

# WESTEEL LIMITED WARRANTY

## Agriculture Products, Water Storage Products and Secondary Containment

Westeel Division of Vicwest Operating Limited Partnership ("Westeel") warrants products that it has manufactured and/or that are branded with its name (the "goods") subject to the following terms and limitations, (the "warranty"):

1. **Duration of Warranty.** The duration of the warranty is limited as follows:

Galvanized Bins	12 months
EasyCheck	12 months
EasyFlow	24 months
EasyAer	12 months
Floors	12 months
SeedStor-K Cones	
Paint	12 months
Structural	30 months
SeedStor Cones	
Paint	30 months
Structural	10 years
Elite Cones	
Paint	30 months
Structural	10 years
WESTEEL cones	
Paint	No warranty
Structural	12 months
Smooth Wall Bins	
Paint	30 months
Structural	10 years

The duration of the warranty will run from the date of purchase from a dealer or distributor authorized by Westeel (the "warranty period").

2. **Limitation of Remedies Replacement.** Within the warranty period, Westeel will replace the goods and/or original manufactured components thereof which are found, to Westeel's satisfaction, to be defective. Westeel is not responsible for direct, indirect, special, consequential, or any other damages of any kind, including personal injury to any individual, howsoever caused, including caused by transportation of the goods for repair or replacement
3. **Procedure for Obtaining Service.** In the event of a warranty claim, the purchaser must complete any and all information required by Westeel in order to properly assess or investigate the claim. Westeel will not be responsible for the removal of any of the goods found to be defective, or transportation charges to and from Westeel's authorized dealer or distributor, or for installation of any replacement goods and/or parts furnished under the warranty.

**Limitations as to Scope of Warranty.** The warranty does not extend to defects or damage caused, in whole or in part, by:

- i. use of a kind and/or to a degree not reasonably expected to be made of the goods;
- ii. improper storage of the goods both prior to and after purchase;
- iii. damage caused by, or in the course of, installation or assembly;
- iv. any use of the goods which is not an intended use as specified in Westeel's published product literature, or otherwise specified by Westeel in writing;
- v. any equipment attached to or used in conjunction with the goods;
- vi. any field modifications or substitutions to original bin components;
- vii. inadequate ventilation or any other circumstance not in keeping with proper maintenance and/or use of the goods;
- viii. Acts of God, accident, neglect or abuse of the goods by the purchaser and/or any other individual or entity; or
- ix. Any use or installation inconsistent with Westeel's Standard Disclaimers.

4. **Limitations as to Manufacturer.** The warranty does not cover products sold by Westeel that are not manufactured by Westeel. In those circumstances, the purchaser is referred to the manufacturer of those products.

6. **Limitation of Implied Warranties and Other Remedies.** To the extent allowed by law, neither Westeel nor its dealers, nor any company affiliated with Westeel makes any warranties, representations, or promises as to the quality, performance, or freedom from defect of any Product covered by this Warranty.

**WESTEEL HEREBY DISCLAIMS, TO THE EXTENT APPLICABLE, ANY AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. A PURCHASER'S ONLY REMEDIES IN CONNECTION WITH THIS WARRANTY ARE THOSE SET FORTH IN THIS WARRANTY. IN NO EVENT WILL WESTEEL, ITS DEALERS, OR ANY COMPANY AFFILIATED WITH WESTEEL BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL OR PUNITIVE DAMAGES.**

Some jurisdictions do not allow waivers of certain warranties, so the above waivers may not apply to you. In that event, any implied warranties are limited in duration to ninety (90) days from delivery of the products. You may also have other rights which vary from jurisdiction to jurisdiction.

7. **Exclusive Warranty.** This warranty is the only warranty provided by Westeel and all other warranties and/or commitments, whether express or implied and no matter by whom made, statutory or otherwise, are subsumed and replaced by it and are of no legal effect. If any provision of the warranty is held by a court of competent jurisdiction to be void or unenforceable, in whole or in part, such provision shall be deemed severable and will not affect or impair the legal validity of any other provision of the warranty.

