GBMA
Gypsum Board Manufacturers of Australasia

Move it - the GBMA Way

GBMA National Load Restraint Guide

load restraint

Table of Contents

Introduction and Purpose of Load Restraint

Introduction

Welcome to the Gypsum Board of Australasia (GBMA) guide titled “Load Restraint and Transport Chain of Responsibility”.

GBMA is the industry body for plasterboard manufacturers. Members include BGC, Boral, CSR, Lafarge and Winstone Wallboards who are all committed to health and safety at every stage.

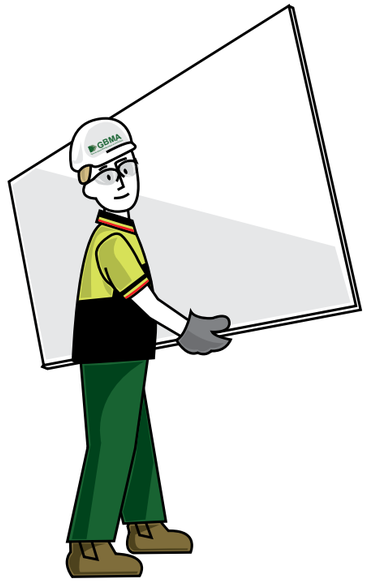
The Chain of Responsibility (CoR) legislation is made up of four sections that require compliance: Load Restraint, Mass Management, Load Dimension and Fatigue Management.

As a result of this commitment, the GBMA is actively working to address the safety challenges related to load restraint among companies who transport and distribute plasterboard on behalf of all of the member companies.

In August 2011, new industry load requirements were introduced. This guide has been produced to provide plasterboard transport providers and distributors with load requirement information in an easy to understand format.

The guide builds on independent load stability assessments conducted in early 2010. GBMA undertook tests to ensure that plasterboard loads met the minimum stability safety requirements, in order to ensure the performance standard measures were met.

The GBMA takes safety seriously by producing and recommending this guide, we want to encourage all transport providers to have the knowledge and ability to adequately and safely restrain plasterboard.



Load Restraint and Transport Chain of Responsibility

Introduction

Chain of Responsibility (CoR)

The Chain of Responsibility (CoR) legislation is made up of four sections that require compliance: Load Restraint, Mass Management, Load Dimension and Fatigue Management.

Plasterboard and related products are loaded prior to delivery in many different configurations. All loads must conform to the Transport Chain of Responsibility requirements. Typical load configurations are displayed below.

This guide relates to load restraint.

1. Load Restraint

All personnel involved in the loading operation are to ensure that all loads comply with load restraint requirements: -

- The transport contractor and transport driver are required to provide a minimum of 50mm webbing straps with a minimum of 2000kg lashing capacity. Ropes are NOT recommended to secure loads, other than for small quantities of accessory products.

- The transport contractor and transport driver are required to strap ALL loads prior to leaving the distribution yard in accordance with the CoR requirements.

- All lashing equipment should be marked with the manufacturers minimum load lashing capacity (LC) which should not be less than 50mm x 2000kg rating straps (Refer to Australian and New Zealand Standard AS/NZS 4380 - 2001).

- It is the responsibility of the driver and loader to ensure that any dunnage used is fit for purpose, correctly positioned and restrained.

2. Mass Management

All personnel involved in the loading operation are to ensure that all loads and vehicles comply with mass management requirements of the CoR legislation: -

Under the CoR legislation, each trip undertaken by a heavy commercial vehicle (over 4.5 tonne) needs to comply with individual axle weights as well as Gross Vehicle Mass (GVM) or Gross Combined Mass (GCM) limits.

3. Load Dimensions

All personnel involved in the loading operation are to ensure that all loads and vehicles comply with dimensional requirements. Specifically, 1350mm and 1200mm wide plasterboard cannot be loaded side by side. A height restriction of 4.2 metres is recommended for the loading of plasterboard.

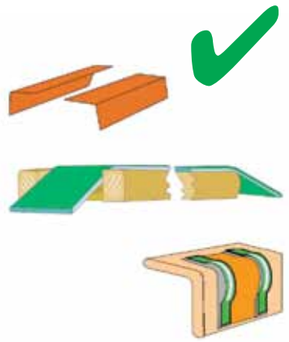
4. Fatigue Management

All personnel should avoid incentives or demands that may cause fatigue or breaches of work/rest hour rules.

