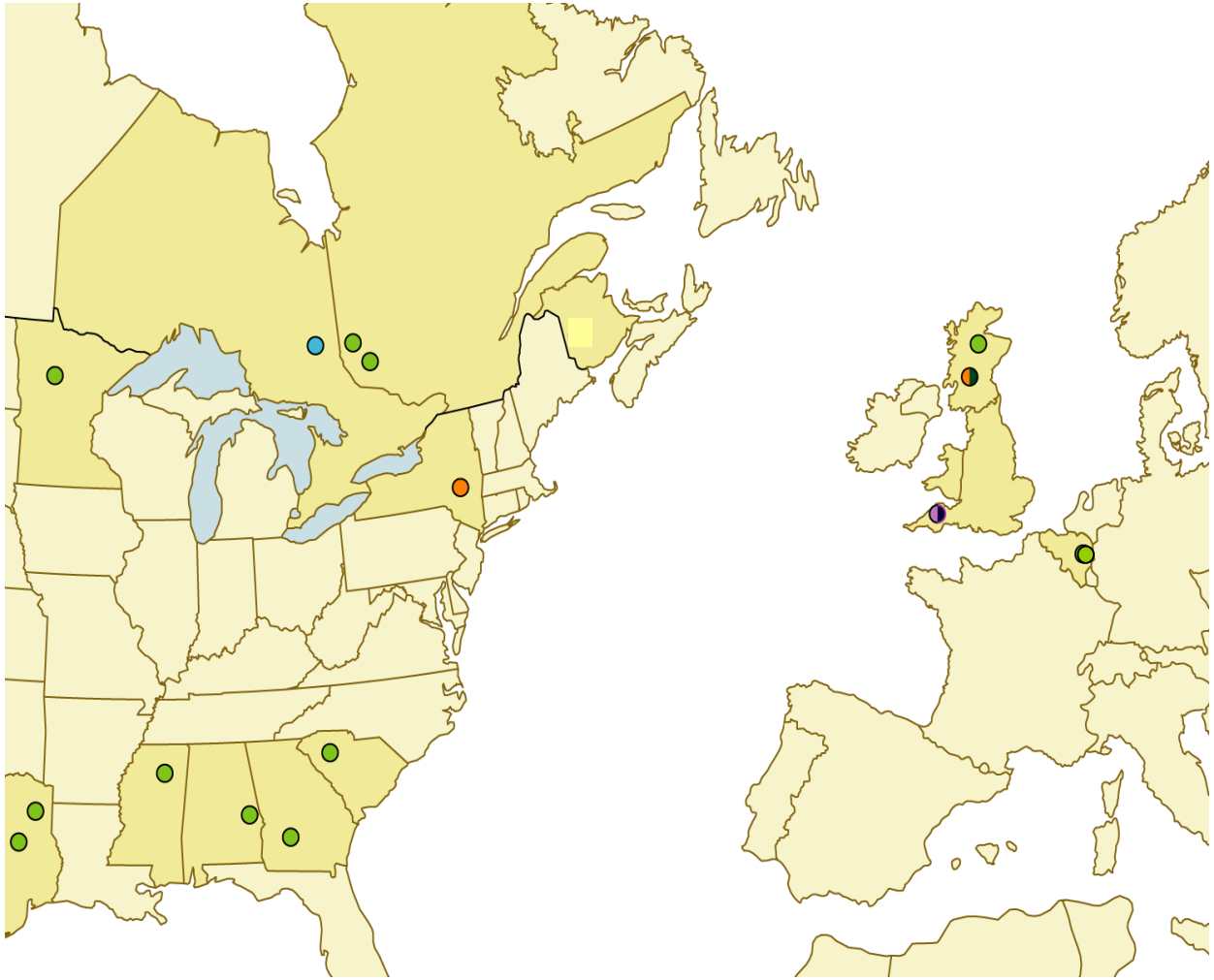
Oriented Strand Board (OSB) Training Module

