Healthy, quiet and comfortable environments...

Boron Based

Cellulosic Isolation Era

CelluBOR®

Heat - Sound - Fire Insulation

Çağ Engineering Architecture Construction Trade Company

Çağ Engineering, which started its activities in 1999, has started mass production of CelluBOR, the first and only cellulose based boron-added insulating material of Turkey and Middle East, and CelluMAK which applies CelluBOR on various surfaces.

Our vision as Çağ Engineering is to reduce heating and cooling costs, to make sound insulation in constructions, to produce fire resistant structures, to build structures free of microorganisms. In addition, we aim to create buildings that breathe, remove all possible risks for human health and convey the required technical information and application methods to its users.

Since its production, CelluBOR has been applied widely in countless national and international projects, mainly hotels, conference halls, steel structures, residences, offices, hangar structures. Furthermore, our national resource boron is processed from recycled materials, contributes to the economy.

Our company qualifies the terms of ISO 9001: 2008 quality standards.

Insulation Sector
Performance Awards
2006
INVESTMENT AWARD
OF THE YEAR

CelluBOR®
Heat - Sound - Fire Insulation

TS EN 15101

ISO 9001:2008

What is CelluBOR?

CelluBOR is a boron-based cellulosic material, which is used of thermal, sound, and fire insulator. Thanks to the pouring, blow-filling and special spraying machines, CelluBOR can be applied to all kinds of surfaces easily.

It mimics naturally-occuring materials thanks to its porous structure, which can breath. Producing the material entirely from natural materials ensures that the performance of the product remains constant throughout its lifetime. There is no volumetric loss and no deterioration in terms of thermal, sound and fire insulation.

CelluBOR has the possibility to be applied on every surface at desired thickness and density. During its application no gap is left which prevents the formation of thermal and sound bridges.

CelluBOR is completely environmentally friendly. The assessment of waste paper contributes to the country's economy.

It is used in thermal, sound isolation and acoustic regulations. It can be used in Cinemas, concert halls, meeting factories, workshops and other open-public spaces and also in places where sound isolation is required at high levels, such as recording studios.

Density: It can be applied at densities ranging from 30-150 kg / m^3.

It is completely inert towards enzymatic reactions. Thus, it does not biologically degredade. It is not carcinogenic. It does not deteriorate with time, does not rot, does not corrode.

Energy

More Thermal Resistance with CelluBOR

Thanks to the high thermal insulation provided by CelluBOR, up to 70% fuel saving is achieved. Thus, more thermal resistance is obtained by paying less.

Economy

CelluBOR is Economic

If the insulation material is expensive, the recycling period of the investment will be prolonged and the economic contribution to the consumer will decrease. In addition to thermal insulation, CelluBOR also makes fire and sound insulation. It also contributes to the use of boron, which is a natural resource in Turkey.

Ecology

CelluBOR is Environmentally and Health Friendly

CelluBOR does not contain any carcinogenic or harmful substances. It allows the buildings to breathe thanks to its physical structure. It prevents mold, dampness and rust. It is nature friendly as it is made of recycled paper (%80).

Insulation Sector Performance Awards 2006 INVESTMENT AWARD OF THE YEAR

CelluBOR® Heat - Sound - Fire Insulation

TS EN 15101

ISO 9001:2008

Certificate Of Conformity To Turkish and European Standards

TURKISH STANDARDS INSTITUTION
CERTIFICATE OF CONFORMITY TO TURKISH STANDARDS

Description of the Mark

TSE or  or TSE

REFERENCE NUMBER OF LICENCE	:	035767 - TSE - 01/02
DATE OF FIRST ISSUE OF LICENCE	:	03.11.2015
LICENCE VALID UNTIL	:	03.11.2017
NAME OF THE LICENCE HOLDER	:	ÇAĞ ENGINEERING ARCHITECTURE CONSTRUCTION TRADE COMPANY
ADRESS OF THE LICENCE HOLDER	:	MİMAR SİNAN MAHALLESİ ÇAVUŞBAŞI CADDESİ ÖZGE SOKAK ZİNDE İŞ MERKEZİ NO: 1/10 ÇEKMEKÖY İSTANBUL/TÜRKİYE
NAME OF THE MANUFACTURING PLACE	:	ÇAĞ ENGINEERING ARCHITECTURE CONSTRUCTION TRADE COMPANY
ADRESS OF THE MANUFACTURING PLACE	:	FEVZİ ÇAKMAK MAHALLESİ MAKPARSAN SANAYİ SİTESİ DEVECİ SOKAK 2. BLOK NO: 7 KARATAY KONYA/TÜRKİYE
INDICATION OF SUPERSEDED LICENCE (if any)	:	035767 - TSE - 01/01
REGISTERED TRADE MARK	:	Cellu BOR
RELATED STANDARD	:	TS EN 15101-1 / Thermal Insulation Products for Buildings - In -situ formed Loose Fill Cellulose (LFCI) Products - Part 1: Specification for the Products Before Installation / 13.02.2014

SCOPE OF LICENCE

"CelluBOR" Trade Mark
Thermal Insulation Products for Buildings - In -situ formed Loose Fill Cellulose (LFCI) Products

Fire Resistance: B S1 d0
Thermal Insulation Coefficient: 0.037 W/m.
The Settlement Class of Horizontal Dry Applications: SH 10
Short Duration Water Absorption Ratio Class: WS2
The Resistance Class to Fungus: BA0
Weighted SoundAbsorption Coefficient (Qw) is1,0 and sound absorption Class : A

03/11.2015

İBRAHİM YÜCEL AYDEMİR
KONYA BELGELENDİRME MÜDÜRÜ
(V)

CelluBOR is Healthy and Long-Lasting

In order for the insulation material to be long lasting, it must not contain fungi, microbiological organisms, insects etc. Such living structures reduce the life of the material in a short time, putting human health in danger. In the following experiments performed according to TS EN 13501, no microorganisms were found in CelluBOR. According to this, CelluBOR does not rot and is very long-lasting. It's totally hygienic. The building is made in full compliance with health conditions.

