

GRAINPRO® FIBC HERMETIC LINER™ INSTRUCTION MANUAL

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GRAINPRO
STORING THE FUTURE



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TABLE OF CONTENTS

1. INTRODUCTION.....	4
2. CHECKLIST	5
3. COMPONENTS	6
4. SPECIFICATIONS	6
5. WARNINGS	6
6. RECOMMENDED MAXIMUM MOISTURE CONTENT FOR SAFE STORAGE (WET BASIS) .	7
7. INSTALLATION.....	7
Preparation.....	7
Loading	8
Sealing	9
Transporting.....	10
Unloading.....	10
8. MAINTENANCE AND CARE	11
Repairing punctures and other damages.....	11
Cleaning the FIBC and inner bags.....	12
Safekeeping	11
Recycling.....	12
9. FREQUENTLY ASKED QUESTIONS AND ANSWERS.....	12
10. WARRANTY CLAUSE	13

1. INTRODUCTION

GrainPro's patented Hermetic™ technology allows organic storage of dry agricultural commodities. It offers organic solution and protection from insect damage, moisture ingress, molds, fungi, and consequent health hazards without using harmful chemical fumigants.

The GrainPro® FIBC Hermetic Liner™ is an inner liner for the flexible intermediate bulk container (FIBC) which is composed hermetic liner made from high-strength polyethylene with a barrier layer. It is ideal for storing dry agricultural commodities in warehouses, preventing moisture ingress and oxidation. GrainPro® only provides the gastight liner for the FIBC bag.

1.1. FEATURES:

- 1.1.1. It is equipped with a downspout which provides easy opening/closing of the liner.
- 1.1.2. It prevents cross-infestation of commodities stored in the warehouse.
- 1.1.3. It prevents further damage to the commodity and post-harvest losses due to insect infestation.
- 1.1.4. It offers convenience during transport/shipping from source to warehouse (if provided with FIBC).

1.2. PRODUCT GUARANTEE:

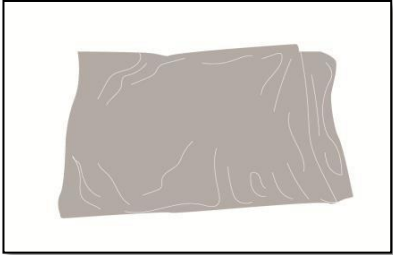
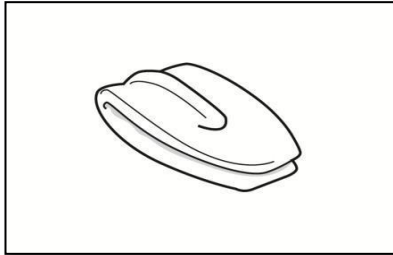

- 1.2.1. In accordance with the terms and conditions herewith, GrainPro®, Inc. guarantees the quality of this product per its written warranty provided it is used according to the instructions in this manual.
- 1.2.2. Please read and understand the manual thoroughly before using the GrainPro® FIBC Hermetic Liner™.

1.3. FOR COMMENTS, COMPLAINTS, AND/OR CLARIFICATIONS:

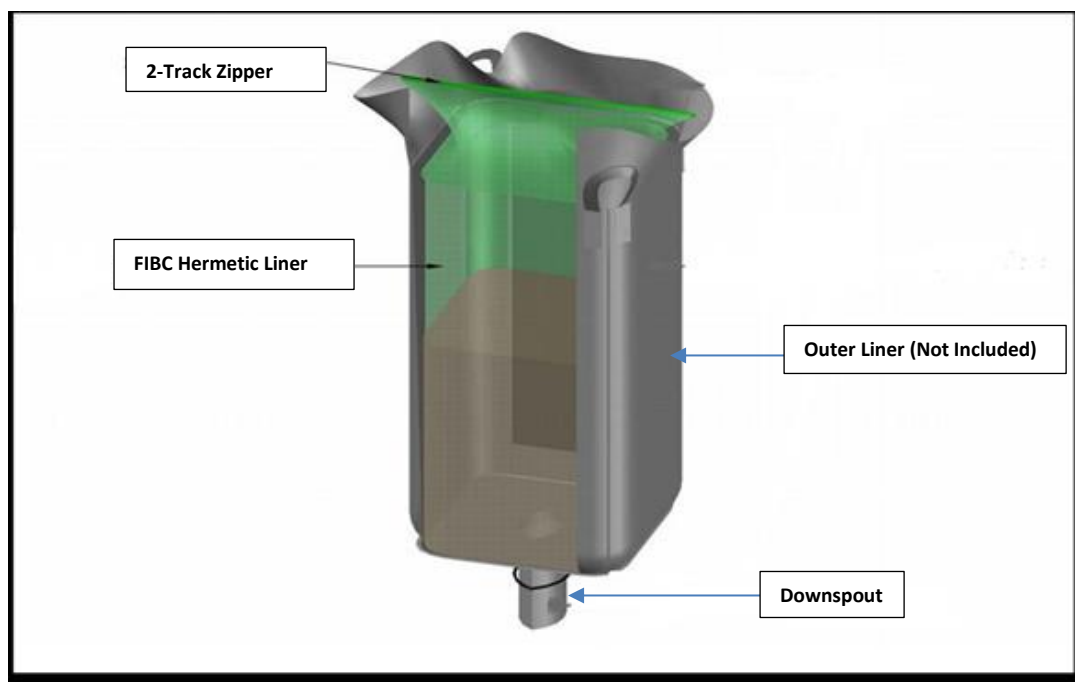
- 1.3.1. Please contact customercare@grainpro.com.
- 1.3.2. All queries will be answered by our team of post-harvest solutions experts.