Norbord number 2 OSB producer in the World



Mills

- 11 OSB
- 2 Particleboard
- 1 MDF

Think thin…

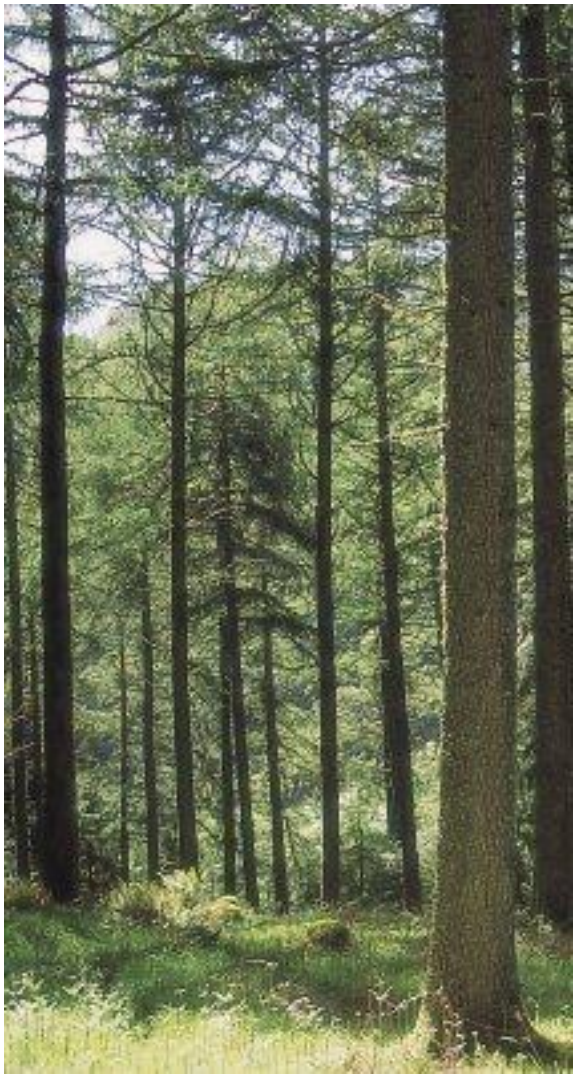
- Thinning is removing selected trees to allow others to grow bigger.

- Thinning improves
    - tree growth rates
    - economic potential,
    - species composition
    - disease and insect resistance
    - quality of wildlife habitat
    - forage production
    - visual appearance of tree stands

- Forest management also increases a forest's ability to survive wildfire.

- A forest that has an active thinning procedure can yield up to 10 times more timber.

- OSB uses trees from the thinning process



Where does OSB get its strength and name from?