Customer Name / Address	: ÇAĞ ENGINEERING ARCHITECTURE CONSTRUCTION TRADE COMPANY
Report No	: 72258
Date	: 10.12.2014
Reason of Analysis	: QUALITY CONTROL
Sample Shipper	: ÇAĞ ENGINEERING ARCHITECTURE CONSTRUCTION TRADE COMPANY
Shipper's Address	:
Laboratory Arrival Date	: 10.12.2014
Start / End date of the analysis	: 10.12.2014 / 24.12.2014

SAMPLE'S

Type	: CelluBOR Insulation Material
Packing	: ORIGINAL PACKING
Production and Expiration Date	:
Quantity	: 3kg
Explanation	:

Analysis Done	*Result / Unit*	*Determined Sublimit*	*Analysis Method*
Aspergilus niger	**Class BA : 0**		**TS EN 15101-1:2013 Annex F**
Trichoderma viride	**Class BA : 0**		**TS EN 15101-1:2013 Annex F**
Chaetomium globosum	**Class BA : 0**		**TS EN 15101-1:2013 Annex F**
Paecilomyces variotti	**Class BA : 0**		**TS EN 15101-1:2013 Annex F**
Penicillum pinophilum	**Class BA : 0**		**TS EN 15101-1:2013 Annex F**

The above mentioned values were determined as the result of the inspection and analysis.

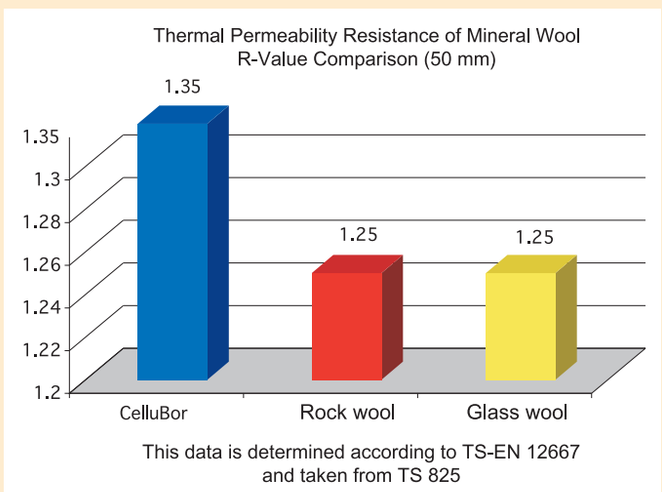
Features of CelluBOR

Thermal

The thermal conductivities (λ) of the insulation materials should be between 0.020-0.060 W/mK. CelluBOR's λ value is not affected by density variation and temperature changes. Its thermal conductivity value is 0.037 W / mK.

R value

R value -thermal resistance- is the figure demonstrates the total thermal insulation value of the structure. The R value, expressed as resistance of components and insulation materials against heat transfer, is an important criterion for selecting materials. The heat conductivity resistance of CelluBOR is 1.35m^2 K / W at 50mm thickness. It is temperature independent.



Acoustic and Noise Transition

CelluBOR absorps sounds due to its flexible and soft structure. Its irregular and fiber textured structure (High surface weight and porous structure) prevents reverberation and tinnitus. When used with the appropriate components and applied in appropriate thickness, the CelluBOR system has the ability to absorp sounds up to 70 dB of noise. Acoustically the sound absorbing feature is perfect. Its sound absorption coefficient is 1.0, which corresponds to class A.

CelluBOR® Heat - Sound - Fire Insulation

TS EN 15101

ISO 9001:2008

The Right Choice for Fire Safety

CelluBOR ...

Fire

The fire retardant boron components in CelluBOR provide the necessary fire protection (duration, smoke amount, no dripping, no fire advance etc). for the building.
CelluBOR is in Class B Fireproof Materials according to EN 13501-1 Norm. CelluBOR is in fire reaction class B-s1, d0.

A, B, C, D, E (Class of building products, except floor coverings)	
Class B	According to the EN ISO 11925-2 test and the EN 13823 test, providing FIGRA (=$FIGRA_{0,2\ Mj}$) ≤ 120 W/s $THP_{600s} \leq 7,5_{Mj}$

S_i-smoke generation class (S_1, S_2, S_3)*	
According to S1 = EN13823	SMOGRA ≤ 30 m^2/s^2 ve $TSP_{600s} \leq 50\ m^2$

d_0- Drop formation class (d_0, d_1, d_2)*	
d_0	According to EN 13823 in 600s Burning drops/ particles do not occur

*These data have been determined according to EN 13501. Details about other classes and classifications are available here.
**Product specifications of 'CelluBOR' (Cellulosic Insulation Material) is determined according to TS EN 15101 standards.
***The CelluBOR fire response tests above were made by the TSE laboratory and were reported in 25/11/2014.

CelluBOR®
Heat - Sound - Fire Insulation

TS EN 15101 ISO 9001:2008

Weighted Sound Absorption Coefficient and Class

Sound Absorption Coefficient Measurement Test Report

TURKISH ACCREDITATION AGENCY

TÜBİTAK UME

TÜRKAK Test TS EN ISO IEC 17025 AB-0092-T

AB-0092-T
UME G2AK-0002
12-14

TUBITAK
NATIONAL METEOROLOGY INSTITUTE

Test Report

Customer / Adress	:	ÇAĞ ENGINEERING ARCHITECTURE CONSTRUCTION TRADE COMPANY Mimar Sinan Mh. Çavuşbaşı Cad. Özge Sk. No: 1/10 Çekmeköy - İSTANBUL
Order No	:	2014.02162
Name and Identity of Test Item	:	CelluBOR Cellulose Insulation Material
Date of Receipt of Test Item	:	01.12.2014
Remarks	:	Sound Absorption Coefficient Measurement
Date of Test	:	01.12.2014

Technical Description

Manufacturer	ÇAĞ ENGINEERING ARCHITECTURE CONSTRUCTION TRADE COMPANY
Description of materials	CelluBOR Cellulose Insulation Material having thickness of 100 mm
Properties of materials	Content : 81% Cellulose obtained from paper, 7% Borax pentahydrate and 12% Boric acid Thickness : 10cm Density : 30 kg/m^3
Application of material into the room	Absorption surface is obtained by normal spreading method on the room floor. The perimeter of the surface is surrounded by aluminyum plate.