2. CHECKLIST

Please inspect your GrainPro® FIBC Hermetic Liner™ package to ensure it includes the following items:

PART NAME	DESCRIPTION	IMAGE
2.1. LINER (INNER BAG)	2.1.1. Multi-layer PE (100 microns) with plus barrier property. One (1) piece.	
2.2. ZIPPER SLIDER	2.2.1. For zipper sealing. One (1) piece.	
2.3. INSTRUCTION MANUAL	2.3.1. Installation instructions. 2.3.2. Maintenance instructions 2.3.3. Frequently asked questions and answers. 2.3.4. Warranty clause.	

3. COMPONENTS



4. SPECIFICATIONS

PARAMETERS	GrainPro® Hermetic Liner™
Material	High Strength PE with Barrier Layer
Thickness	Body- 0.1 mm (0.004 in.) Downspout - 0.078 mm (0.0031 in.)
Dimension	325cm x 240cm (128.0 in. x 94.5 in.)
Color	Green (Pantone 3385)
Material Weight	Liner Bag Body- 97.5 g/m ² Downspout- 73.0 g/m ²
Packed Weight	1.7 kg (3.7 lbs) ±5%
Capacity (based on Maize)	1,500 kg (3,306 lbs)
Discharge Method	Downspout
Sealing Method	Top and downspout with gastight zipper

5. WARNINGS!

- 5.1. Do not load fresh produce or commodities with high moisture inside GrainPro® FIBC Hermetic Liner™.
- 5.2. Do not smoke during installation, cigarette butts can burn and damage the GrainPro® FIBC Hermetic Liner™.
- 5.3. Do not stack with wooden pallet or equivalent in between layers to prevent damage on the inner liner.
- 5.4. Do not allow spillage between the inner liner and the outer bag.
- 5.5. Do not allow loading vehicles (e.g., forklift/pallet trucks) to run over the GrainPro® FIBC Hermetic Liner™ as this will cause damage to the PE material.

6. Recommended Maximum Moisture Content for Safe Storage (wet basis)

COMMODITY	RECOMMENDED MC
Barley	12%
Black Pepper	10%
Cashew nuts	8%
Chia seeds	7%
Chickpeas	12%
Cocoa beans	7%
Coffee beans	12%
Cotton seed	10%
Cowpea	12%
Maize	13.5%
Millet	12%
Mung bean	12%
Oats	12%
Paddy	13.5%
Paddy, rice bran	11%
Peanuts, shelled	7%
Red Chili Pepper	8-10%
Rice, milled	12%
Rye	12%
Sesame	5.5%
Sorghum	12%
Soybean	12%
Sunflower	7%
Wheat	13%

You may also contact us through customer care@grainpro.com for more information or for commodities that are not on the list.

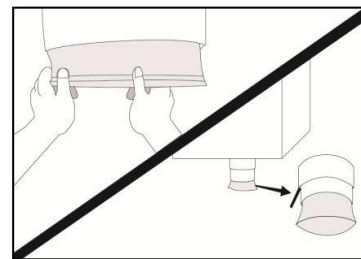
7. INSTALLATION

7.1. PREPARATION

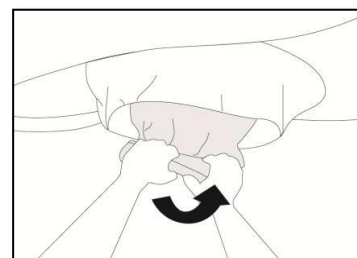
7.1.1. Insert the liner inside the FIBC all through the downspout.



