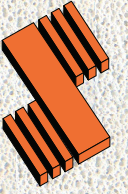


SIPOREX[®]
سيبوركس



Autoclaved Aerated Concrete Products

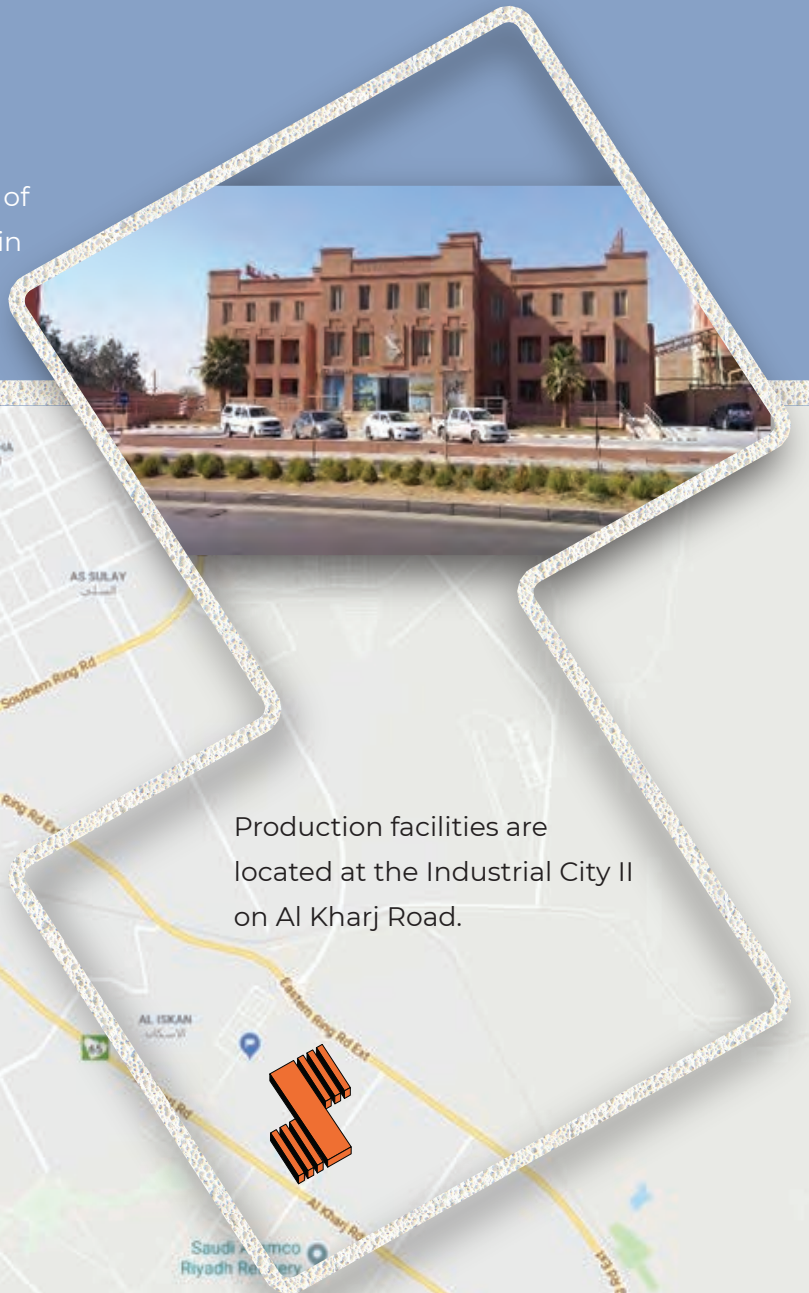
TECHNICAL GUIDE



المباني الخضراء (صديقة البيئة)
Green Buildings System (environmentally friendly)

Lightweight Construction Company (LCC-Siporex)
Is originally the sole manufacturer and supplier of
lightweight Autoclaved Aerated Concrete (AAC)
to the Saudi Arabian Construction industry.
The company is wholly owned by Saudi nationals.

The Head Office of
the Company is in
Riyadh.



Production facilities are
located at the Industrial City II
on Al Kharj Road.

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1.1 What is SIPOREX ?

SIPOREX is lightweight Autoclaved Aerated Concrete (AAC) which is also called cellular concrete.

SIPOREX is completely cured mix of calcareous materials such as cement and siliceous fine materials such as quartz sand with the addition of water and aluminum powder acting as foaming agent to form a homogenous cellular structure known as Calcium Silicate Hydrate.

SIPOREX is a high quality structural material, load-bearing and extremely well insulating material due to numerous tiny non-connecting air bubbles which gives Siporex its incredibly diverse qualities. The high pressure steam-curing in autoclaves achieves a physically and chemically stable product with an average density being approximately one fourth of normal concrete.

SIPOREX is produced as blocks and precast reinforced units, i.e., wall panels, lintels and floor/roof slabs forming a complete building system.

SIPOREX has been used on large scale projects such as housings, schools, hospitals, commercial, industrial and government projects under all climatic conditions since the early nineteen thirties worldwide.

SIPOREX is definitely one of the major achievements in the field of construction. It is a revolutionary material that offers a unique combination of strength, lightweight, thermal insulation, sound absorption, unsurpassed fire resistance and unprecedented buildability.

SIPOREX is a natural and non-toxic construction material, saves energy, and is friendly to the environment.