Weighted Sound Absorption Coefficient and Class

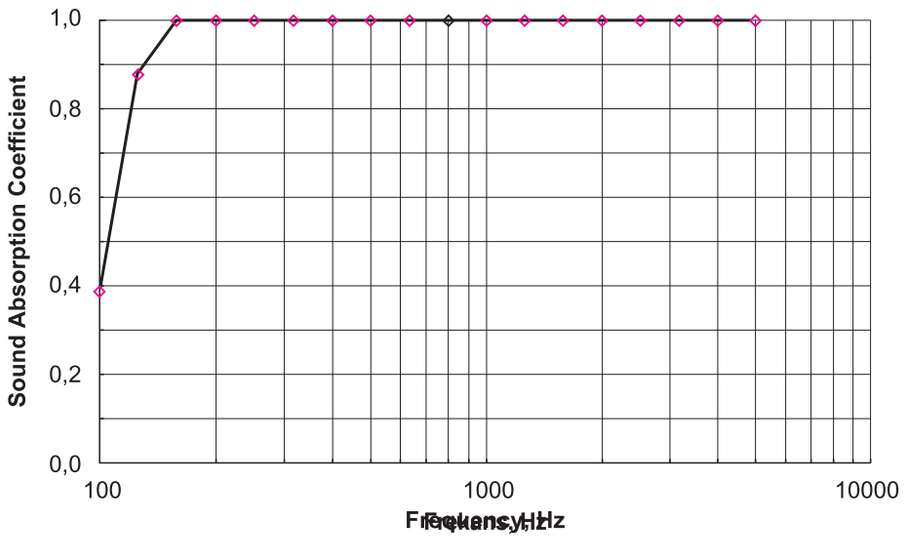
Weighted sound absorption coefficient and absorption class according to ISO 11654:1997 standard

Weighted Sound Absorption Coefficient	1,0
Sound Absorption Class	A

Test Result Details

Measured reverberation time values of empty room and when CelluBOR Cellubose Insulation Material placed the room and calculated sound absorption coefficient values

Frequency (Hz)	Resonate Duration (s)		Sound Absorption Coefficient (α_p)
		Absorbing Surface inside the room	
100	3,77	2,66	0,39
125	7,30	2,59	0,88
160	6,92	2,16	1,00
200	7,95	2,15	1,00
250	8,73	2,19	1,00
315	8,30	2,00	1,00
400	7,80	2,18	1,00
500	8,06	2,19	1,00
630	8,79	2,34	1,00
800	8,07	2,35	1,00
1000	7,51	2,29	1,00
1250	6,89	2,31	1,00
1600	6,37	2,20	1,00
2000	5,60	2,12	1,00
2500	4,64	1,95	1,00
3150	3,53	1,71	1,00
4000	2,86	1,51	1,00
5000	2,18	1,32	1,00



Sound absorption coefficient versus frequency

Sound Transmission Test Report

Accredited by TÜRKAK

HEADSHIP OF TSE TEST and CALIBRATION CENTER
CONSTRUCTION MATERIALS FIRE AND
ACOUSTICS LABORATORY DIRECTORATE

Address: Aydınlı Mah. Gülennur Sok. No: 7/1 Tuzla/İSTANBUL
Tel: +90 (216) 560 05 27 Fax: +90 (216) 560 05 65 E-mail: yalitim@tse.org.tr Web: www.tse.org.tr

TÜRKAK Test TS EN ISO/IEC 17025 AB-0001-T

AB-0001-T
293746
04-16

TEST REPORT

Introduction

At the request of **ÇAĞ Engineering Architecture Construction Trade Company,** airborne sound insulation measurements were carried out for Wall system that was constituted gypsum board (Knauf Alçıpan Flex 12,5mm) and insulation material (Cellubor) at the acoustic department of TSE Construction Materials Fire and Acoustic Laboratory according to TS EN ISO 10140-2: 2013 on 24.03.2016

Description of the test specimen

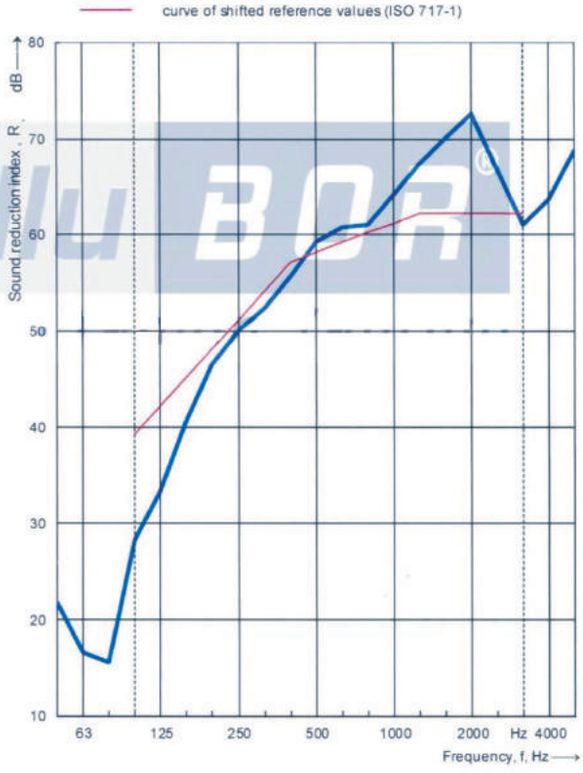
Description of the product: Wall system that was constituted using double gypsum board (Knauf Alçıpan Flex 12,5 mm) on both sides with 10 cm air gap, and the air gap was filled with sound insulation material called Cellubor.
Made of: Gypsum board, Insulation material (Cellubor), support system (C shaped studs)
Surface area: 12,42m^2
Mass per unit area (system): ≈39,9kg/m^2

Dimensions (Wall system)	Length (mm)	Height (mm)	Thickness (mm)
	4060	3060	150

Static pressure:	99,0 kPa
Air temperature:	17,4 °C
Relative air humidity:	58,5 %
Mass per unit area:	≈39,9kg/m^2
Area, S, of test element:	12,42 m^2
Source room volume:	114,9 m^3
Receiving room volume:	174,4 m^3

