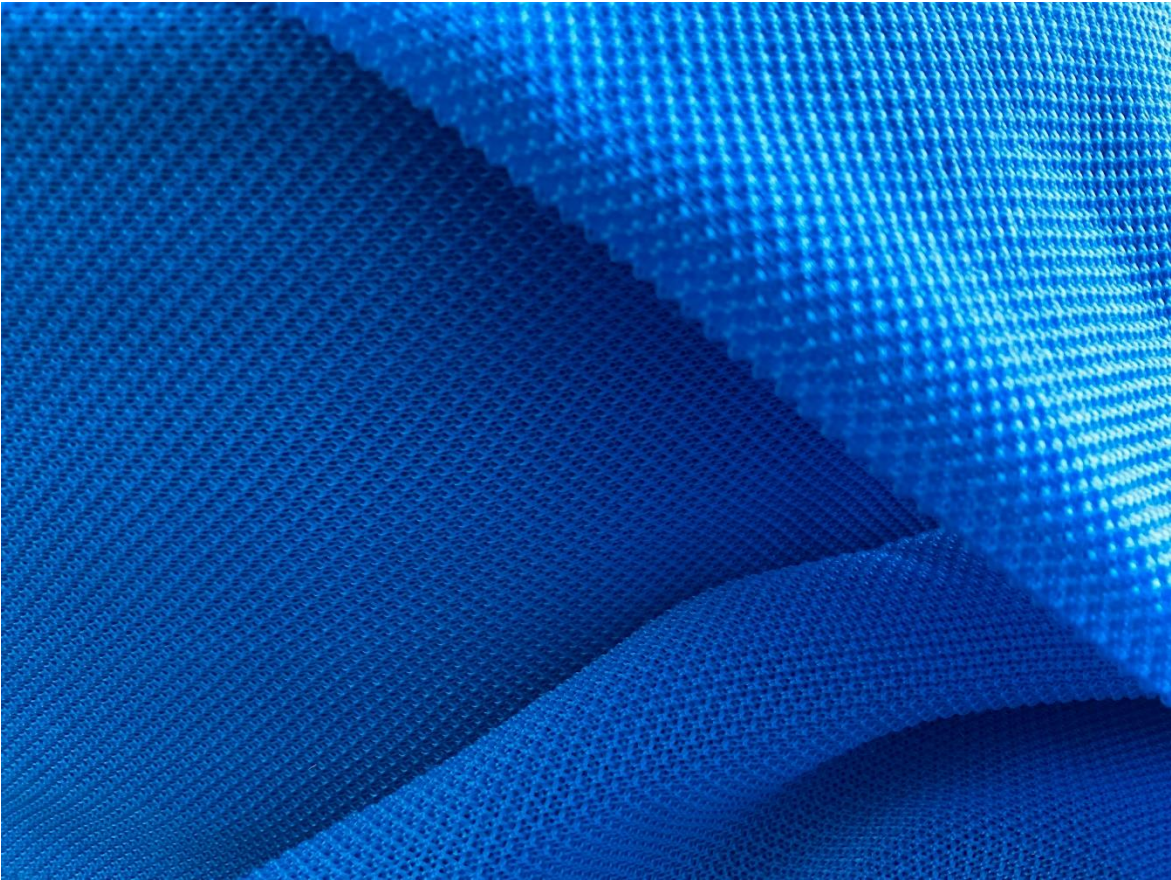
Zeolite (on left) and heat-treated rice hulls (on right)



# ZEO STORM™ Stormwater Filter Sock - Information

(v1.2)

Sock Netting and colored brand naming



 **ZEO STORM**<sup>TM</sup>

 **ZEO STORM**<sup>TM</sup> **MAX**

Box Labels

# ◇ ZEO STORM™

## STORMWATER FILTER SOCK

### REGULAR POLLUTION CAPTURE FORMULA

5-inch diameter x 10-feet long. Weighs approximately 30 lbs. Color is blue.

Place perpendicular to the flow of stormwater. During storm events, sediment and debris collects behind the sock, while waterborne pollutants such as grease, oil sheen, heavy metals, and dissolved nutrients are collected inside the sock. Use around stormwater drainage devices such street gutter, curb inlets, catch basins, downspouts, and dumpsters that may leak during storm events.

Contents: Heat-treated rice hulls, gravel, zeolite, blue polypropylene netting.

**MKB Company, LLC [mkbcompany.com](http://mkbcompany.com) Patent Pending (63/070,891)**

# ◇ ZEO STORM™ MAX

## STORMWATER FILTER SOCK

### MAXIMUM WATERBORNE POLLUTION CAPTURE FORMULA

5-inch diameter x 10-feet long. Weighs approximately 30 lbs. Color is blue.

Place perpendicular to the flow of stormwater. During storm events, sediment and debris collects behind the sock, while waterborne pollutants such as grease, oil sheen, heavy metals, and dissolved nutrients are collected inside the sock. Use around stormwater drainage devices such street gutter, curb inlets, catch basins, downspouts, and dumpsters that may leak during storm events.

Contents: Zeolite, heat-treated rice hulls, kenaf core, blue polypropylene netting.

**MKB Company, LLC [mkbcompany.com](http://mkbcompany.com) Patent Pending (63/070,891)**



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(v1.2)

Pictures from R&D field testing





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(v1.2)





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(v1.2)



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(v1.2)



## Sediment Control Test Results via ASTM D 5141

Client: MKB Company TRI Log #: 862 Date: 11/8/2019 Temperature, C: 18 Technicians: GM

Sample ID	Composition	Specimen #	Soil Type	Test Configuration (Vertical or Horizontal)	Specimen Width, cm	Flow Volume (L)	Distance from SRD to the edge of water behind SRD at end of 25 min (mm)	Flow Rate (m <sup>3</sup> /m <sup>2</sup> /min)	Flow Rate (GPM/ft <sup>2</sup> )	Initial Mass of Soil (g)	Final Mass of Soil (g)	Filtering Efficiency (%)
"F2 10' Blue"	Blue 3D Wattle	1	Clear Water	Vertical	81	50	0	0.434	10.653	0	0.00	n/a
			Silty Clay	Vertical	81	50	0	0.379	9.295	150	9.38	93.7
			Silty Clay	Vertical	81	50	0	0.345	8.465	150	11.09	92.6
			Silty Clay	Vertical	81	50	0	0.323	7.934	150	20.04	86.6
			Silty Clay	Vertical	81	50	0	0.303	7.436	150	20.62	86.3
			Silty Clay	Vertical	81	50	0	0.285	6.997	150	21.56	85.6
			Avg								0.327	8.025



Typical Upstream View - With Sediment-Laden Discharge



Typical Downstream View - With Sediment-Laden Discharge



Testing Apparatus (typical)

Calculations & Report by: C. Joel Sprague, P.E.  
Date: 2-Dec-19

The testing herein is based upon accepted industry practice, as well as, the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.