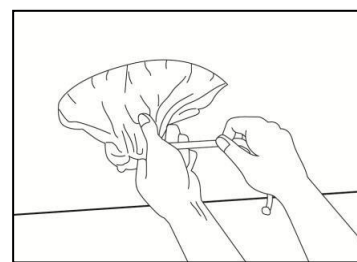
7.1.2. Close the zipper of the liner downspout using the zipper slider.



7.1.3. Insert the downspout of the liner inside the downspout of the FIBC.



7.1.4. Close the downspout chute. Afterwards, close or tie the bottom “bonnet”.



7.2. LOADING

7.2.1. Check the moisture content (MC) of the commodity is at safe level.

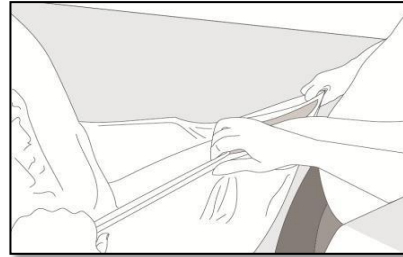


7.2.2. Pour the commodities gently into the hermetic liner. Make sure that there is no spillage between the liner and the bag.



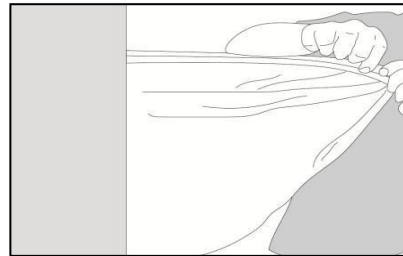
7.3. SEALING

7.3.1. Put both ends of the liner together to make way for sealing.

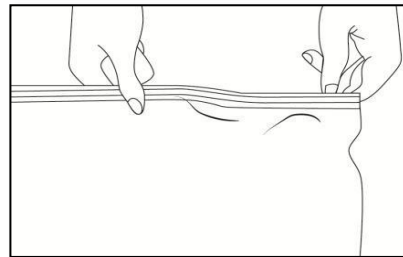


7.3.2. Positioning of zipper slider:

a. Manually zip a few centimeters enough to initially engage the zipper slider.

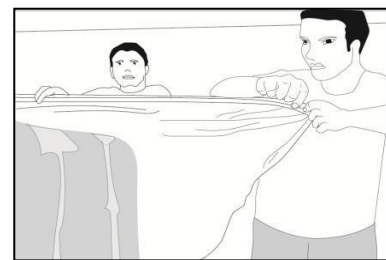


b. Position the zipper slider on the zipped portion of the zip lock.



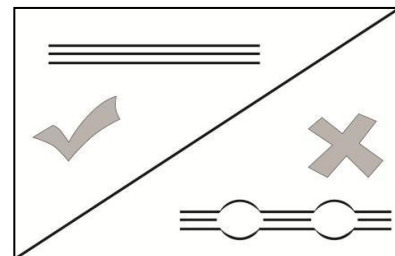
7.3.3. Preferably, two persons are required for ease zipping:

a. One will do the zipping and the other will hold the other end steadily making both sections of the zipper straight to avoid zipper length difference.



b. Moving the slider on the curved zipper will force one of the zipper sections to elongate.

c. If uneven zipper ends are obtained, both ends of the zipper should be slightly stretched before zipping from end to end.



7.3.4. Fold the extra liner against the slack.



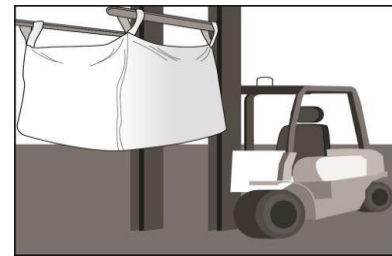
7.3.5. Close the outer bag (FIBC) by tying the sleeves to protect and cover the inner liner completely.