Vehicle ✔	Suitable for the task, with a smooth dry floor and fitted with serviceable fittings and equipment. Keep unnecessary fittings & equipment clear.
Load Protection ✔	All products to be placed evenly on uniform height gluts, loads to be fully covered for weather protection at all times. It is important that the placement of sufficient gluts about 600 mm apart support each pack.
	Always use load corner protectors or wooden bearers under webbing straps.
Restraint Equipment  ✔	The most suitable lashings are webbing straps of at least 50 mm in width & a minimum 2000 kg lashing capacity (LC) each. All lashings and restraint equipment should be checked before use to ensure they are in good working order and free from cuts, tears or knots.
	All lashing equipment should be marked with manufacturer's minimum load rated lashing capacity (LC) not less than 50mm x 2000 kgs rating (Ref: AS/NZS 4380 – 2001) for all straps.
	Minimum criteria is **'Pre-tension'** as applied to the plasterboard pack groups – all based on 400 kg or 25% less to 300 kg when lashings are not at an angle close to 90° or nearly vertical.
	For single width packs using wooden spreader/bearers 2 or more high clamping force has been measured at 550 kg. At 1 high stay with 300 kg.
Packs Placement	When possible all packs should be 'blocked' against the front headboard or loading rack, so as to block forward movement in any sudden braking. As per the diagram & recommendations on the reverse side.
✔	Vehicle axle weight distribution usually determines where the load weight is placed for axle load limits. When packs are not closely blocked against a headboard, additional lashings are recommended to meet the 80% load weight restraint forward direction requirement.

Loading, Placement and Restraint

Trucks and Trailers
"Follow Safe Site Operating Rules"

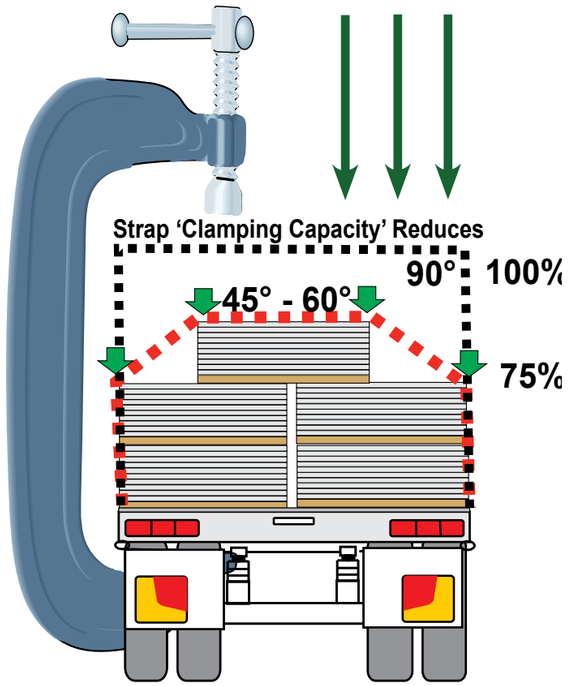
Restraint Recommendation	Place webbing straps vertically across the loaded packs. It is best to align the straps over the gluts & onto or close to floor cross-bearers, so when tension is applied the least bending deformation of the load will occur.
 ✔	Corner protectors or wooden bearers should always be used to protect both the load and the webbing straps. Take care when placing corner protectors, as falls from vehicles happen very easily and are more common than many believe. If fall arresters or other safety equipment is available, use it.
	Apply quite firm tension, but without "over-tensioning" on plasterboard products. Tests show high pre-tension can cause edge damage to packs. When straps are "angled" over a centre pack, tension is reduced by about 25% - to 300 kgs per strap. See the example of the front load section over page.
✘	***Do not*** - over tighten lashings, always use corner protectors ***Do not*** - use unserviceable equipment, eg; knots, twists, frays or cuts ***Do not*** - use ropes as the only means of restraining ancillary items ***Do not*** - move out without covering the load for weather protection ***Do not*** - take risks, especially at heights, even low heights.

NOTE: This guide is based on the Load Restraint Guide (LRG) issued by the National Road Transport Commission and Roads & Traffic Authority of New South Wales. While this document is intended to be a guide to the requirement under the LRG, the LRG provides the basis of your responsibilities.

How Many Lashings?

The "critical lashing feature" for plasterboard products is the **"clamping effect"** for the total block of weight across a load.

