

FAQs

Types Of Structure

Geocells can be used for a wide a variety of structures.

In the military context we have spilt them into two types:

Standard Structures - These are walls, bunkers and other protective structures that utilize **standard components** to produce **standard structures**. Examples are walls no greater than 2m in width and 2-3m in height, normally straight-sided. Bunkers to a standard design, whilst not matching these dimensions, would come under this category. No specific design work would be required.

Special Structures – These structures are special-to-type and **may** involve specific design work or require us to give advice because of the height, width or other unusual features that need to be incorporated (e.g., Sanger or Cave Designs).

Do not confuse the two - the needs of one type (construction method, framing etc.) are not always the same as the other.

These FAQs concentrate on Standard structures.

What Is It?

DefenCell is a **Force Protection System**.

It comprises a series of **fabric** cells joined together to produce a **honeycomb-like** structure that is then **filled** with sand, earth, rocks and similar material.

It provides protection against **blast** (pressure), **ballistic** penetration (fragments) and can be used as a vehicle **barrier** as well.

This system does offer benefits as a construction system also.

What's it made of?

A durable and well-proven polypropylene or polypropylene/polyethylene Geotextile fabric.

How do you build it?

In its simplest form you:

Unpack a piece of DefenCell and pull roughly into shape (< 1 min)

Fit a simple frame on top to provide a degree of tension to ease filling (< 1 min)

Pieces are all 0.5 m high, 5 m long and either 1, 1.5 or 2 m wide (T2, T3 or T4).

Fill to level with main fabric line (assuming plant or manpower and fill available <5 mins. The final layer can be filled to the top of the outer upskirt.

Remove frame and fit to next piece of DefenCell.

Repeat process.



Where is it made?

We have factories in both the **UK** (Pontypool, Wales) and **USA** (Nashville, TN). Both have up and running DefenCell **production facilities**.

What standards do you work to?

In the UK we test to European standards.
In the US we test to US standards.
The **performance in both cases is the same - it's the test methods that differ**.
Both the UK and US work to **ISO** quality standards

What will it do?

It will provide both **blast** and **ballistic** protection.
It can also be used to provide a barrier against hostile vehicle attack.
We do this by using it to build walls, bunkers and stand-alone barriers.

Who uses it?

Military, para-military, law enforcement and security organizations, both government and civilian engineers.

What sizes does it come in?

We have a number of standard sizes.
In simple terms they will make walls from **1m to 2m in width** and from **0.5m to 3m** high, all with straight sides.
Our standard sizes are targeted for minimum width and known as:
T2 – 1.0m wide.
T3 – 1.5m wide.
T4 – 2.0m wide.

How does it work? – Each section comprises:

Individual cells **holding fill** material and **supporting** each other.
This creates a very **stable self-supporting** structure.
The honeycomb structure allows excellent **energy transfer** and absorption within the structure to provide **predictable and reliable protection**.
These characteristics **overcome** the problems associated with **gabion-type** structures which often act as a series of **separate domino-like units instead of a coherent single structure**.

What surfaces can I build it on?

Almost any surface you can **stand on** – with a less than a 20° slope, however we recommend flat surfaces.
DefenCell conforms with sloping and undulating ground.
Other DefenCell products are available for non uniform soil conditions



How high can I build it?

Our standard structures, with straight-sided walls, with no special preparation, design or planning will go to the following heights:

- T2 – 1.0 m wide walls - up to 1.5 m high.
- T3 – 1.5 m wide walls – up to 2.5 m high.
- T4 – 2.0 m wide wall – up to 3.0 m high.

Have you tested it?

Yes.

Testing in the UK, under **MOD and Other Government Department (OGD) supervision**, and at independent test facilities, has been completed.

These **reports** are available on request.

Confirmatory testing for the US is underway.

What protection do I get against bullets and cannon rounds?

Filled with common sand, penetration of the following rounds is less than 1m:

9 mm	5.56 mm
7.62 short (AK)	7.62 long (NATO)
0.5" Ball	0.5" AP
14.5 mm (Soviet)	20 mm cannon

Independent test reports are available on request.

What protection against RPGs will it give me?

Independent testing has shown that no penetration of a 1 meter wall by slug or jet occurs with improvised shaped charges up to 2 Kg Net Explosive Quantity (NEQ) with a cone diameter of 60 mm.

Further advanced testing is underway.

What protection against blast will it give me?

The walls and bunker design have been extensively tested against the most common threats, **primarily stand-off weapons with a NEQ up to 15 Kg and shaped charge weapons up to 2 Kg NEQ.**

The tests demonstrated that **no penetration** of the wall or bunker by any **shrapnel** and in all cases the **structure continued to protect.**

See test reports.

Does it interfere with radios and other electronic gear?

No.

DefenCell contains **no metal** or other elements that would interfere with communications and similar equipments making it ideal for bunker-type construction and protective walls around communications-dependant facilities.



Can I re-use it?

It is **possible** to re-use but this involves the removal of fill and the extraction of the DefenCell from the structure.

In general terms **re-use is practical if recovering small amounts or if circumstances dictated no other alternative.**

How do I repair it?

Three options exist:

Patching - is carried out for small penetrated areas. This involves placing a piece of material over the damaged area and fixing it with a number of plastic studs.

Replacement - is carried out by cutting out the damaged section and installing a new piece of DefenCell and then filling it.

Reinforcement - is carried out by either placing a new piece of wall in front of or behind the damaged area to reinstate the required level of protection.