As a building system, SIPOREX meets all the requirements of our modern age throughout the world. Its properties ensure a building material that outperforms all others. In view of the rapid development and increasing demand, we can claim with certain justification that SIPOREX is the ideal choice for building construction.



1.2 About Our Plant

Industrial production of this versatile building material was started in 1929 and it has been produced and used for building construction ever since. First in Europe and now world-wide.

Here in the Kingdom of Saudi Arabia, LCC Siporex Company was established in 1976 and has been producing Siporex AAC material at our plant in the Second Industrial Estate, AlKharj Road.

With our continued expansion of additional manufacturing plant to sustain the growing demand, our current total production capacity has intensified to about 350,000 cubic meters of Siporex AAC products per year.



Siporex manufacturing plant in Riyadh, Saudi Arabia

After more than forty years and having used by several thousands of projects, LCC Siporex became the leading supplier of this truly amazing material not only within the kingdom but also to GCC countries, Yemen, Jordan, Sudan, Ethiopia and as far away as Djibouti, Taiwan and Japan.

Builders, engineers, architects and contractors not only appreciate the excellent properties of Siporex, but also energy-saving and pollution-free techniques used in its production.

In fact, Siporex manufacturing process produces neither polluting waste gases nor dangerous residues and there is no waste of costly raw materials.

1.3 Codes & Standards

Various international codes and standards had been developed to provide engineers and designers with provisions for the analysis and design of AAC factory-produced reinforced panels and blocks based on various research studies and experiences on its use.

These include guidelines or recommended practice addressing the materials, manufacture and structural design of AAC including design considerations such as erection and construction details incorporating the use of AAC products in conventional construction. Some of these Codes & Standards are listed below:

CODE OR STANDARD	DESIGNATION NO.	DESCRIPTION
ACI	ACI 523.4R-09	Guide for Design and Construction with Autoclaved Aerated Concrete Panels
ASTM	C1555-03A	Standard Practice for Autoclaved Aerated Concrete Masonry
ASTM	C1386-98	Standard Specification for Precast Autoclaved Aerated Concrete Wall Construction Units
ASTM	C 1452-00	Standard Specification for Reinforced Autoclaved Aerated Concrete Elements
DEUTCH NORM	DIN 4165	Autoclaved Aerated Concrete Blocks
DEUTCH NORM	DIN 4223	Aerated Concrete; Reinforced Units
BRITISH STANDARD	BS 8110 – Part 2, Section Six	Autoclaved Aerated Concrete
BRITISH STANDARD	BS EN 771-4:2003	Autoclaved Aerated Concrete Masonry Units
BRITISH STANDARD	BS EN 678:1994	Determination of the Dry Density of Autoclaved Aerated Concrete
BRITISH STANDARD	BS EN 679 :1994	Determination of the compressive Strength of Autoclaved Aerated Concrete
BRITISH STANDARD	BS EN 680: 1994	Determination of the Drying Shrinkage of Autoclaved Aerated Concrete
BRITISH STANDARD	BS EN 772-10:1999	Method of test for Masonry Units
BRITISH STANDARD	BS EN 1351:1997	Determination of Flexural Strength of Autoclaved Aerated Concrete
BRITISH STANDARD	BS EN 1353:1997	Determination of Moisture Content of Autoclaved Aerated Concrete
SASO	SASO 1579	Precast Autoclaved Aerated Concrete
SWEDISH BUILDING CODE		Autoclaved Aerated Concrete Products
COUNCIL OF AMERICAN BUILDING OFFICIALS		Design Procedure for Siporex Roof, Floor, Wall Panels, Masonry Blocks and Lintels of Autoclaved Lightweight Cellular Concrete (Report # NER-297)
RILEM		Autoclaved Aerated Concrete

2.1 Manufacturing Process

Siporex is produced by a highly complex and advanced manufacturing process in our factory under the careful control of chemists and engineers. Siporex is made either as steel reinforced panels using moulds 6 meters long, 1.5 meters wide and 600 mm deep or as non-reinforced blocks using moulds 6 meters long, 1.5 (or 1.2) meters wide and 600 mm deep. A schematic diagram of manufacturing process is shown on fig. 1.



The basic raw materials are sand, water, aluminum powder and cement. The sand is ground to required fineness in a ball mill before mixing with other raw materials with water to form slurry to which a trace of aluminum powder is added as expanding agent.



All Siporex panels are reinforced with steel. Steel coils are straightened, cut and spot-welded into mats, where crossbars provide anchorage to the longitudinal reinforcements. Siporex blocks are not reinforced.



After dipping the welded mats in a homogenized anti-corrosion mix for rust protection, they are dried and assembled into cages and set accurately in the moulds before the slurry is poured in.



This is only a preview of the file.

Regulated amount of aluminum powder gives accurate control of density of the final product. Moulds are only partly filled with slurry which then expands in a controlled

Please request a download of the full version of the file by filling up the form from the web page.

Thank you.

After the expansion is sufficient, the moulds are stripped and the cake is wire-cut to close tolerances into panels and blocks using high-precision cutting technology. These are then steam cured under high pressure in autoclaves for up to 15 hours.



Technical Guide

Our Technical Guide provides you with the complete information about our products and its applications.

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marked and stored on wooden pallets.

The finished goods inspection programme ensures the products quality. The material is now ready for loading and delivery.