Each webbing lashing when tensioned up quite firmly (but not too tightly, so as to break an edge) delivering about **400kgs** of down-force (or clamping) at a 90° lashing angle.



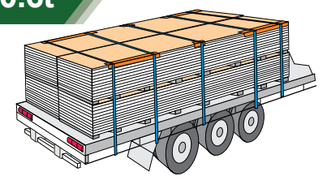
Each webbing lashing tensioned up to 400kgs of down-force, (at 90°) or **300kg** at an angle. The combined total of all "clamping" should be 20% of that group of load section's weight.

When each 400kg or 300kg of "clamping" is added up compared to the weight of a full load section, it works out to be very close to **"1 strap per metre of plasterboard pack length", or also to be approx 1 strap for each 2000kg of plasterboard.**

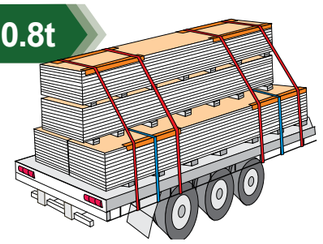
Loading, Placement and Restraint

Plasterboard - Straps shown in red = 300kg
& Straps shown in blue = 400kg Downforce

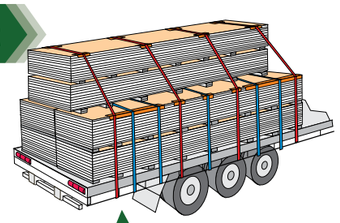
10.6t



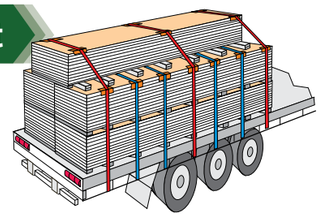
10.8t



16.0t

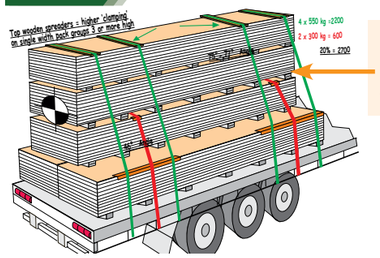


13.3t



Worked example:	16.0t load section (use straps with a min 2000 LC)
Count all vertical straps?	eg: the weight of 6 x 6 packs = 16.0t
These deliver 400kg	16.0t x 20% = 3200kg of pre-tension required
Count all angle straps?	5 x straps x 400kg of pre-tension = 2000kg
These deliver 300kg	4 x straps x 300kg of pre-tension = 1200kg

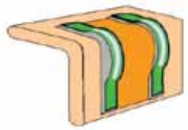
13.5t



Get to within 150kg of the total 20% 'down-force'. (There is a small 'safety margin' left from friction.)

For 3 or 4 high single width packs using wooden 'spreaders' under the straps - **550kg** is supplied.

If using standard length 'pallet' corner protectors, place 2 (or 3) straps over them.



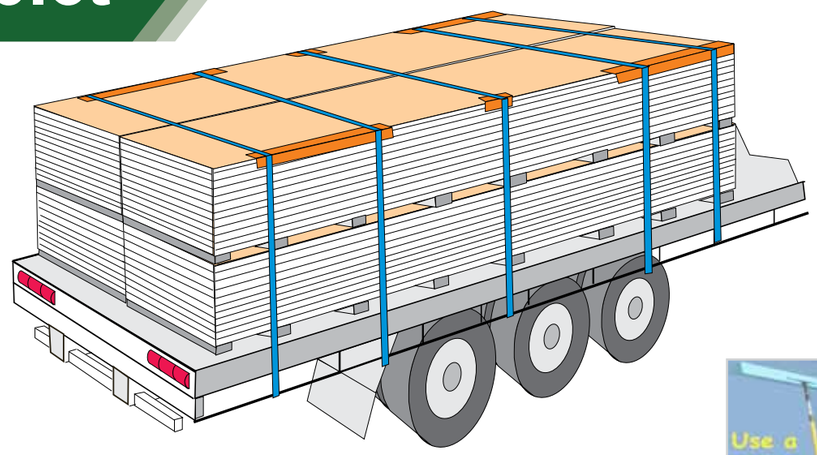
Recommend that 2 "belly-lashings" be placed over the middle packs when possible (eg: 2nd level).