# DISCLAIMERS

## Foundation Design

The foundations for the stiffened bin models are based on 4000 lbs. per sq. ft. (192 kPa) soil bearing capacity. All foundation designs use 3000 lbs. per sq. in. (21 MPa) ultimate compressive strength (after 28 days) for concrete and 43,500 lbs. per sq. in. (300 MPa) re-bar. The foundation designs included in this manual are suggestions only, and will vary according to local soil conditions. Westeel will not assume any liability for results arising from their use.



**IMPORTANT:** Foundation should be uniform and level. Level should not vary by more than ¼" over a span of four feet under the bottom ring angle. Any variance from level must be shimmed under upright base assembly. If being utilized to support a full floor aeration system, this levelness requirement should extend across the complete floor area.

## Method of Erection

The recommendations for erecting Westeel Grain Bins should be closely followed to achieve the full strength of the bin and to achieve adequate weather sealing. Warranty is void if the recommendations are not followed including but not limited to:

1. Wall sheets and/or uprights, which are not specified for a given tier, are used.
2. Foundations are found to be inadequate or out-of-level.
3. Anchor bolts (cast-in-place, drill-in, chemical type or other) are found to be inadequate.
4. Off-center loading or unloading is used. This does not apply to the use of approved side unloading systems.
5. Materials stored are not free-flowing or have a compacted bulk density greater than 55 lbs/ft<sup>3</sup> (880 kg/m<sup>3</sup>).

If using Bin Jacks: Always lift on an upright. Choose a hoist with a suitable capacity for the expected empty bin deadload. Make sure the rated capacity of the hoist is not exceeded.

## Design

Standard Westeel Grain Bins are designed for:

1. Non-corrosive free-flowing materials up to 55 lbs/ft<sup>3</sup> (880 kg/m<sup>3</sup>) average compacted bulk density.
2. Maximum horizontal gusted wind speed of 94 mph (151 km/h)
3. Zero seismic activity. (Note: Seismic resistance in grain bins varies with height and diameter. Many standard designs have significant seismic capabilities. Designs can be reviewed and/or modified to reflect local seismic requirements.)
4. Roof loading capabilities vary with diameter, peak load and snow load.
  - a. Peak Loads – standard peak loads follow. **Upgrades are available.**
    - i. 15' to 24' – 4000 lbs (1814 kg)
    - ii. 27' to 48' – 5000 lbs (2268 kg)
    - iii. 51' & 54' non-structural – 8000 lbs (3629 kg)
    - iv. 51' to 108' structural Roofs – 10,000 lbs (4536 kg)
  - b. Roof Snow Loads (RSL) – at the above stated standard peak loads, standard RSLs vary with diameter and range from 16 psf (78 kg/m<sup>2</sup>) to 49 psf (239 kg/m<sup>2</sup>). **Upgrades are available.** (Note: The correlation between ground snow load (GSL) and roof snow load (RSL) for grain bin designs vary with jurisdictions. In the US  $GSL = 2 \times RSL$ . In Europe  $GSL = 1.25 \times RSL$ . In Canada the correlation between GSL and RSL varies and is site specific.)
  - c. See following tables for specific roof design capabilities for standard and upgraded non-structured roofs.

<b>Roof Design Capacities for Non-Structural Roofs</b>									
<b>Maximum Roof Snow Load @ Standard Peak Load</b>									
Bin Series	Std Peak Load lbs (kN)	Standard Roof		Plus Upgrade 1		Plus Upgrade 2		Plus Upgrade 3	
		psf	kPa	psf	kPa	psf	kPa	psf	kPa
15	4000 (17.8)	49	2.35	n/a		n/a		n/a	
18		49	2.35	n/a					
21		33	1.58	50	2.39				
24		23	1.10	36	1.72				
27	5000 (22.2)	26	1.24	42	2.01	43		2.06	
30		22	1.05	34	1.63				
33		16	0.77	26	1.24	36	1.72	47	2.25
36		26	1.24	33	1.58	42	2.01	n/a	
39		24	1.15	29	1.39	39	1.87		
42		21	1.01	27	1.29	37	1.77		
45		18	0.86	26	1.24	35	1.68		
48		23	1.10	28	1.34	36	1.72	n/a	
51		8000 (35.6)	22	1.05	31	1.48	n/a		
54		19	0.91	30	1.44				