Frequency f [Hz]	R 1/3 octave [dB]
50	21,9
63	16,7
80	15,6
100	28,2
125	33,3
160	40,6
200	46,5 [2]
250	50,2 [2]
315	52,3 [2]
400	55,7 [2]
500	59,2 [2]
630	60,7
800	61,0
1000	64,1
1250	67,4
1600	70,1
2000	72,6
2500	66,8
3150	61,0
4000	63,7
5000	68,8

[2] Minimum values



Rating according to ISO 717-1
R_w ($C;C_{tr}$) = 58,2 (-4 ; -12) dB
Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

$C_{50-3150}$ = -12 dB $C_{50-5000}$ = -11 dB $C_{100-5000}$ = -4 dB
$C_{tr,50-3150}$ = -24 dB $C_{tr,50-5000}$ = -24 dB $C_{tr,100-5000}$ = -12 dB

Sound Transmission Test Report

HEADSHIP OF TSE TEST and CALIBRATION CENTER
CONSTRUCTION MATERIALS FIRE AND ACOUSTICS LABORATORY

TEST RESULTS

TS EN ISO 10140-2: 2013; TS EN ISO 717-1: 2013

AB-0001-T
293746
04-16

Sound reduction index according to ISO 10140-2

Laboratory measurement of sound insulation of building elements

Rating according to ISO 717-1

R_w $(C;C_{tr})$ = 58,2 (-4 ; -12) dB

$C_{50\text{-}3150}$ = -12 dB $C_{50\text{-}5000}$ = -11 dB $C_{100\text{-}5000}$ = -4 dB

$C_{tr,50\text{-}3150}$ = -24 dB $C_{tr,50\text{-}5000}$ = -24 dB $C_{tr,100\text{-}5000}$ = -12 dB

Evaluation based on laboratory measurements results obtained in one-third-octave bands by an engineering method.

Sum of unfavourable deviations : 31,8 dB
Max. unfavourable deviation : 11,0 dB at 100 Hz

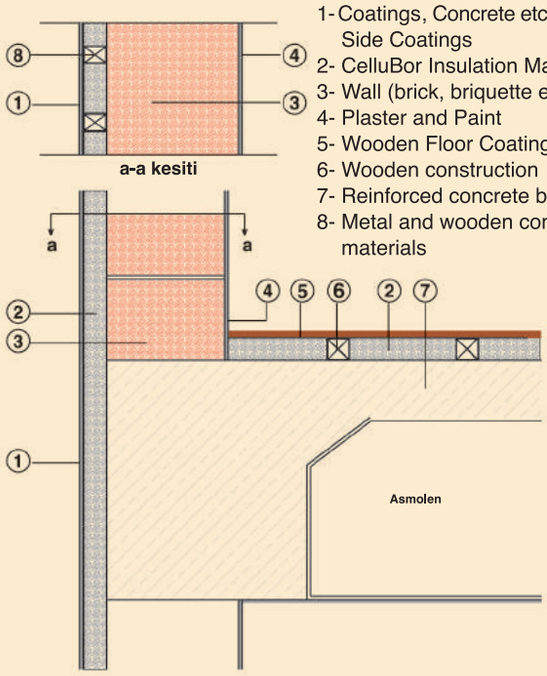
Frequency [Hz]	R [dB]	L1 [dB]	L2 [dB]	T [s]	Corr. [dB]	u. Dev. [dB]	Bgn status	Ftm status
50	21,9			2,26				
63	16,7			1,99				
80	15,6			2,24				
100	28,2			2,83		11,0		
125	33,3			2,62		8,9		
160	40,6			2,59		4,6		
200	46,5			2,68		1,7		Minimum values
250	50,2			2,99		1,0		Minimum values
315	52,3			2,62		1,9		Minimum values
400	55,7			2,96		1,5		Minimum values
500	59,2			3,14				Minimum values
630	60,7			3,01				
800	61,0			2,84				
1000	64,1			2,64				
1250	67,4			2,37				
1600	70,1			2,30				
2000	72,6			2,51				
2500	66,8			2,57				
3150	61,0			2,37		1,2		
4000	63,7			2,04				
5000	68,8			1,84				

Receiving room volume:	174,4 m³	Air temperature:	17,4 °C
Source room volume:	114,9 m³	Relative air humidity:	58,5 %
Area, S, of test element:	12,42 m²	Static pressure:	99,0
		Mass per unit area:	≈39,9kg/m²

TÜRK STANDARDLARI ENSTİTÜSÜ KALİBRASYON MERKEZİ BAŞKANLIĞI 1954

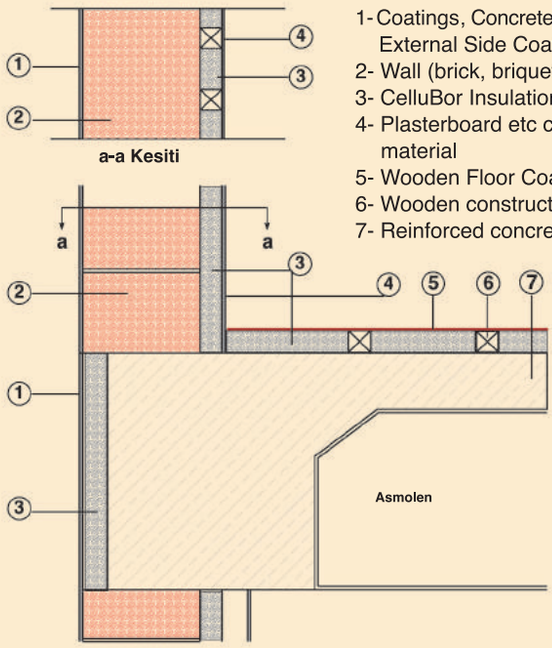
Some CelluBOR Application Details

External CelluBor Insulated Walls



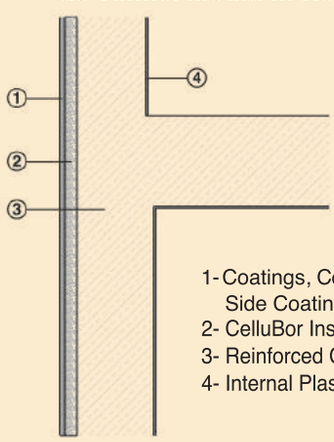
1- Coatings, Concrete etc based External Side Coatings
2- CelluBor Insulation Material
3- Wall (brick, briquette etc)
4- Plaster and Paint
5- Wooden Floor Coating
6- Wooden construction
7- Reinforced concrete beams
8- Metal and wooden construction materials

