



Recommendations and instructions for using Ekistack sole boards* for scaffolding



*sole boards, mudsills, sole pads for scaffolding



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1. INTRODUCTION

Ekistack sole boards* for scaffolding have been designed and tested for use with a load distribution plate as per the NF 12810 et 12811 standard for props and scaffolding.

However, after testing, they may be used “non-standard” for props and scaffolding in order to integrate different load values from the etched maximum payload.

They are made from 100% recycled, recyclable plastic obtained from the 868 million tonnes of waste produced in France (source: ADEME for 2008).

They offer comfort of use and new safety guarantees.

The sole boards* for scaffolding slot into one another to facilitate storage: they do not split, rot or absorb humidity, are easily cleaned with a high-pressure washer and, above all, can be reused.

2. REGULATIONS

As of the date of these instructions for use, no regulations or standards exist regarding the shimming of load-bearing structures such as scaffolding, grandstands or mobile homes, but only recommendations:

- By the Syndicat français de l'échafaudage, du coffrage et de l'étalement (French federation for scaffolding/formwork/props) in its professional guide for erecting and using scaffolding (*Guide professionnel de montage et d'utilisation des échafaudages*) March 2009 edition.
- By the Fédération Française des Industries du Sport et des Loisirs (French federation for sport and leisure industries) in its *Manuel des tribunes à structures métalliques fixes, démontables et télescopiques* (Manual for fixed, removable and telescopic grandstand structures).

These recommendations for the shimming and resistance of adjustable sole boards* for scaffolding are repeated in the various technical assembly leaflets issued by various manufacturers.

The default values indicated are for illustration purposes only.

Ekistack advises companies to have the sole boards* for scaffolding checked by accredited organisations authorised to validate the shimming executed.

Ekistack declines any liability in the event of an accident due to incorrect use of products, not in line with the instructions for use.

Any person or company using the sole boards* for scaffolding will comply with “The recommendations and instructions for using the sole boards* for scaffolding.”

The recommendations and instructions for using the sole boards* for scaffolding are available on request and can be viewed or downloaded on www.ekistack.fr

3. PRINCIPLE

The sole boards* for scaffolding are intended to distribute the loads applied downwards by support structures on a bearing surface. They are defined after studying the loads and nature of the ground.

4. SCOPE

This text is the responsibility of all company managers whose personnel come fully or partly under the general French national health system and/or amateurs erecting and removing Ekistack sole boards* for scaffolding, even on an occasional basis.

It applies to all elements produced as per the NF EN 74 standard, such as free-standing scaffolding or one consisting solely of tubes and collars, for shoring up.

After testing or making calculations for a grandstand, rows of seats, a mobile home, terrace, camping car, caravan, worksite building, garden shed, container, form panels or any other load-bearing or residential elements, storage resting on the ground or on solid supports via plates, jacks or “ISO” corner pieces, etc..

Ekistack sole boards* cannot be used with lifting and handling equipment such as cranes, truck cranes, aerial platforms, etc.



5. PREVENTION PRINCIPLES

- Choose the type of sole board for scaffolding corresponding to the required use.
- Comply with the technical instructions for use prepared by Ekistack.

6. PREVENTION MEASURES

a. Site requirements and constraints

Before use, the user must analyse the needs and constraints of the site.

In the event of joint activity, adhere to the recommendations made by the coordinator and/or general contractor under the responsibility of the client.

b. Needs

An analysis of needs must notably take the following into account:

- the type of work to be carried out, the phases, their timescales and developments,
- for a sole board for scaffolding to be used to its best advantage, the the ground load-bearing capacity (daN/cm²), ground homogeneity and density must be determined using a dynamic penetrometer or by testing with a plate,
- identify the loads consisting of the weight of the load-bearing structure (given by the manufacturer) and operating load,
- the manufacturer's recommendations for the structure to be installed on the sole boards* for scaffolding.

c. Site constraints

An analysis of the constraints must notably take the following into account:

- the environment,
- weather conditions,
- ground type and resistance,
- the ground slope.

7. SPECIAL CASE FOR SHARED USE OF EKISTACK SOLE BOARDS* FOR SCAFFOLDING

If there are to be several sole board for scaffolding users or if erected by someone other than the user, the companies concerned will transmit their needs to the client, health & safety coordinator and general contractor.