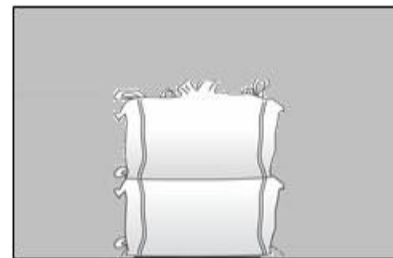
7.4. TRANSPORTING

7.4.1. Mobility is one of the benefits of GrainPro® FIBC Hermetic Liner™.

Forklift could be used whenever the GrainPro® FIBC Hermetic Liner™ with a 2-meter height needs to be transported in the warehouse.



7.4.2. In-house/inter-warehouse transporting could be done while stacking up to 2-3 layers for GrainPro® FIBC Hermetic Liner™ with 1-meter height each.

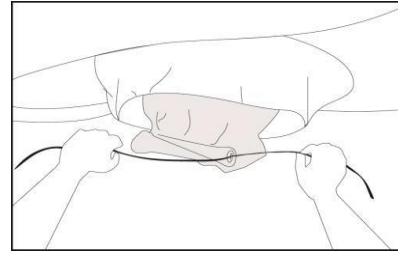


7.5. UNLOADING

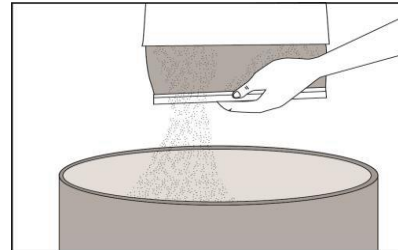
7.5.1. To unload the commodities, elevate the bag.



7.5.2. Untie or open the bottom “bonnet” and the downspout chute. Pull the liner’s downspout and manually open the zip-lock.



7.5.3. Slowly open the downspout to unload the commodities.



8. MAINTENANCE AND CARE

8.1. REPAIRING PUNCTURES AND OTHER DAMAGES

- 8.1.1. Use an ordinary 2” wide plastic tape to repair the liner:
- Clean the surface of the damaged area with damp cloth and allow the surface to dry before applying the adhesive tape.
 - Cut out a piece of tape large enough to cover the damaged area of the liner.

8.1.2. Protective maintenance:

- Check the adhesive tape occasionally and replace or re-patch if necessary.



8.2. CLEANING THE FIBC AND INNER BAG

- 8.2.1. Use liquid soap and water.
8.2.2. Air dry or dry under the sun.



8.3. SAFEKEEPING

- 8.3.1. Fold the FIBC and the inner liner.
8.3.2. Make sure that the FIBC and the inner bags are stored in a place inaccessible to rodents (on a shelf, pallet, or elevated platform with GrainPro® Rodents Guards, or suspended from a beam or girder).

8.4. RECYCLING

GrainPro® FIBC Hermetic Liner™ is made from PP and LDPE

8.4.1. The products can be delivered to the nearest recycling facilities in the area.

8.4.2. Plastic #4 – LDPE (Low Density Polyethylene) can be recycled into compost bins, paneling, trash can liners and cans, floor tiles, and shipping envelopes.

8.4.3. Plastic #5 – PP (Polypropylene) is recycled into brooms, auto battery cases, bins, pallets, signal lights, ice scrapers, and bicycle racks.

9. FREQUENTLY ASKED QUESTIONS AND ANSWERS

9.1 DO I NEED TO PUMP THE AIR OUT OF THE GRAINPRO® FIBC HERMETIC LINER™ OR MODIFY THE AIR INSIDE, FOR EXAMPLE WITH CARBON DIOXIDE?

- No, you do not need to pump out or change the atmosphere in any way. The insects own natural metabolic functions will use up the available oxygen and replace it with carbon dioxide. Atmospheres modified with carbon dioxide or vacuum can preserve the quality of stored products, and reduce insect kill time but are not required to eliminate insect infestations.

9.2 IF THE STORED COMMODITY IS ALREADY INSECT INFESTED, DO I NEED TO FUMIGATE IT OR OTHERWISE KILL THE INFESTATION BEFORE STORING IT?

- No, you do not need to fumigate or kill the infesting pests before storing the food. The insects will die naturally in a matter of days. The greater the infestation, the faster the kill.

9.3 CAN YOU ADD OR TAKE OUT ITEMS ONCE THE GRAINPRO® FIBC HERMETIC LINER™ IS FILLED AND CLOSED?

- Yes, you may add and remove items. If the added items are infested, the insects will naturally modify the internal atmosphere again and die off.