<b>Roof Design Capacities for Non-Structural Roofs</b>									
<b>Maximum Roof Snow Load @ Upgraded Peak Load</b>									
Bin Series	Upgraded Peak Load lbs (kN)	Standard Roof		Plus Upgrade 1		Plus Upgrade 2		Plus Upgrade 3	
		psf	kPa	psf	kPa	psf	kPa	psf	kPa
15	8000 (35.6)	31	1.48	n/a		n/a		n/a	
18		31	1.48	n/a					
21		26	1.24	41	1.96				
24		19	0.91	29	1.39				
27	10000 (44.5)	20	0.96	30	1.44	36		1.72	
30		17	0.81	25	1.20				
33		12	0.57	20	0.96	26	1.24	40	1.92
36		20	0.96	25	1.20	34	1.63	n/a	
39		18	0.86	23	1.10	32	1.53		
42		16	0.77	21	1.01	30	1.44		
45		14	0.67	19	0.91	27	1.29		
48		18	0.86	23	1.10	28	1.34	n/a	
51		12000* (53.4)	16	0.77	23	1.10	n/a		
54		14	0.67	22	1.05				

Notes :

- 1) Standard roofs are adequate for many applications but additional capacity is available when optional upgrade packages are used.
- 2) Upgrade packages include roof stiffening rings and/or rib supports. For 21' and 24' roofs, the upgrade uses heavier gauge roof sheets.
- 3) For peak load between the standard and upgraded, a straight line interpolation can be used to determine maximum roof snow load.
- 4) \* A structural 54' roof with rafters is available to support peak ring loads greater than 12,000 lbs (53.4 kN).

## **Site and Assembly**

Unless otherwise specifically provided in writing, Westeel does not take responsibility for any defects or damages to any property, or injury to any persons, arising from or related to any site or assembly considerations, including but not limited to:

- Bin location and bin siting;
- Soil conditions and corresponding foundation requirements (note that the examples provided in manuals are for specifically stated soil conditions);
- Bin assembly (Westeel recommends the use of qualified bin installers; contact Westeel for information on installers in your area);
- Field modifications or equipment additions that affect the bin structure;
- Interconnections with neighbouring structures.
- Compliance with all applicable safety standards, including but not limited to fall restraint systems (ladders or other systems). Local safety authorities should be contacted as standards vary between jurisdictions.

### **Critical Assembly Requirements**

1. Local code and jurisdictional requirements that are applicable to the grain bin installation must be adhered to.
2. Foundations must be designed for the loads being imparted to them, and for local soil conditions. Westeel foundation guidelines are for a set of stated conditions and may not be applicable to local conditions.
3. A foundation must provide uniform and level support to the grain bin structure being supported. Surface imperfections causing gapping must be remedied. This may involve, but not be limited to - grouting under the bottom ring of a non-stiffened bin, and shimming under the uprights of a stiffened bin or under the legs of a hopper.
4. If extending an existing bin, ensure that the foundation is adequate for the increased loads that will be subjected to it.
5. If installing an existing bin on a hopper, ensure that the bin is designed for a hopper application, and that the foundation is capable of withstanding the substantial point loads that the hopper legs apply. If uprights are present, ensure that they are supported.
6. Ensure that the proper hardware is utilized for all bolted connections. Refer to the 'Hardware "Where Used" Chart' in the Installation Manual. If a shortage occurs do not substitute. Take the necessary steps to obtain the proper hardware. Ensure nuts are tightened to the required torque values as provided in the Installation Manual.
7. Refer to the appropriate Installation Manual to ensure a safe, proper structure, in particular but not exclusively for the wall sheet and upright layouts. **Do not deviate from the layouts provided.**
8. Ensure that an integral end-to-end connection exists between mating uprights. Successive uprights must not overlap.