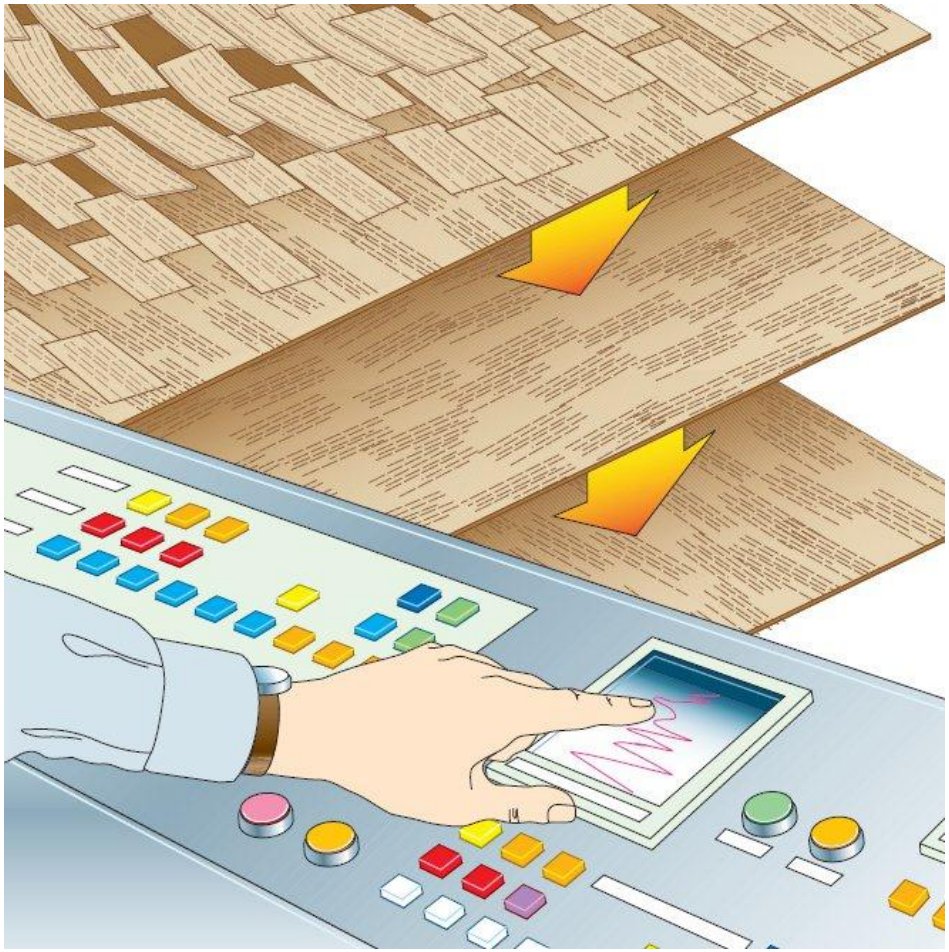
- OSB = Oriented Strand Board

- Surface fibres on each layer face the same direction.

- Extra strength is achieved from a cross ply effect in the core of the board.

- Three layers are finally pressed together under heat and high pressure.

- OSB is manufactured in Inverness, Scotland. The first sheet was produced in 1985



Testing, Testing, Testing…

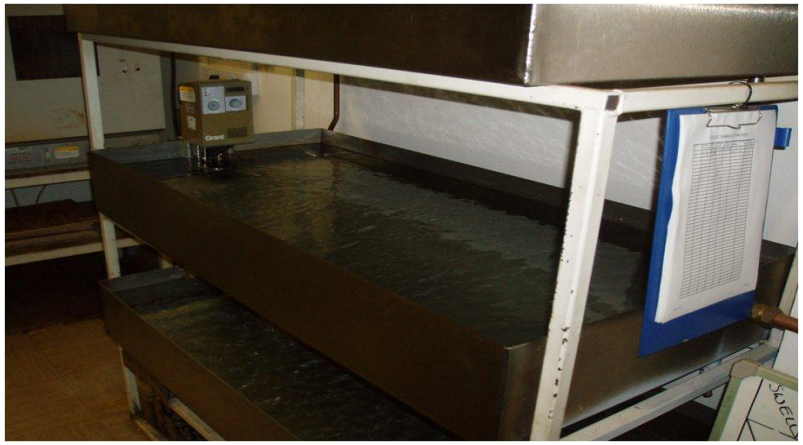
- Production samples tested every 8 hours

- 3 major types of tests:

  -Bending Test

  -Dry Internal Bond Test

  -Thickness swell test



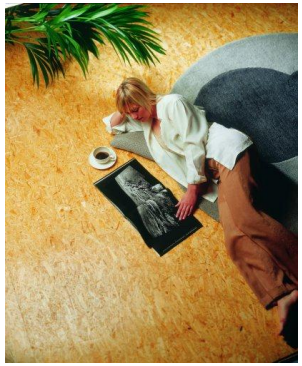
What exactly is the difference between OSB 2 & 3?

- **OSB2 = structural (non-load bearing) use in dry conditions**



- **OSB3 = structural (load bearing) use in humid conditions (where moisture is present)**





OSB2 – ideal for desert use!

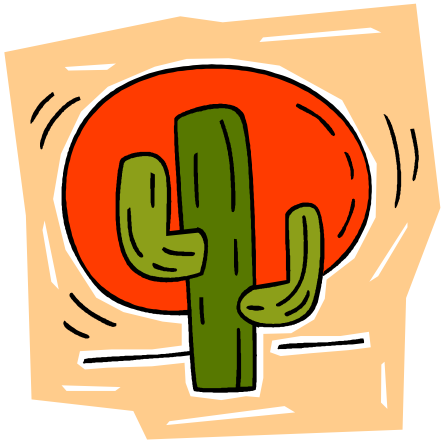
- OSB2 = structural use in dry conditions

- is the perfect board for general applications

- For dry structural use SterlingOSB2 is tough, consistent and great value for money.

- Boarding up windows to site hoarding; crates to DIY; shelving to sheds.

- BS EN300 (manufactured to EU standards)



Does it ever rain in Scotland? Use OSB3….