What temperature range will it work in?

DefenCell works throughout the main range of **NATO** climatic conditions.

What can I fill it with?

Sand, earth, gravel and stone or any combination of these.

As a general rule, the smaller the material : The easier the fill process.

The **better and more consistent the performance** compared to larger materials.

The cellular, layered structure lends itself to tailoring the fills to optimize performance against particular weapon types - more detail available.

Is it affected by ultra-violet light?

All **textile materials suffer in UV** light if exposed and unprotected.

DefenCell uses a **number of mechanisms** to reduce the damage thus giving an initial **field life of 2 years** from the opening of the packaging.

This life can be **extended by spraying** the material with commonly available coatings (suitable general specifications can be supplied).

How is it packaged?

DefenCell components are packaged in a **light-proof plastic wrap/bag**.

They are **labeled on both on the product and packaging** with a simple indicator system that tells you the color and type/size of the product.

Additional information includes all the routine **NSNs, bar codes** etc.

Do I need any training?

To erect **standard** structures only a **basic level of knowledge** is required.

No specialist knowledge is needed and the process is both **intuitive and repetitive**.

The only skills required are **basic supervisory** ones to ensure that work is conducted **efficiently and quickly**.

No specialist engineer knowledge is required.

It is perfectly possible to utilize **civilian contractors or labor** as well.





How heavy is it?

A T2 section weighs 18 pounds each.
A T3 section weighs 22 pounds each.
A T4 section weighs 25 pounds each.

How bulky is it?

DefenCell is very compact, one 40' container is capable of holding 4000m³
This is equivalent to: 1000 meters of T4 Wall at 2.0 meters high
 1500 meters of T3 Wall at 1.5 meters high
 2000 meters of T2 Wall at 1.5 meters high

Does it have Nato Stock Numbers (NSNs)?

Yes. All the items and standalone structures have NSNs.

How much can you make and how quickly?

Our production facilities in both UK and US are running and established.

Do you hold stock?

Yes.

Can I cut through it?

Yes you can.
However, unlike gabion-type structures, if the textile becomes damaged, because of the cellular structure only the contents of the discrete cell is at risk, not the contents of the whole unit.
However, it is very difficult to destroy the wall structure - fill that falls out collects like a platform and encumbers removal. It therefore takes a considerable time to cut through even a small section as fill has to be constantly removed.

Will it stop cars and trucks?

Yes.
Detailed test and briefing material is available.
The system has been tested in the UK to **PAS 68**.
We expect **US testing** to take place in the **near future**.

How do you ship it?

DefenCell can be shipped by **land, sea or air**.
There are **no special handling or DAC** considerations.
Material can be handled by any **normal pallet handling** systems or broken down into even smaller packages no matter what the size of the overall structure.
No outsize considerations are applicable.
With no metal or other 'hard' components to be broken, it is droppable or sling loadable.
Barrier systems are even small enough to use **standard courier** networks if required.



How do you store it?

No special storage requirements exist.
Providing the equipment remains in its standard packaging a shelf-life of 10 years can be expected.
No self life issues for moisture or rot.

How stable are the structures you build?

Very.
With standard structures, providing the normal height and width restrictions are not exceeded and the ground is sound they are extremely stable.
Personnel can walk on them and plant appropriate to the width can be operated on the top if required.

Once it's up, what maintenance do I need to do?

None in principle.
A routine visual check is all that is required to establish if any damage has taken place.
If it has then a repair can be effected through patching, replacement or reinforcement.
If deployment is anticipated for more than 2 years plan to coat after installation (within 90 days).

What happens to it in a fire?

In intense heat it is possible for the outer cell layer to melt or burn.
Even if this is damaged the remainder of the cells in the structure should remain protected by the fill.
It is very unlikely that the structures integrity will be breached unless some other form of force is applied or damage inflicted.

What happens to it if chemicals or petrol or lubricants come into contact with it?

With petrol, oil, lubricants (POL) or most chemicals likely to be encountered any damage is likely to be localized to the area of the spill only and consist primarily of discoloration only.

What colors does it come in?

DefenCell is available in: Green, Tan, Black, Blue
Other colours are available on request.

Can I paint it?

Yes. Paints or coatings to can be used with no detrimental effect.
Advice on types or generic specifications can be given.
Application can be hand or sprayer.
Advice on application techniques is available.



How do I dispose of it?

There are no special disposal requirements.
DefenCell is an inert material with no specific hazards attached to it.

How long will it last?

Shelf life of 10 years.
Initial field life of 2 years.
Field life extendable by re-coating in-situ.

What if it rains a lot?

The textile is porous.
This ensures there is no build-up of water.
The flow-through of any water or moisture also improves compaction, leading to greater performance.

Do you have engineering drawings?

Yes.
Technical drawings and advice are available for all our standard products **for planning and design purposes.**

Who sells it and how can I order it?

DefenCell is available through J& S Franklin Ltd, JSF Systems LLC and its appointed agents and distributors.
See www.DefenCell.com or call +44 207 836 5746 or +1 301 717-1372.

Are you in the GSA System?

As at Aug 07 we are not in the GSA system but have started that process.
This should be complete in due course.

How do I handle it?

No special handling measures are required during transport.
During man-handling, as there are no metal components, sharp edges, or other similar hazards and because DefenCell is made of an inert, non-hazardous textile, **the risk of injury is drastically reduced** when compared to others.