9. Vertical tolerances between uprights and wall sheets are tight. This can be affected by "jacking" techniques, which can allow the tolerance to grow or shrink depending on the technique used. The gapping between successive uprights must be monitored to ensure that upright holes align with bin sheet holes.
10. When installing roof stiffening rings, and if it is necessary to shorten the stiffening ring tubes, shorten them as little as possible. Initially the nuts on the expanders should be centered and as close together as possible. When tightening, share the amount of take-up between expanders such that the nuts remain centered, and the amount of engagement between all expanders on the same ring is equalized.
11. Before anchoring the bin to the foundation, ensure that the bin is round. The maximum variation from perfect roundness is 3/4" on the radius (see details in "wall sheet and bottom angle" section of manual). Locate anchor bolts towards the outside of the anchor bolt holes (away from bin) to permit the incremental expansion that can occur with the initial filling.

### **Grain Bin Use**

1. Do not off-center unload a grain bin. It is imperative to unload from the center of the bin first, until as much grain as possible has been removed, and only then proceed to unload from the next closest unload gate to the center. Continue utilizing the unload gates in succession from the center towards the outside. Gate control mechanisms should be clearly marked and interconnected to prevent an external gate from being opened first.
2. The only exception to center unloading is when a properly designed and installed side draw system is utilized. However, as bins tend to go out of round when employing side draws, the bin must be completely emptied before refilling.
3. When unloading a bin with a mobile auger through a properly designed auger chute, the entry end of the auger should be pushed into the center of the bin before the auger is engaged. Slower rates of flow are preferable and should not exceed the capacity of an 8" auger.
4. Ensure that the inner door panels of grain bin doors are completely closed and latched before filling the grain bin.
5. Never enter a loaded grain bin for any reason. Grain can be a killer.

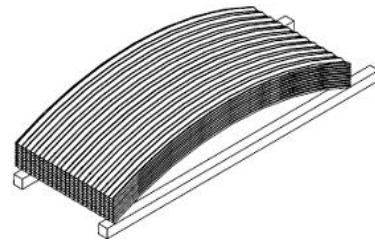
### **Product Storage**

#### **Rust on Galvanized Parts**

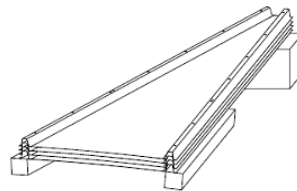
1. White rust forms when moisture is allowed to collect on galvanized surfaces that have yet to develop the durable zinc oxide layer. This zinc oxide layer naturally occurs as the surface interacts with carbon dioxide, and is characterized over time by the dull grey appearance that weathered galvanized surfaces get.
2. Parts that are not well ventilated or well drained can collect water between surfaces and develop white rust.
3. White rust is not a structural concern if its development is stopped in the early stages. A light film or powdery residue can occur after a period of heavy rainfall or a short time of improper storage. If white rust has started to develop, separate parts and wipe off any moisture. Next, using a clean cloth, apply a thin layer of petroleum jelly or food-grade oil to the entire part.
4. If moisture is left on parts, this white rust can become more aggressive and turn into red rust. Red rust can cause degradation in the material and become a structural concern. Any parts that have red rust should be replaced immediately.

## **Storage Guidelines**

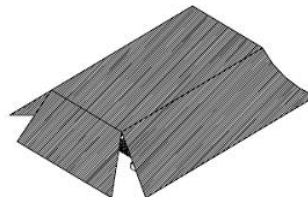
1. Keep all bundles dry before assembly of the bin. Start assembly as soon as possible. Do not lay bundles on the bare ground, raise all bundles 6" – 8" off the ground on wood blocks or timbers. Store curved wall sheets 'hump-up'. All other bundles material should be placed so that they are well sloped to promote good drainage.



2. Roof sheets must be elevated at least 12" at the small end of the sheets.



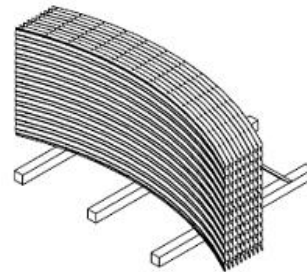
3. Temporary storage can be provided by erecting a simple framework supporting a waterproof tarp.



4. All bin boxes, ladder boxes and hardware boxes should be stored inside. These are not waterproof, and will deteriorate in normal weather conditions, allowing moisture to contact the parts inside.