The analysis described in the previous point will be conducted in the design phase by the general contractor in collaboration with the health & safety coordinator.

The specifications for the "shimming, load distribution" lot must include, in addition to the elements of the above-mentioned analysis:

- the constraints for the various contractors using the sole boards* for scaffolding,
- the provision conditions: formal acceptance before use, verification and maintenance.

8. CHOICE OF SOLE BOARD FOR SCAFFOLDING

The sole board for scaffolding should be chosen in line with the analysis of needs, site constraints and ergonomic aspects (weight of elements, traffic, etc.).

Sole boards* for scaffolding must be used in line with the recommendations of the manufacturers of the equipment placed on them.

When several sole boards* for scaffolding are used, they must be of the same origin and make.

As a priority, undamaged sole boards* for scaffolding must be used.

Sole boards* for scaffolding must not be repaired by the company but scrapped and destroyed or collected for recycling.



9. VERIFICATIONS

Definition of the examinations liable to be included in verifications:

a. Suitability inspection:

The “suitability inspection” is an inspection consisting of checking that the sole boards* for scaffolding are suitable for the work planned by the user with the conditions for use defined by the manufacturer.

b. Assembly and installation inspection:

The “sole board for scaffolding assembly and installation inspection” is an inspection consisting of checking that the sole boards* for scaffolding are safely installed, in line with the manufacturers instructions leaflet.

c. Condition and maintenance inspection:

The “sole board for scaffolding condition and maintenance inspection” is an inspection by sampling consisting of checking that the sole boards* for scaffolding are in good condition and not liable to cause any danger. In particular, checks must be made to ensure:

- there is no deformation or deterioration of the sole boards* for scaffolding,
- the information on the sole boards* for scaffolding regarding authorised loads is clearly visible.

10. COMPETENCY OF PERSONNEL USING THE SOLE BOARDS* FOR SCAFFOLDING

Every operator using Ekistack sole boards* for scaffolding must be able to adhere to the following rules:

- define the type of sole board for scaffolding according to the vertical loads applied,
- determine the distribution of the loads on the ground,
- locate structure load bearing points,
- the direction for using the sole boards* for scaffolding,
- the number and quality of the sole boards* for scaffolding,
- comply with load limits,
- take the necessary measures to avoid obstructing water drainage systems and inspection traps (electricity/gas, etc.)
- check the authorised loads on horizontal terraces, sloping roofs,
- check that products put into contact with the sole boards* for scaffolding do not damage them (acid, oil, paraffin, etc.)
- report dangerous situations,
- inform the site manager,
- be able to react in the event of immediate danger.

check:

- the condition of the equipment,
- sole board for scaffolding installation conformity in line with drawings,
- major wear with a decrease in thickness,
- incipient breaks,
- deformation or major impact leading to local weakening of a sole board for scaffolding,
- there is no slipping of load-bearing structures,
- the presence of authorised load indications,
- good resistance of supports after bad weather or major temperature variance,
- the replacement of damaged or dismantled parts,
- the elimination of any excess overload on sole boards* for scaffolding and removal of rubble and debris,
- the quality of insertion if sole boards* for scaffolding are slotted into one another,
- the correct positioning of the support prop on the sole boards* for scaffolding,
- reassembly of removed sole boards* for scaffolding for operating needs,
- the conformity of sole board for scaffolding storage and cleaning.



11. SOLE BOARDS* FOR SCAFFOLDING

The sole boards* for scaffolding must enable the entire load to be distributed over the ground at all points. In all cases, they must be perfectly horizontal. Excavation will therefore be necessary before the installation of sole boards* for scaffolding on sloping ground.

The contact surface area of the supports depends on the downward load applied to the most heavily loaded upright and the nature of the ground.

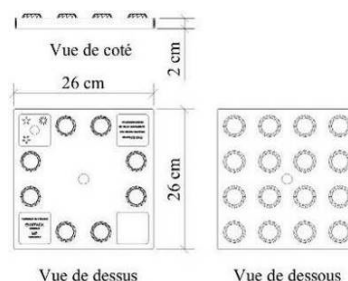
Use sole boards* for scaffolding:

- on which the Maximum Authorised Load is visibly indicated,
- where positioning systems hold the load to be distributed in the centre of the sole board for scaffolding,
- of sufficient dimensions as to facilitate traffic/movement and help improve working conditions.