- For dry and humid structural use SterlingOSB3 is the ideal panel.

- You benefit from BBA approval and the choice of square edged or T&G formats.

- This panel is designed to withstand all the punishment you can throw at it. It is an excellent choice for humid structural applications such as house building and commercial construction projects

- Confirms to BS5268 Part 2 (suitable for load bearing applications)

- Can span up to 610mm (greater span than Chipboard)

Working 8 to 25….

- We manufacture between 8 and 25mm thicknesses

- The most popular board dimensions are 2440 x 1220mm (8x4ft)

- Metric is into the TF market, imperial is other general construction

- 8x4 has become the building industry standard size. Plasterboards are made this size.

Need the ideal roofing board?

- Roofdek = SterlingOSB3 T&G

- For flat and pitched roofing Sterling Roofdek is recommended

- It is based on SterlingOSB3 T&G and measures 2440x1200mm – ideal for roofing.

- It also incorporates a **sanded** surface that provides excellent adhesion for glues, self-adhesive felts and bitumen.

- Reduces need for support noggins

-Sterling Roofdek is approved for structural applications under BS5268

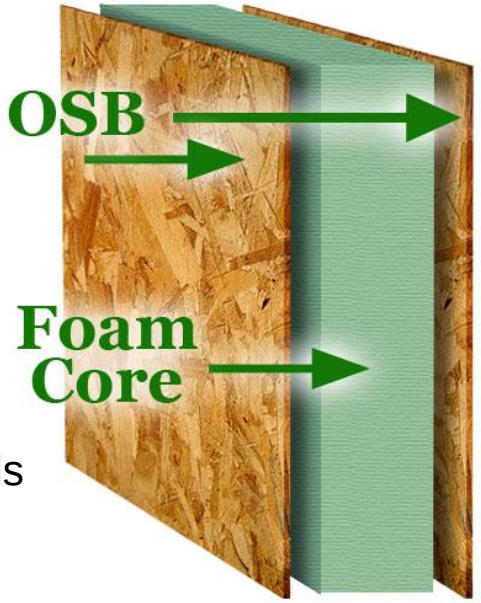
BS EN 5268 the standard to look for when roofing

- BS 5268-2 provides guidance on the structural use of timber, glued laminated timber, plywood and other panel products in load-bearing members.

- BS 5268-2 includes recommendations on quality, grade stresses and modification factors applicable to these materials when used as simple members, or as parts of built-up components, or as parts of structure incorporating other materials.

- BS 5268-2 also gives recommendations for the design of nailed, screwed, bolted, dowelled, connectored and glued joints.

Examples of end uses - SIPS



- SIP is an abbreviation for Structural Insulated Panels
- Rigid foam core sandwiched between 2 exterior skins (OSB)
- Benefits are material and labour saving
- Insulation in the panels is continuous and not bridges by timber studs
- SIPS can be walls and roofs and also entire structure
- Offer excellent structural performance

OSB applications and end uses

	Structural use in humid conditions							Structural use in dry conditions						
Numbers indicate suitable board thicknesses in mm	Timber Frame / SIPS	Flat & Pitched roofing	Wall Sheathing	Flooring	Portable buildings	Caravans	Agricultural buildings	Site hoardings	Interior decorative	Exhibition displays	Shelving	Packaging, pallets	Garden sheds	DIY projects
SterlingOSB2	x	x	x	x	x	x	x	11, 18	18	18	18, 22	11, 12, 18	9, 11, 18	9, 11, 18,
SterlingOSB3	9, 11	18, 22	9, 11	18, 22	9, 11, 18	9, 11, 18	9, 11	11, 18	18	18	18, 22	11, 12, 18	9, 11, 18	9, 11, 18,

Only 18 & 22mm is recommended for flooring unless joists are closer together

How does OSB measure up?

- CE (Conformité Européan) certification shows that the product has met stringent regulations for use in construction, more about this tomorrow

- BBA is a 3rd party guarantee that OSB will perform to modern construction applications. In order to gain the certification, OSB is put through a series of structural and weathering tests over a prolonged period of time to test the ability of the board to perform on construction sites.