## **If Parts Become Wet**

1. If goods become submerged or wet, the bundles should be opened as soon as possible, sheets or material separated and dried. Keep separated until assembly. Brace goods properly so as to avoid damage or injury from material falling when in storage.



2. Any boxed goods that become wet should be dried and stored in a new box that is free of moisture.
3. In addition to wiping down wallsheets, a food-grade oil can also be applied with a clean, lint-free cloth. This will assist in preventing any further moisture from contacting the galvanizing on the steel. Due to safety concerns with installation and use, Westeel does not recommend the use of oil on other parts such as roof sheets and safety ladders.

# IMPORTANT NOTES

1. In order to maintain your wall sheets in good condition separate sheets and allow air circulation between them. Store sheets in a dry place. Do not store sheets with sheet ends pointing upwards.
2. To keep an even pressure on walls, the bin must always be unloaded from the centre.
3. Contact local power officials for minimum power line clearance.
4. See "Disclaimers - Design" for materials which can be stored.
5. Tighten all bolts to the recommended torque setting (see Recommended Bolt Torques table in Appendix).
6. Do not locate grain bin close to high buildings, which might cause snow to fall onto or build up on the roof of the grain bin. Consider future expansion and allow space for loading and unloading of the bin. Your dealer and local government agricultural consultants can help you plan your storage system for maximum efficiency.

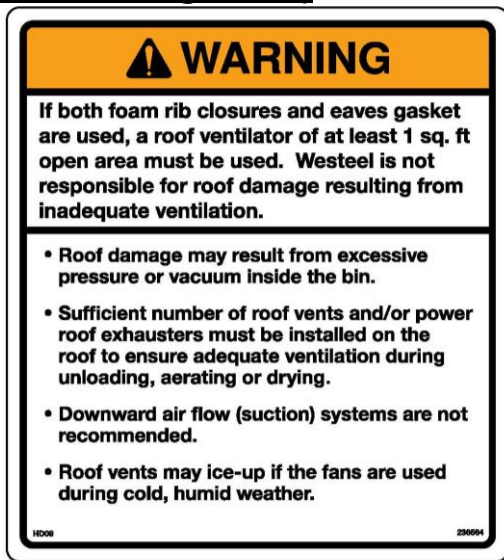
### **Shortages and Damaged Parts:**

Report damaged parts or shortages immediately to the delivering carrier, followed by a confirming letter requesting inspection by the carrier, if required. Order any replacement parts immediately to ensure that assembly will not be held up by missing parts. All parts will be charged for and credit will be issued by party at fault - no credit will be issued if freight bill are signed as received in good condition.

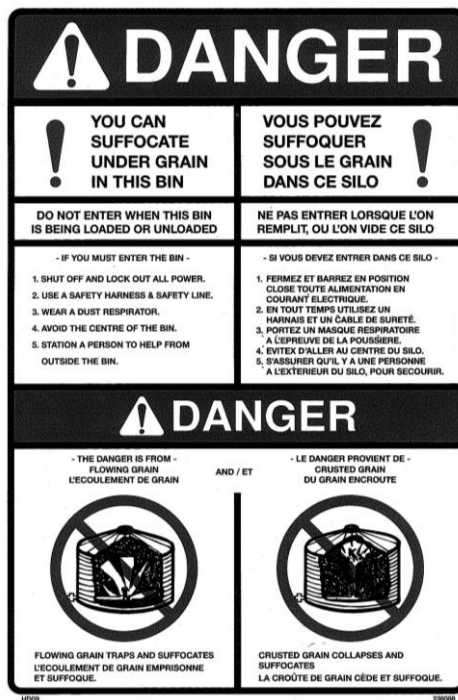
### **Order Optional Equipment:**

Optional equipment such as unloading augers, aeration equipment, anchor bolts, foundation sealant, external ladders, safety cage and platforms, etc., should all be on site and checked before assembly starts. Plan your installation in advance. For details, see assembly instructions supplied with optional equipment.

### **List of Warning Decals:**



236564



236088

Consistent with Westeel Limited's policy of continued research and development of our products, we reserve the right to modify or change information contained in this publication Without notice.