12. TYPES OF SOLE BOARD FOR SCAFFOLDING

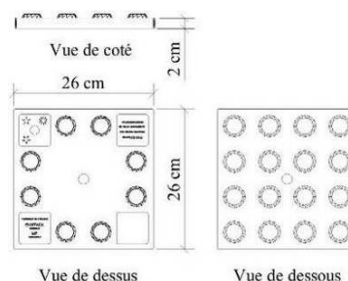
a. "Ekistack" for stable surface

- Only use on "hard" ground
- Dimensions = 26 cm x 26 cm x 2 cm
- Approx. weight = 1.5 Kg
- Base colour: grey
- Maximum number of stacked sole boards* for scaffolding = 5
- Safety coefficient (weighting) = 1.5
- Authorised pressure in contact under the sole board for scaffolding with the ground 35 bars /cm² i.e. 16.5 tonnes over the entire surface.
- Maximum Authorised Load for use at 20°C = 5.5 tonnes
- Does not mark the ground or paintwork
- Resists high-pressure washer (200 bars) at 80°C



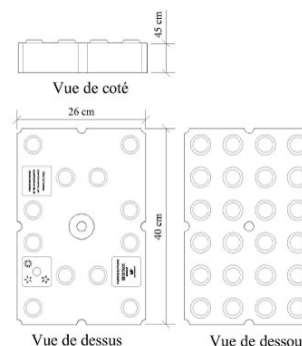
b. Fire proof "Ekistack" for stable surface

- Only use on "hard" ground
- Dimensions = 26 cm x 26 cm x 2 cm
- Approx. weight = 2 Kg
- Base colour: brick red
- Fireproofing treatment
 - o No falling material or burning drops (NF P 92-505)
 - o Heat given off (NF EN ISO 1716)
 - o Smoke index (NF F 16-101)
- Maximum number of stacked sole boards* for scaffolding = 5
- Safety coefficient (weighting) = 1.5
- Authorised pressure in contact under the sole board for scaffolding with the ground 35 bars /cm² i.e. 16.5 tonnes over the entire surface.
- Maximum Authorised Load for use at 20°C = 5.5 tonnes
- Does not mark the ground or paintwork
- Resists high-pressure washer (200 bars) at 80°C



c. "Ekistack" for all type of surface

- 40 cm x 26 cm x 4.5 cm
- Approx. weight = 6.2 Kg
- Base colour: red
- Maximum number of stacked "Ekistack" for all type of surfaces = 5
- Safety coefficient (weighting) = 1.5
- Authorised pressure in contact under the sole board for scaffolding with the ground 35 bars /cm² i.e. 24.8 tonnes over the entire surface.
- Maximum Authorised Load for use on ground 2 DaN/cm² = 2.1 tonnes
- Maximum Authorised Load between 2 supports = 2.1 tonnes (sag = 2 mm)
- Does not mark the ground or paintwork
- Resists high-pressure washer (200 bars) at 80°C



13. DISTRIBUTION ON THE GROUND WITH A SOLE PLATE

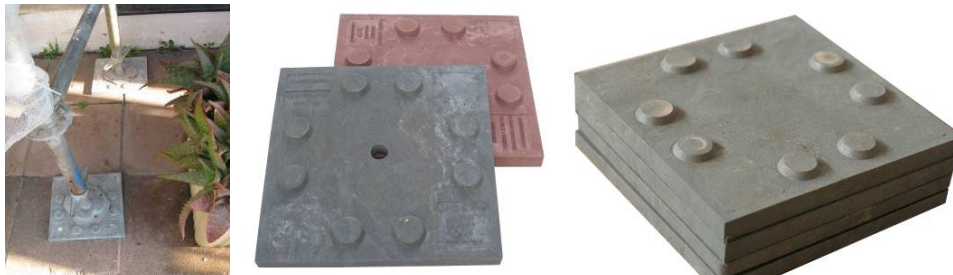
For a sole board for scaffolding to be used to its best advantage, the the ground load-bearing capacity (daN/cm²), ground homogeneity and density must be determined using a dynamic penetrometer or by testing with a plate. Identify the loads consisting of the actual weight of the structure (given by the manufacturer) added to the operating load.