Internal CelluBor Insulated Walls



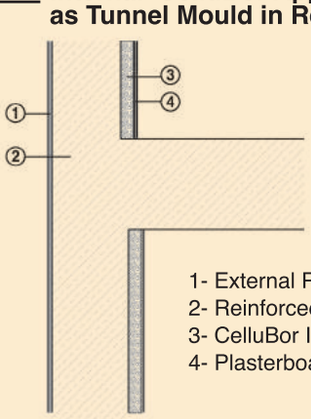
1- Coatings, Concrete etc based External Side Coatings
2- Wall (brick, briquette etc)
3- CelluBor Insulation Material
4- Plasterboard etc coating material
5- Wooden Floor Coating
6- Wooden construction
7- Reinforced concrete beams

External CelluBor Application in Systems such as Tunnel Mould in Reinforced Constructions



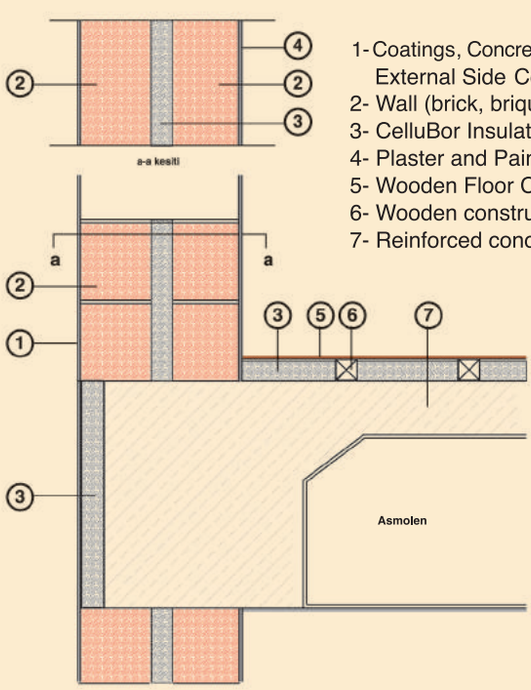
1- Coatings, Concrete etc based External Side Coatings
2- CelluBor Insulation Material
3- Reinforced Concrete Elements
4- Internal Plaster

Internal CelluBor Application in Systems such as Tunnel Mould in Reinforced Constructions



1- External Plaster and Coating
2- Reinforced Concrete Elements
3- CelluBor Insulation Material
4- Plasterboard etc Coating Material

Sandwich Inter-Walls CelluBor Insulation



1- Coatings, Concrete etc based External Side Coatings
2- Wall (brick, briquette etc)
3- CelluBor Insulation Material
4- Plaster and Paint
5- Wooden Floor Coating
6- Wooden construction
7- Reinforced concrete beams

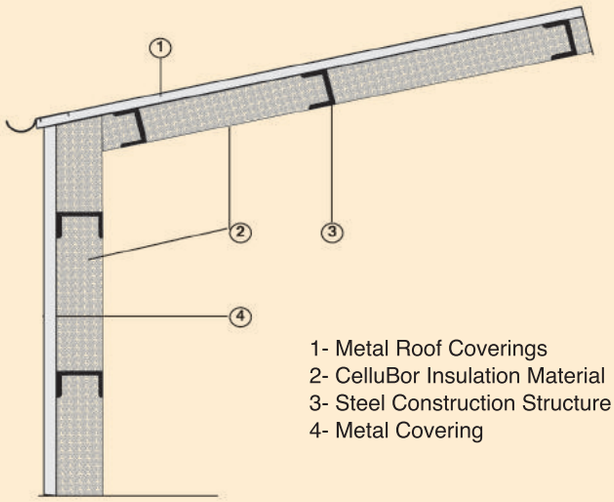
CelluBOR®
Heat - Sound - Fire Insulation

TS EN 15101

ISO 9001:2008

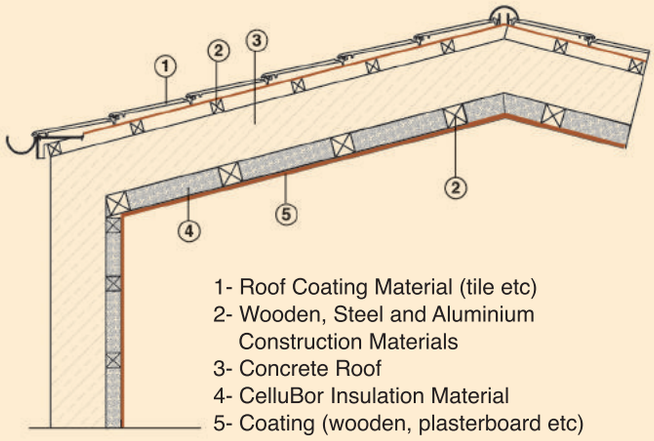
Some CelluBOR Application Details

Spraying Application with Machine to the Roof and Wall in the Industrial Constructions.



