



REFURBISHMENT

Sika CarboDur® Grid

PATENTED CARBON GRID

REINFORCEMENT SYSTEMS

BUILDING TRUST



# Sika CarboDur® Grid PATENTED CARBON GRID REINFORCEMENT SYSTEMS

**THE REINFORCEMENT PRINCIPLE OF Sika CarboDur® Grid** is to provide structural strengthening evenly on the structure by applying mortar and embedding a bi-directional grid of carbon fiber into the mortar.

Sika CarboDur® Grid has been designed to strengthen masonry or reinforced concrete structures in certain circumstances such as wet environments, under warm or cold conditions, or in very small spaces.

Sika CarboDur® Grid is very easy to apply. The application requires only simple tools like scissors and trowels.

Sika CarboDur® Grid is perfect for buried water tanks, waste water treatment plants, sewage systems, aqueducts and elevator shafts.

## ADVANTAGES

- Allows reinforcement of a structure in a wet environment.
- Allows application of the reinforcement under low temperatures up to 5°C.
- Allows reinforcement of the structures in a 'hot' environment (up to 80°C)
- Lower tensile forces for 'weak' substrates compared to FRP systems
- High tensile resistance in both directions
- Wider distribution of constraints
- Corrosion insensitive
- Does not require UV protection
- VOC free
- Appearance: concrete or 'fine' cement coating
- Can be overcoated by paint or waterproofing systems (epoxy or PU systems)
- Easy and fast application
- Good reaction against fire

## EASY APPLICATION

An Example of Sika CarboDur® Grid C System Application:



Cut Sika CarboDur® 300 Grid.



Mix MonoTop®-3200 Grid mortar.



Apply first layer of MonoTop®-3200 Grid mortar.

## SYSTEMS BUILD-UP

At first, a levelling layer of the mortar Sika MonoTop®-3200 or -3260 (depending on the substrate) is applied. Then, the carbon mesh Sika CarboDur®-300 Grid is then embedded in the mortar by hand (applying soft pressure with a trowel until the mortar fills the gaps of the grid). At last, the same mortar as for the first layer is applied wet in wet on top to ensure sufficient embedment and protection.

## Sika CarboDur® GRID SYSTEMS

THIS REINFORCEMENT CONCEPT IS BASED ON TWO SPECIFIC SYSTEMS.



The “**thin system**”, Sika CarboDur® Grid C, is specially designed for concrete reinforcement. It mainly involves flexural reinforcement of concrete structures in wet environments or when short application time is required. This system is based on one patented grid and a mortar which has a thin grain size. This particular mortar allows a thin thickness of the reinforcement system between 4 to 5 – 6 mm



The “**thick system**”, Sika CarboDur® Grid M, is designed for the civil engineering structures made with masonry which are mainly buried water tanks, aqueducts and sewers. This system is also suitable for masonry homes, depending on the needs. This system dedicated for masonry allows a thickness between ~20 – 60 mm.



Sika CarboDur® 300 Grid is then embedded in the mortar.



Apply second layer of MonoTop®-3200 Grid mortar.



# Sika CarboDur® Grid C CONCRETE SYSTEM

Thin system for the reinforcement of concrete structures

Sika CarboDur® Grid C is a system particularly designed for the reinforcement of concrete structures such as:

- Management of cracks
- Old fragile concrete structures requiring additional reinforcement without creating brittleness in the existing structure.
- Shear reinforcement for concrete beams
- Management of the creation of openings in concrete walls
- Protection against the risk of sudden collapse

Concrete structures sometimes need an adapted system of reinforcement. That is the reason why Sika's structural strengthening offer is now completed with this new FRCM system. This is not a competitor of any FRP system, but an alternative solution where an FRP system is not suitable.

Sika offers a solution consisting of a bi-directional carbon fiber grid (Sika CarboDur®-300 Grid) and two layers of the R3 mortar Sika MonoTop®-3200 Grid (compliant to EN 1504-3) in which the grid is embedded to provide a high level reinforcement composite.

## SYSTEM DESCRIPTION



- The system consists of a single-component Sika MonoTop®-3200 Grid mortar and a patented Sika CarboDur®-300 Grid carbon grid.
- A first layer of mortar is applied to the substrate, the grid is then embedded in this first layer of mortar and a smooth finish is usually applied with Sika MonoTop®-3200 Grid mortar.



### Step 1

Sika MonoTop®-3200  
Grid

### Step 2

Sika CarboDur®-300 Grid

### Step 3

Sika MonoTop®-3200 Grid

EXAMPLES OF CONCRETE APPLICATIONS





# Sika CarboDur® Grid M MASONRY SYSTEM

Thick system for the reinforcement of existing masonry structures

Sika CarboDur® Grid M is particularly designed for the reinforcement of existing below ground or buried civil engineering masonry structures which are not accessible from outside. Depending on the needs, it also could be a good solution to reinforce masonry in housing projects.

Existing underground or buried structures are subject to numerous attacks of all kinds. One of the main causes of repair and reinforcement is the aging of the structures and the maintenance carried out with varying degrees of rigor throughout their useful life. These structures very often require special restoration solutions adapted to a particular environment.

Sika offers a solution consisting of a bi-directional carbon fiber grid (Sika CarboDur®-300 Grid) and two layers of the R4 mortar Sika MonoTop®-3260 Grid (compliant to EN 1504-3 and EN 998) in which the grid is embedded to provide a high level reinforcement composite.

## SYSTEM DESCRIPTION



- The system consists of Sika MonoTop®-3260 Grid in accordance with EN 998-1 (masonry) of a high-performance level, which is the matrix in which the patented Sika CarboDur® Grid-300 carbon grid is embedded.
- The system is simple and effective, consisting of mortar and carbon grid only.



### Step 1

Sika MonoTop®-3260  
Grid

### Step 2

Sika CarboDur®-300 Grid

### Step 3

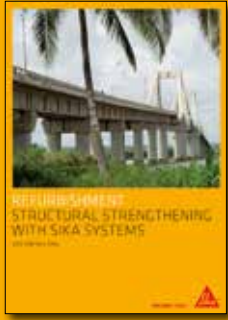
Sika MonoTop®-3260 Grid

EXAMPLES OF MASONRY APPLICATIONS





# ALSO AVAILABLE FROM SIKA



## FOR MORE INFORMATION ON SIKA STRUCTURAL STRENGTHENING SYSTEMS AND SOLUTIONS:



### WE ARE SIKA

Sika is a specialty chemicals company with a leading position in the development and production of systems and products for bonding, sealing, damping, reinforcing and protecting in the building sector and the motor vehicle industry. Sika's product lines feature concrete admixtures, mortars, sealants and adhesives, structural strengthening systems, industrial flooring as well as roofing and waterproofing systems.

Our most current General Sales Conditions shall apply. Please consult the most current local Product Data Sheet prior to any use.



**SIKA SERVICES AG**  
Tueffenwies 16  
CH-8048 Zurich  
Switzerland

**Contact**  
Phone: +41 58 436 40 40  
[www.sika.com](http://www.sika.com)

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