These weights allow acceptance and verifications to determine the pressure on the ground according to the bearing surface, by the relation:

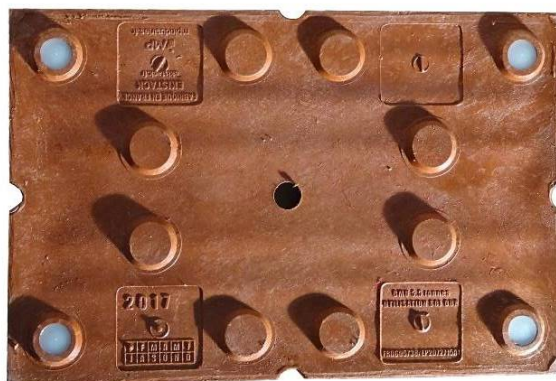
$$\text{Pressure daN/cm}^2 = \frac{\text{Actual weight of the load-bearing structure} + \text{operating load (in daN)}}{\text{Bearing surface (in cm}^2\text{)}}$$



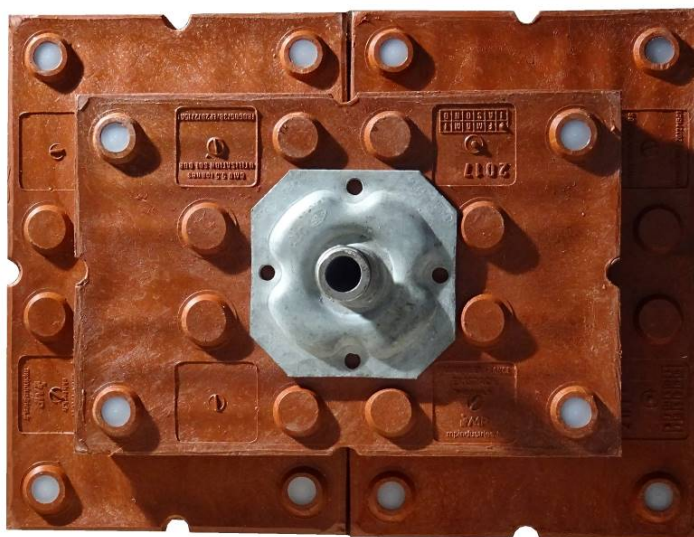
- a. On hard ground $> 5 \text{ daN} / \text{cm}^2$: use sole board for scaffolding "Ekistack" for stable surface



- b. On ground $> \text{or} = 2 \text{ daN} / \text{cm}^2$: use an "Ekistack" for all type of surface