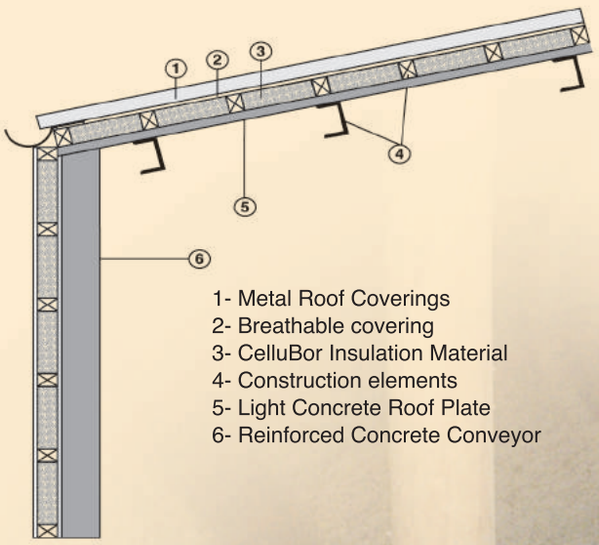
1- Metal Roof Coverings
2- CelluBor Insulation Material
3- Steel Construction Structure
4- Metal Covering

CelluBor Insulation on Concrete Roofs



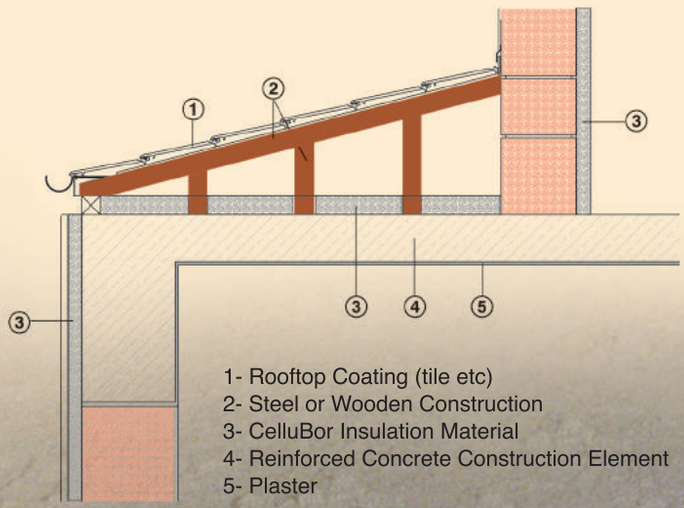
1- Roof Coating Material (tile etc)
2- Wooden, Steel and Aluminium Construction Materials
3- Concrete Roof
4- CelluBor Insulation Material
5- Coating (wooden, plasterboard etc)

Sub-coating CelluBor Insulated Roofs



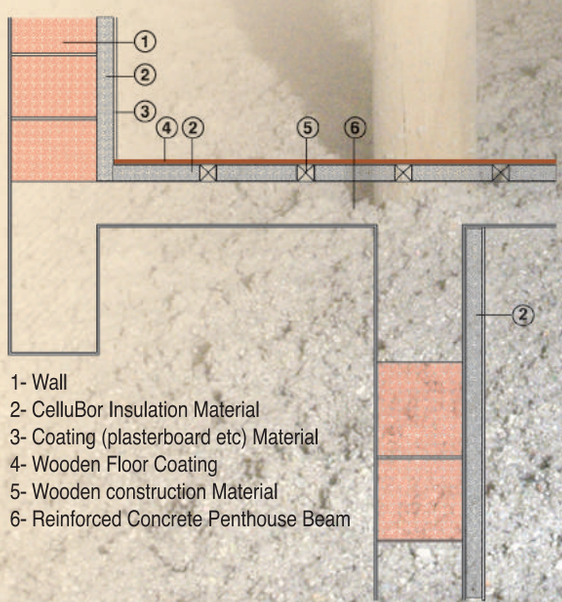
1- Metal Roof Coverings
2- Breathable covering
3- CelluBor Insulation Material
4- Construction elements
5- Light Concrete Roof Plate
6- Reinforced Concrete Conveyor

Loft CelluBor Insulation



1- Rooftop Coating (tile etc)
2- Steel or Wooden Construction
3- CelluBor Insulation Material
4- Reinforced Concrete Construction Element
5- Plaster

On Penthouse Floors and Walls



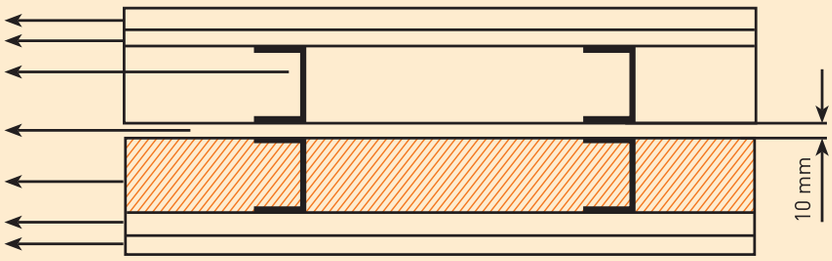
1- Wall
2- CelluBor Insulation Material
3- Coating (plasterboard etc) Material
4- Wooden Floor Coating
5- Wooden construction Material
6- Reinforced Concrete Penthouse Beam

CelluBOR®
Heat - Sound - Fire Insulation

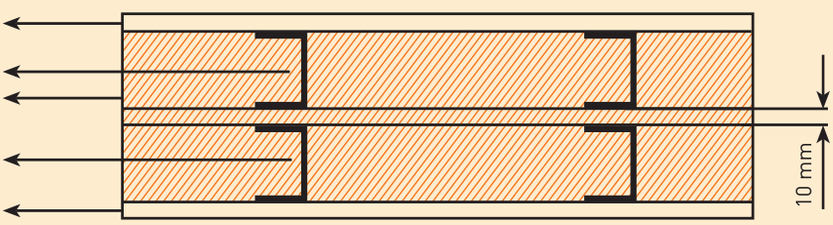
TS EN 15101 ISO 9001:2008

Sound Isolation Wall System With CelluBOR

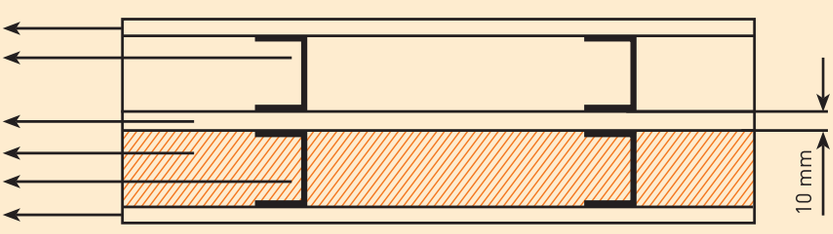
12.5 mm Gypsum Board
12.5 mm Gypsum Board
50 mm U Profile
Air gap
50 mm CelluBOR
12.5 mm Gypsum Board
12.5 mm Gypsum Board