- UKTFA Q mark. This scheme is a condition of Membership of the UKTFA and is based on a benchmark scheme that the industry has used for some years to demonstrate fitness for purpose of manufactured panels

FSC – the label to look for

- FSC = Forest Stewardship Council

- All Norbord mills use wood produced from forests managed in a sustainable manner from FSC certified sources. Genk has a volume credit system meaning that FSC finished product can be accredited based on the amount of FSC wood purchased.

- The FSC product label allows consumers worldwide to recognise products that support the growth of responsible forest management. In an increasingly environmentally aware marketplace many demand the FSC mark on their wood products: with Norbord it comes as standard.

- All of our plants have obtained the coveted environmental 14001 ISO accreditation.

Plywood a competing product

- Softwood Plywood (made from Douglas fir, spruce, pine) is the main competing product to OSB. Plywood is a type of engineered board made from thin sheets of wood, called plies or wood veneers. The layers are glued together, each with its grain at right angles to adjacent layers for greater strength.

- Plywood is made by taking a large diameter tree (of approximately 40-60 years old) and putting through a giant pencil sharpener to produce the veneers

- Plywood purchased in a builders merchant is always more expensive than OSB even though they perform the same function

- 3 times as much plywood is sold in UK than OSB. All plywood is imported.

- Some applications require specialist plywood's, for which OSB is not suitable

Types of plywood

Why we talking about plywood

- There are many qualities/varieties/grades of plywood which are used in structural applications, but do not conform to the relevant standards

- End users, particularly flat roofers, often pay more for plywood that has no certificate for structural use, such as Elliottis pine plywood

- Many end users are unaware of the different qualities of plywood available

- When the wrong plywood is used the remedial cost far outweigh any cost savings

See handout for different types of plywood and structural ability

BRE Green Guide

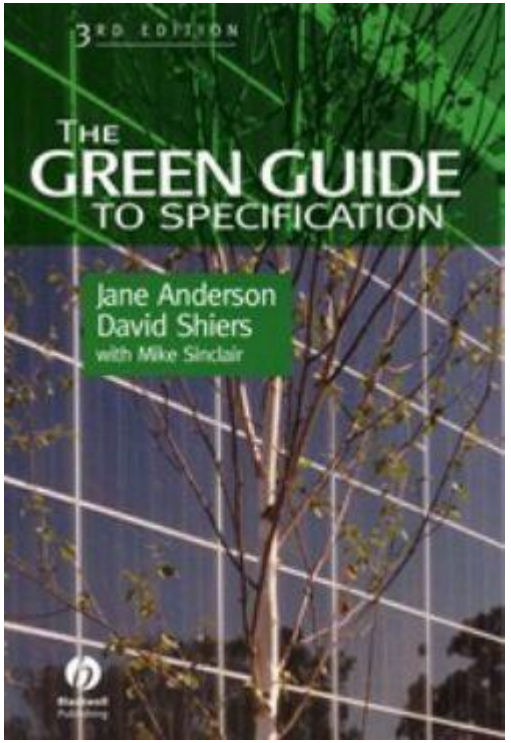
- Provides guidance for specifiers & designers on the relative environmental impacts of over 250 elemental specifications for roofs, walls, floors etc

- Similar system to energy rating for your fridge/freezer

- Guide looks at products when used as part of a system, for example OSB in a wall sections

- Systems using OSB always score an A+, the highest rating

- The highest score systems using plywood can achieve is A, with most reaching B's & C's