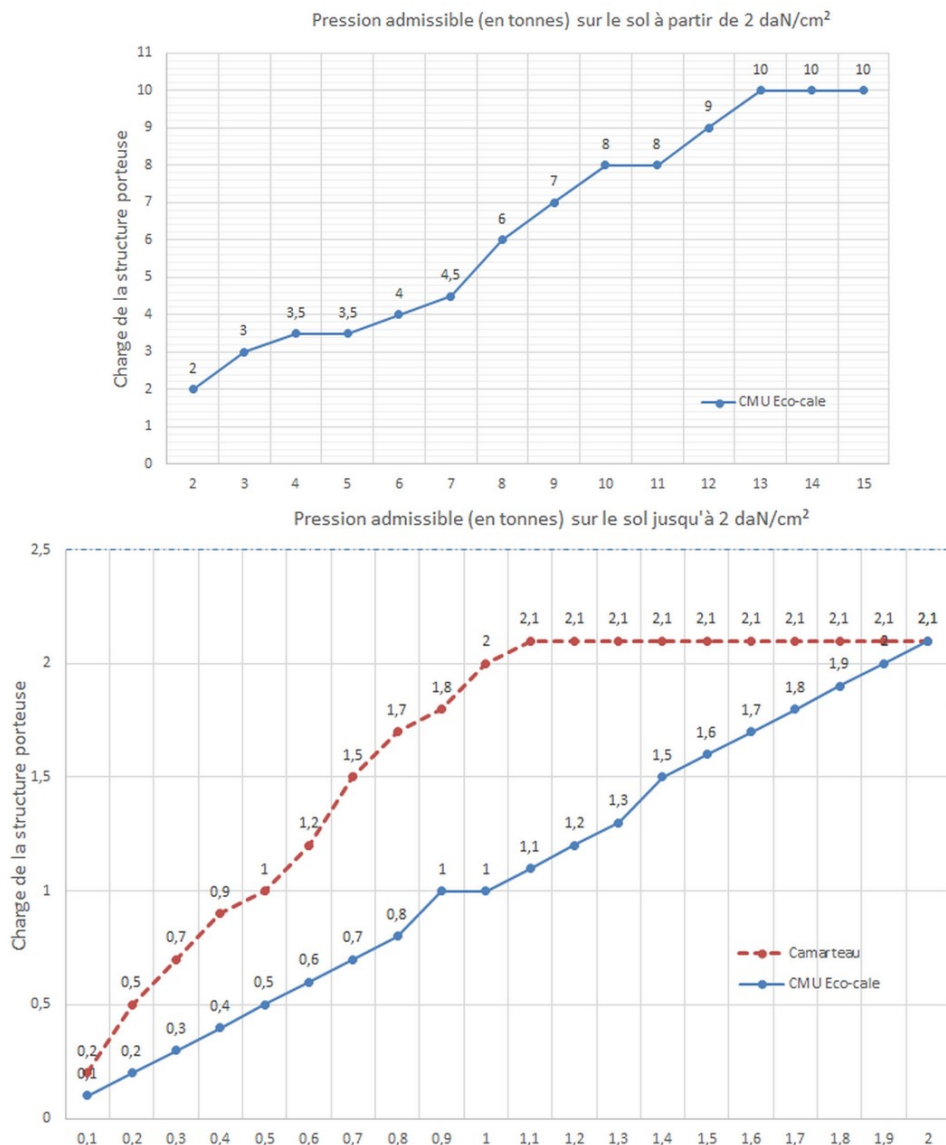


- c. On ground $< 2 \text{ daN} / \text{cm}^2$: increase the distribution surface by using 3 "Ekistack" for all type of surfaces (assembled in a stack)





It is no longer necessary to calculate the bearing surface, the table below indicates the type and number of sole boards* for scaffolding to meet your requirements.



d. When using sole boards* for scaffolding for levelling, the following measures should be taken

Unless a study is made for specific footings and larger sole boards* for scaffolding, the height of the sole boards* for scaffolding is to be limited to 5.

14. DISTRIBUTION ON THE GROUND WITHOUT A SOLE PLATE

The following must be determined:

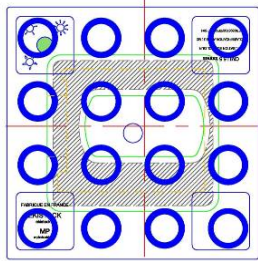
- the surface area of the load-bearing structure in contact with the sole board for scaffolding - the surface area of the holes under the sole board for scaffolding.
- multiply the surface area by 35 bars /cm².

Example for the ISO cornerpiece of a container on hard ground.

Ekistack – 3 Avenue des Ormes 91210 Draveil
 Evry Commercial Register 521 635 862 – Simplified Joint Stock company with 6,000 euros capital – SIREN 521 635 862 – SIRET
 521 635 862 00019 – NAF Code 8299Z



Surface area of the cornerpiece in contact th the sole board for scaffolding x 35 bars /cm² = 130 cm² x 35 bars = 4.55 tonnes per cornerpiece.



15. AUTHORISED PRESSURE ON THE GROUND

Careful attention must be paid to the ground, or any zone of a structure designed to receive the uprights of a structure, in order to ensure the resistance with respect to the values of the downward loads exerted by the uprights.