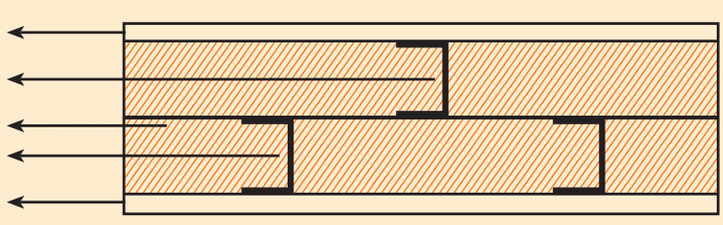
12.5 mm Gypsum Board
50 mm U Profile
CelluBOR is sprayed into all gaps
50 mm U Profile
12.5 mm Gypsum Board



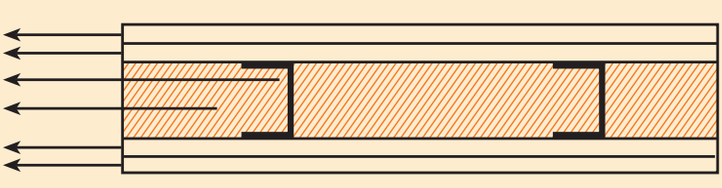
12.5 mm Gypsum Board
50 mm U Profile
Air gap
50 mm CelluBOR
50 mm U Profile
12.5 mm Gypsum Board



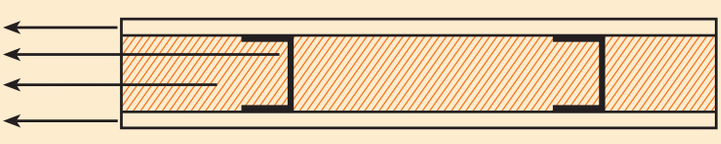
12.5 mm Gypsum Board
50 mm CelluBOR
CelluBOR is sprayed into all gaps
50 mm U Profile
12.5 mm Gypsum Board



12.5 mm Gypsum Board
12.5 mm Gypsum Board
75 mm U Profile
CelluBOR is sprayed into all gaps
12.5 mm Gypsum Board
12.5 mm Gypsum Board



12.5 mm Gypsum Board
75 mm U Profile
CelluBOR is sprayed into all gaps
12.5 mm Gypsum Board



CelluBOR®
Heat - Sound - Fire Insulation

TS EN 15101

ISO 9001:2008

CelluBOR Applications

Spraying and Filling Applications

Spraying can be applied on interior and exterior walls, basement and basement walls, prefabricated structures, cathedral interiors and industrial roofs. Ceiling/floor insulation in commercial buildings is necessary for sound control between the flooring. It provides noise absorption for wall and roof constructions.

Casting and Pouring Applications

The casting-pouring method can be applied on floors of attics, between two walls and between two spaces formed.
It is preferred due to its excellent performance values when compared to mineral wool insulators applied in cast form. With its high density and perfect compatibility, CelluBOR is the right solution to maximize thermal efficiency by reducing air leaks and heat dissipation on ceiling and floor. In all angles and configurations, CelluBOR can be applied by pouring, injection or spraying with manual casting or special application machine.

CelluBOR Application Areas

• Constructions can be coated with CelluBOR by external spraying under siding, concrete based materials, glass, aluminum, granite etc.
• The inner surfaces of the structures are sprayed and filled under the cover.
• Construction roofs are in the form of casting and pouring.
• Can be filled between two bricks.
• On buildings with steel construction, the building structure is protected against fire.
• On Metal roofs and facades.
• In cold storages.
• In farms.
• Sound insulation is required in mosques, concert halls, meeting rooms, schools, factories, workshops and other public spaces, as well as recording studios.
• In technical insulations on roofs and walls of industrial installations.
• On ships, wagons and containers, on exteriors.
• The most important part of technical infrastructure that hotels and motels, meeting, entertainment and sports facilities and similar facilities.
• In all industrial building roofs, concrete onduline, eternit, sheet metal, membrane etc. provide excellent adhesion to all kinds of materials regardless of the floor.

CelluBOR® Heat - Sound - Fire Insulation

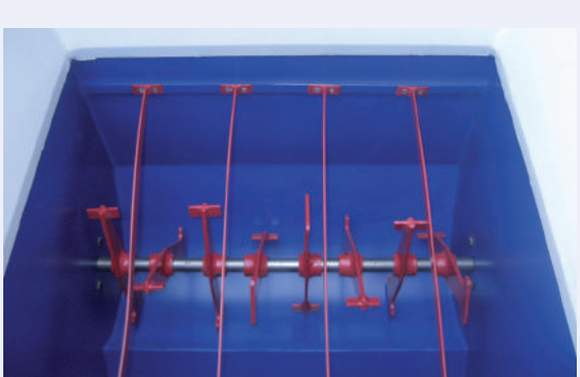
TS EN 15101 ISO 9001:2008

Blowing Machines and Equipment

CelluMAK insulation machines are used to blow the loose form insulation material vertically and horizontally by pneumatic processing form. Wet spraying unit added to CelluMAK spraying system is designed to do both blowing of dry fiber for filling of material inside the vertical gaps and laying of the fiber over the horizontal layers; and spraying of wet fiber material horizontally and vertically to all layers. CelluMAK insulation machine systems are produced under CE certification and production facilities are operated according to the ISO quality management system.

CelluMAK CM-150 model basically consists of 2 units. Main machine unit is opening the pressed material into loose form and blow it by air. The wet spraying unit is mixes the glue inside the tank and pumps it. During the wet insulation application the insulation fiber is blowed inside the hose pipe and the glue is pumped inside the water pipe. Both of them intersect on the air after leaving the CelluMAK pistol. So, the mixed material adhere to the surfaces.