Forward Direction Restraint

The forward direction retraint required is 80% of the total load weight. The common method is to place the load against the headboard, or "block" it in some manner. Where blocking cannot be attained, additional straps should be applied.

Lashings recommended for a group of packs:

10.6t



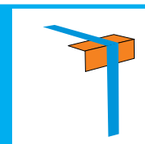
Group of Packs Weight: 10.6t x 0.2 = 2120kg

∴Downforce / Clamping Recommended: = 2120kg

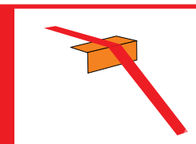
All Vertical at 400kg - 5 x 400 = 2000kg

Taken to the nearest 150kg of the 20% clamping.

Straps shown in blue = 400kg of clamping



Straps shown in red = 300kg of clamping

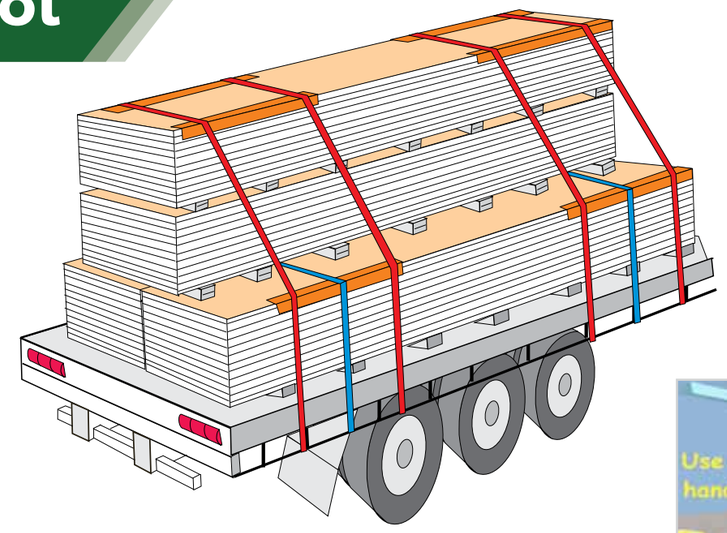


Drive & corner carefully, kerbs, roundabouts/off-ramps.

"The security of your load, your life or the llife of others relies on proper load restraint, appropriate methods and adequate lashing capacity"

Lashings recommended for a group of packs:

10.8t



Group of Packs Weight: 10.8t x 0.2 = 2160kg

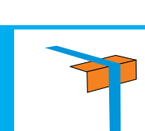
∴Downforce / Clamping Recommended: = 2160kg

Angled at 300kg - 4 x 300 = 1200kg

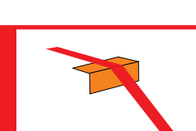
Vertical at 400kg - 2 x 400 = 800kg

Taken to the nearest 150kg of the 20% clamping.

Straps shown in blue = 400kg of clamping



Straps shown in red = 300kg of clamping



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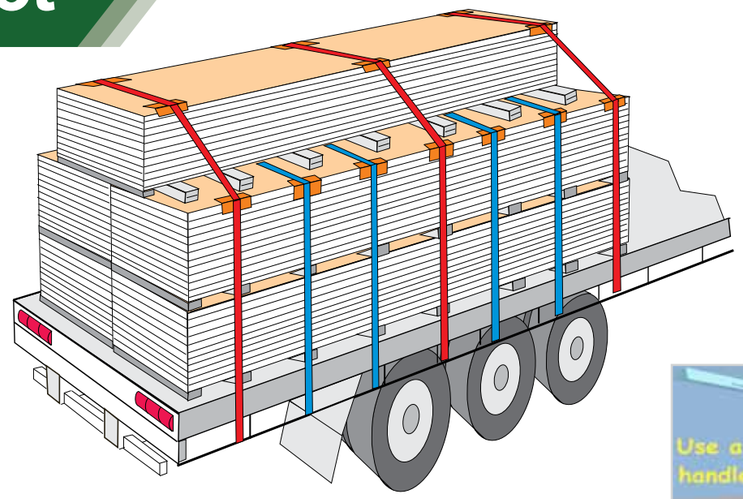
Lashings recommended for a group of packs:

13.3t



Group of Packs Weight: 13.3t x 0.2 = 2660kg

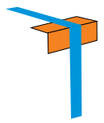
∴ 20% Downforce / Clamping Recommended: = 2660kg

Vertical at 400kg - 4 x 400 = 1600kg

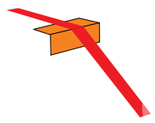
Angled at 300kg - 3 x 300 = 900kg

Taken to the nearest 150kg of the 20% clamping.