	Nature	Authorised pressure
Pulverulent	Fine sand (grain < 1mm)	0.5 to 2 daN/cm ²
	Coarse sand (grain 1 to 3 mm)	2 to 3 daN/cm ²
	Sand and gravel	3 to 4 daN/cm ²
Coherent	Marl or soft clay (foreseeable, can be rolled into small 3 mm diameter cylinders in the hand)	0.4 to 0.8 daN/cm ²
	Marl or fairly hard clay (cannot be rolled into small 3 mm diameter cylinders in the hand without breaking up)	1.5 to 3 daN/cm ²
	Marl or hard clay (the lumps break into pieces)	3 to 4 daN/cm ²
Rock with few cracks not crumbly		3 to 4 daN/cm ²
Tarmac		1 to 2daN/cm ²
Masonry	Ordinary rubble	6 to 2daN/cm ²
	Full bricks	12 daN/cm ²
	Stone	15 daN/cm ²
	Reinforced concrete	45 daN/cm ²

Observations:

The authorised pressure for each category depends on the “tight-packed” nature of the grains (compactness).

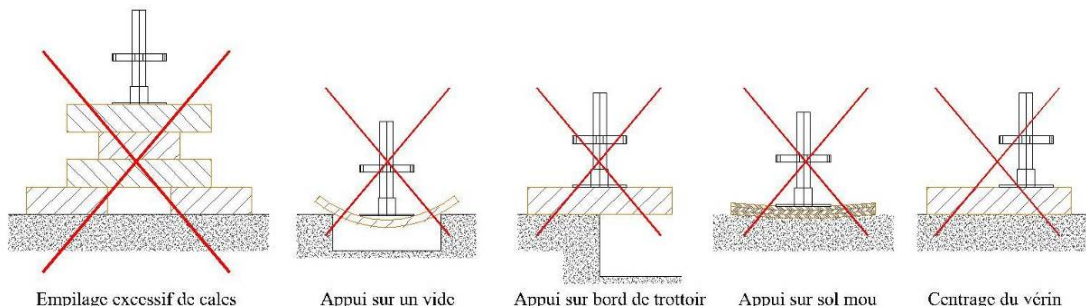
Ground not penetrated by seeping water.

If the quality of the ground is irregular (in a backfill zone), a geotechnical survey must be undertaken.

These values are average values for information purposes

16. PROHIBITED

Be careful of supports placed on manhole covers, pipe covers or on ground the content of which is unknown. In these particular cases: either modify the location of the scaffolding or reinforce the distribution sole plates after receiving authorisation.



Empilage excessif de cales

Appui sur un vide

Appui sur bord de trottoir

Appui sur sol mou

Centrage du vérin



17. CUTOUTS, SCREWING AND DRILLING OF HOLES IN SOLE BOARDS* FOR SCAFFOLDING

Sole boards* for scaffolding can be machined using the same tools as for wood: however, this renders them Ekistack “**non standard**” in terms of use.



Be careful:

The materials used for manufacture may contain impurities (glass, earth, aluminium particles, etc.) which may cause extensive wear on tools.

You can drill and/or screw down into sole boards* for scaffolding with a metal drill by making a preliminary hole 0.5 mm smaller than your screw thread.

Be careful:

Do not damage the metal structure of "Ekistack" for all type of surfaces.

18. STORAGE CONDITIONS

They can be stored outside on pallets.





19. DESTRUCTION, REWORKING OR RETURN OF SOLE BOARDS* FOR SCAFFOLDING TO THE FACTORY

Ekistack has set up a partnership with a company specialising in the transformation of recycled plastics into finished products, without going through the traditional, washing, drying and regranulation phases.

Ekistack sole boards* for scaffolding are made from recycled plastic from the 3 million tonnes of plastic waste produced in France and can therefore be recycled.

They can be disposed of at a dump at the end of their service life.
Or we will take them back up to 3 years after the use-by date (date indicated on every sole board for scaffolding).

The price will be in line with the rate for plastic materials at the time of delivery to our recycling site.

As a result, Ekistack respects and protects the environment.



Deforestation like the recycling of plastics are problems that concern all countries. The development of recycled, recyclable sole boards* for scaffolding can but be beneficial to forests all over the world. The recycling of plastics in an economic system as a material to be used for the preparation of manufactured products would mean that they will not be found discarded in the natural environment. Items with a commercial value should not be thrown away.

*sole boards, mudsills, sole pads for scaffolding