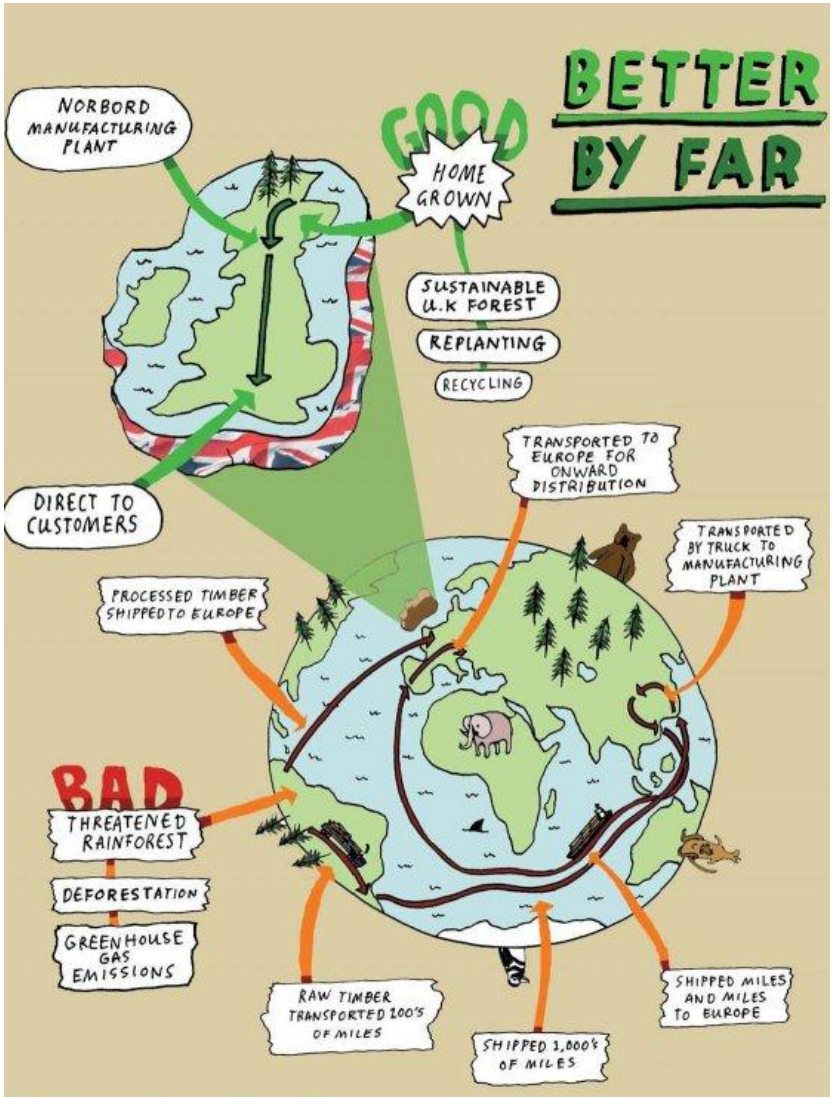
The greenest building material?

- OSB uses small diameter trees (approx 10-15 years old) in the forest thinning process so is a more sustainable forestry practice

- Young fast growing trees absorb more carbon dioxide from the atmosphere than older trees

- With the amount of carbon stored in wood panels, they are highly carbon negative (even when you include the energy used in the manufacturing process). Carbon is locked into wood panels making OSB a truly sustainable green building product

- Most plywood is shipped from Far East and South America which means the product is incurring shipping miles. Norbord is the only UK manufacturer of OSB, which means fewer carbon transportation miles.



OSB recommended by Greenpeace!