Straps shown in blue = 400kg of clamping



Straps shown in red = 300kg of clamping



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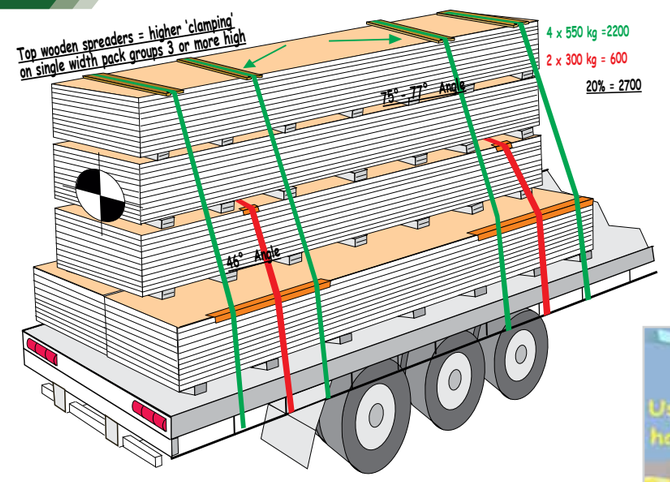
Lashings recommended for a group of packs:

13.5t



Group of Packs Weight: 13.5t x 0.2 = 2700kg

∴ Downforce / Clamping Recommended: = 2700kg

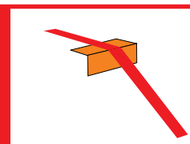
Angles at 77° = 300kg - 4 x 550 = 2200kg

Angles at 46° = 400kg - 2 x 300 = 600kg

Taken to the nearest 150kg of the 20% clamping.

Straps shown in green = 550kg of clamping

Straps shown in red = 300kg of clamping



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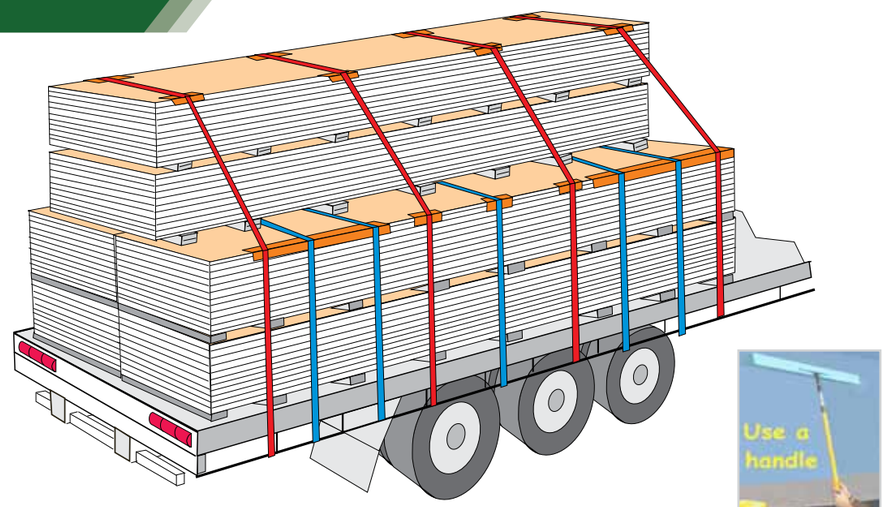
Lashings recommended for a group of packs:

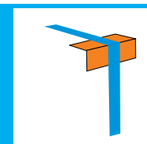
16.0t



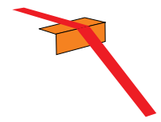
Group of Packs Weight:	**16.0t x 0.2 = 3200kg**
∴ Downforce / Clamping Recommended:	**= 3200kg**
Angled at 300kg - 4 x 300	**= 1200kg**
Vertical at 400kg - 5 x 400	**= 2000kg**

Taken to the nearest 150kg of the 20% clamping.

Straps shown in blue = 400kg of clamping



Straps shown in red = 300kg of clamping



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notes

Loading, Placement and Restraint

Trucks and Trailers
"Follow Safe Site Operating Rules"

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