9.4 DO I NEED TO FILL THE GRAINPRO® FIBC HERMETIC LINER™ ENTIRELY FOR IT TO WORK?

- The GrainPro® FIBC Hermetic Liner™ is designed to operate effectively at any given load.

9.5 SHOULD THE GRAINPRO® HERMETIC LINER™ BE ONLY ERECTED INDOORS?

- Yes, the GrainPro® FIBC Hermetic Liner™ is designed for in-warehouse operation and not intended for outdoor installation.

9.6 WILL A PUNCTURE NEGATE THE BENEFITS OF HERMETICITY OF THE GRAINPRO® FIBC HERMETIC LINER™?

- No. Although a puncture allows oxygen to maintain an infestation in the immediate area of the puncture, tight stacking of the stored contents tends to prevent a widespread infestation. We recommend immediate repair of all punctures or tears.

9.7 HOW DRY MUST BE THE COMMODITY BE IN ORDER TO BE SAFELY STORED IN THE GRAINPRO® FIBC HERMETIC LINER™?

- The GrainPro® FIBC Hermetic Liner™ works best with grains at or below critical moisture content.

9.8 CAN RODENTS CHEW RIGHT THROUGH THE PE MATERIAL WHEN THE GRAINPRO® FIBC HERMETIC LINER™ IS ERECTED?

- Yes, but only if the sides are not taut enough. Rodents can only penetrate the smooth, slippery surface of a GrainPro® FIBC Hermetic Liner™ if the sides are not properly stretched or can gain access by jumping down from an overhang such as a low-hanging branch of a tree. In areas with high rodent activity, we recommend that GrainPro® FIBC Hermetic Liner™ be protected using anti-rodent barriers.

9.9 CAN AGRICULTURAL COMMODITIES OTHER THAN GRAINS BE STORED IN A GRAINPRO® FIBC HERMETIC LINER™?

- Yes, most dry agricultural commodities such as seeds, pulses, beans, and even dried chilies can be safely stored. When in doubt, ask GrainPro®.

10. WARRANTY CLAUSE

GrainPro® hereby warrants that the product sold to Buyers shall be free of defects in workmanship and materials, for a period as follows, starting from the date of shipment (B/L): One year for the GrainPro® FIBC Hermetic Liner™.

The warranty liability is limited to replacement of defective products within the warranty period at GrainPro's plant in accordance with the provisions specifically and expressly set forth herein.

The Buyer will pay for the products which need to be replaced under warranty, a percentage of the full list price according to the ratio between the period, which has passed until replacement, and the full warranty period.

The Buyer shall bear the shipping costs for shipment of defective Products to GrainPro®, and GrainPro® shall bear the shipping costs of returning good Products to Buyer.

The Warranty does not cover the cost of any service, work, or material required for the replacement of defective Products at the site of installation.

GrainPro® shall have no obligation under the warranty to replace defective Products or parts thereof if the defect is a result of any of the following: normal wear and tear; damages occurring after delivery, accidents, acts of God, or catastrophes, buyer's fault or negligence, improper storage or installation and improper maintenance.

Replacement costs and shipping charges for Products found not to be under warranty as specified above shall be paid in full by the Buyer before new/refurbished Products are shipped.

Notwithstanding the above, if the Products include main parts or sub-assemblies purchased by GrainPro® from other vendors ("Additional Equipment"), then the period and terms of warranty for Additional Equipment are limited to the period and terms offered by the vendors of such equipment.

The Buyer agrees that the warranty liabilities of GrainPro® shall be and are limited to the express foregoing terms: THE EXPRESS WARRANTIES AND OBLIGATIONS SET FORTH ABOVE, ARE AND SHALL BE IN LIEU OF ALL OTHER WARRANTIES AND OBLIGATIONS OF GRAINPRO®, and EXPRESSED OR IMPLIED. EXCEPT TO THE EXTENT HEREIN PROVIDED, GRAINPRO® DOES NOT MAKE AND SHALL NOT BE DEEMED TO MAKE ANY WARRANTY WHATSOEVER, TO ANY END USER OR TO ANY OTHER PERSON OR PARTY, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR ANY PARTICULAR USE OR PURPOSE. GRAINPRO® SHALL NOT BE LIABLE FOR ANY LOSS OF USE, SALES, OR PROFIT, OR FOR ANY INDIRECT, CONSEQUENTIAL, OR INCIDENTAL DAMAGES CAUSED BY OR SUFFERED AS A RESULT OF THE SALE OR USE OF THE PRODUCTS.

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