- A staggering 80% of the world's ancient forests have already been destroyed

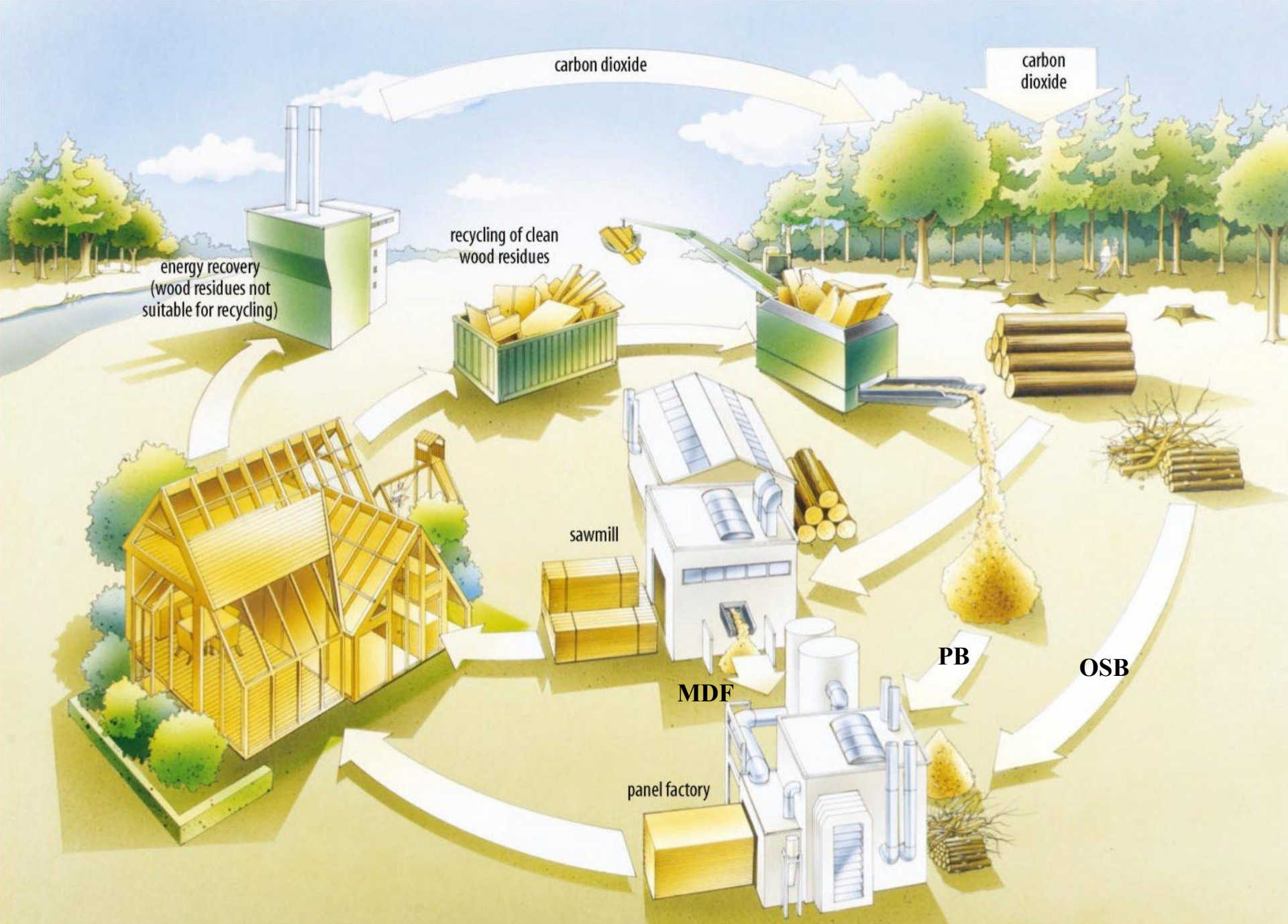
- Greenpeace has repeatedly exposed the use of illegal and unsustainable plywood from threatened rainforests.

- The UK is currently Europe's largest user of plywood. The construction industry uses nearly 70% of all the timber used in the UK.

- There is no technical reason why companies need to use tropical hardwood plywood

- The FSC label is the only credible internationally recognised forest certification system on the market, ensuring your timber comes from responsible sources.

- SterlingOSB is FSC certified and made from timber grown in the UK



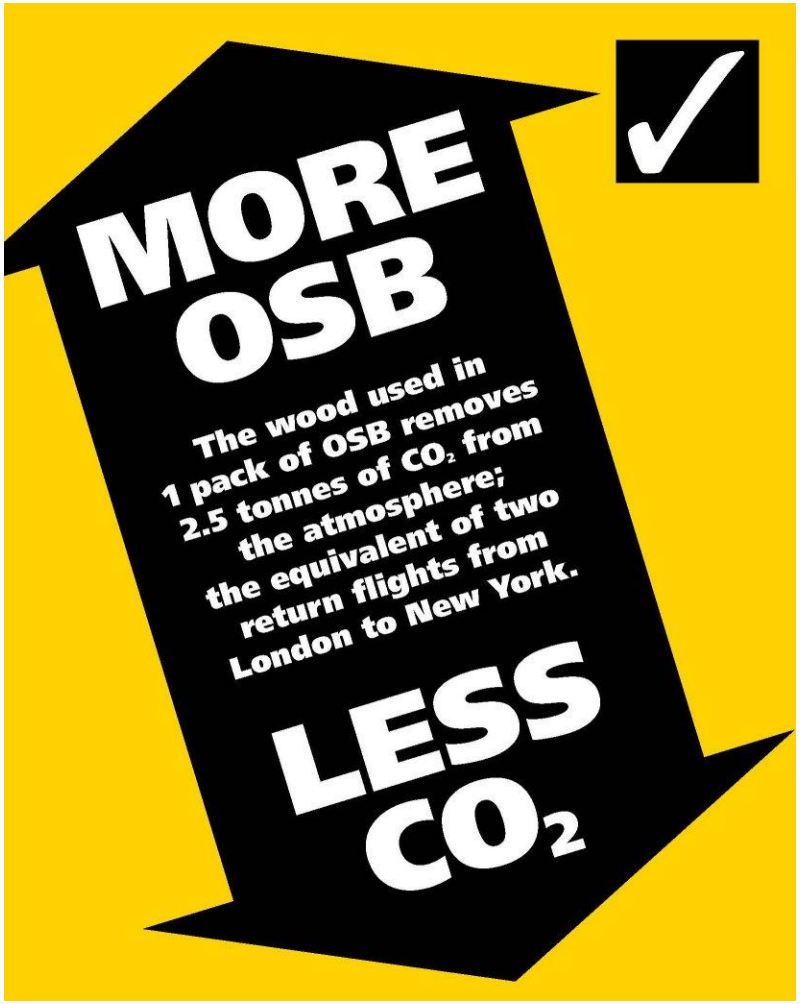
Manufacturing is at the mid-point of the panel product lifecycle

Remove CO^2 from the atmosphere with OSB

- The OSB that Norbord manufactures in one year takes the same amount of carbon dioxide out of the atmosphere as a major city (such as Edinburgh or Glasgow) emits in carbon dioxide in one year

- The trees required to produce one pack of OSB absorb 2.5 tonnes of CO^2 from atmosphere

- Norbord has invested **£60 million** since 1995 in improving our environmental profile, meaning than now **80%** of our energy comes from renewable sources such as Biomass.



Handle me with care

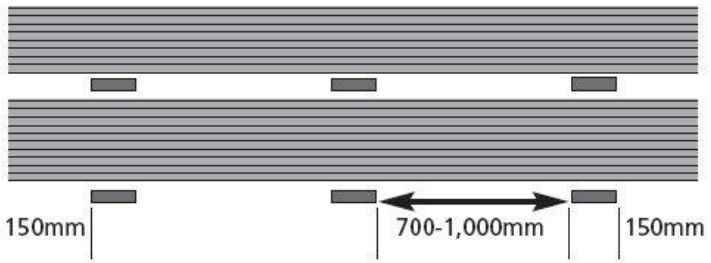
- Storing – panels should be stored under cover on a level base to prevent sagging or distortion (insert picture)

- Acclimatise – OSB may expand or contract slightly when exposed to moisture in the atmosphere. Boards should be stored in the conditions where they are to be used for at least 48 hours

- Most damages to boards take place during handling (loading and off loading) by our customers

- The Tongue & Groove component to Roofdek, Caberdek and other T&G boards are vulnerable to damage

Correct method of edge stacking



Correct method of storage on battens

Summary of learning objectives

You should now have an understanding of:

- The differences between OSB2 & 3
- The OSB product range, sizes and thicknesses available
- Features & benefits of OSB
- End use applications
- OSB certifications
- Products that compete with OSB
- Environmental benefits of OSB
- Handling & storage…

Post assessment - questions

1) How many OSB mills does Norbord have worldwide?
- 2
- 11
- 23

2) The first board made at Inverness was in?
- 1984
- 1985
- 1986

3) How much more timber can a forest that has an active thinning process yield?
- Twice as much
- 10 times more
- 25 times more

4) OSB2 is for structural use in humid conditions and OSB3 is for structural use in dry conditions?
- True
- False

5) What does FSC stand for?
- Full Safety Compliant
- For Structural Conditions
- Forest Stewardship Council

6) When compared to plywood the multilayers in OSB can sometimes come apart (delamination)?
- True
- False

7) OSB2 can be used for roofing?
- True
- False

8) OSB3 can be used for timber frame houses?
- True
- False

9) How much of Norbord's energy requirement comes from renewable sources?
- 20%
- 40%
- 80%
- 100%

10) What percentage of plywood is imported into the UK?
- 25%
- 50%
- 100%

11) How long should OSB boards be "acclimatised" before use?
- 2 hours
- 48 hours
- 1 week