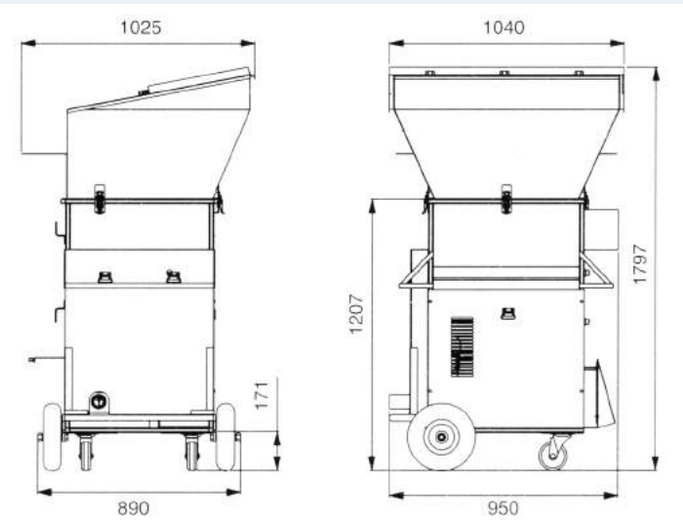
CelluMAK CM-150 system consists of; main blowing machine and its electric box, glue tank and pump, glue filters, 24 meters of pipes and its accessories, 24 meters of insulation transfer hose, electrical control unit and 24 meters of electrical cable, spraying pistol, its filters and nozzles. Shortly, CelluMAK CM-150 system consists of all needed parts for the application of both dry blowing and wet spraying either individually or together.



ISO 9001:2008

CM-150 Blowing and Spraying System

CM-150 Technical Drawings



CM-150 Blowing and Spraying System

Material	Machine, double (3 stage) Blowers
Capacity	288 kg/hr.

The machine is blowing the fibers with a hose of 2 ½" (64mm).

* Product density and variable blowing conditions will effect application rate.

CM-150 Technical Specifications

Weight	Machine	165,2 kg		
	Ex. Bunker	25,2 kg		
	Width (mm)	Length (mm)	Height (mm)	Volume (m^3)
Dimensions	890	1011	1207	1,02
Bunker Capacity	690	650	680	0,23
Ex. Bunker Capacity	1000	800	550	0,35
Air Lock	24'cm - 10" diameter 2 ½" (64 mm) blowing hose outlet diameter			
Power Requirement	220 V 16 A 3,5 Kw			
Blower / Sizes	1200 W 3 stage (220 V)			
CE Marking	✓			

ISO 9001:2008

WALL SCRUBBER

It has been designed for removing excess sprayed material between wall studs.

Features :

* 67 cm roller
* Lightweight, steel construction
* Belt driven by 500 W
  200 V/50 Hz electrical motor
* Dimension : 67x61 cm
* Weight : 7,3 kg.

CM-700 and CM-1000 Blowing Systems

CelluMAK CM-700 and CM-1000 models are developed to serve the high capacity demand of the European market for dry blowing, laying and injection. CelluMAK CM-700 model can transfer 700 kg/hour and CelluMAK CM-1000 model can transfer 1000 kg/hour of insulation fiber both vertically and horizontally.

The wet spraying units can also be adapted easily to CM-700 and CM-1000 model like other models.

Each of CelluMAK CM-700 and CM-1000 models are consist of; main blowing machine and its electric box, standart 24 meters of insulation transfer hose, electrical control unit and standart 24 meters of electrical cable. Eventually, CelluMAK CM-700 and CM-1000 models consist all needed parts for the application of dry insulation fiber blowing. By adding longer electrical cable and hose the insulation fiber can be blowed much more distances of both horizontally and vertically. We can add remote control system instead of cable control for CM-700 and CM-1000 model if demanded.

CelluMAK CM-700 and CM-1000 models are produced according to the CE quality standarts as well other models.

	CM-700 Technical Specifications	**CM-1000 Technical Specifications**
Machine Capacity	600-700 kg/hour	1000 kg/hour
Dimensions	Ø850x1500 mm	Ø850x1500 mm
Weight	180 kg	200 kg
Air Lock Device	3 1/2”	3 1/2”
Control Type	Standart : Manuel	Standart : Manuel
	Required : Remote control	Required : Remote control
Air lock feeding unit	14 grades	14 grades
Air lock rotation speed	10 grades	10 grades
Air feeding unit	High pressurized radial compressor	High pressurized radial compressor
Standart Airflow	300-350 m^3/hour	400-500 m^3/hour
Maximum Blowing Pressure	340 mbar	400 mbar
Blowing height	40 mt	40 mt
Adjustable compressor power	4 kw	5,5 kw
Adjustable air lock power	1,5 kw	2,2 kw
Total Engine power	5,5 kw	7,7 kw
Power Requirement	380-400 V AC/50-60 Hz	380-400 V AC/50-60 Hz

ISO 9001:2008

T.C.
TÜRK PATENT ENSTİTÜSÜ

TRADEMARK REGISTRATION CERTIFICATE

Marka No : 2005 11220 - Ticaret - Hizmet

Cellu BOR

Brand Owner : ÇAĞ ENGINEERING ARCHITECTURE CONSTRUCTION TRADE COMPANY
TÜRKİYE CUMHURİYETİ
Fevzi Çakmak Mah. Deveci Sok. Makparsan Sitesi B Blok No:7 Karatay KONYA
: 17 , 19 , 37
İlişiktedir.

Markaların Korunması Hakkında 556 Sayılı Kanun Hükmünde Kararnameye göre 30/03/2005 tarihinden itibaren ON YIL müddetle tescil edilmiştir.

Kutay KUMBASAR
Enstitü Başkanı a.
Markalar Dairesi Başkanı

TÜRK PATENT [ ] ENSTİTÜSÜ

TURKISH STANDARDS INSTITUTION
CERTIFICATE OF CONFORMITY TO TURKISH STANDARDS

Description of the Mark

TSE - TSE

REFERENCE NUMBER OF LICENCE	: 035767 - TSE - 01/02
DATE OF FIRST ISSUE OF LICENCE	: 03.11.2015
LICENCE VALID UNTIL	: 03.11.2017
NAME OF THE LICENCE HOLDER	: ÇAĞ ENGINEERING ARCHITECTURE CONSTRUCTION TRADE COMPANY
ADRESS OF THE LICENCE HOLDER	: MİMAR SİNAN MAHALLESİ ÇAVUŞBAŞI CADDESİ ÖZGE SOKAK ZİNDE İŞ MERKEZİ NO: 1/10 ÇEKMEKÖY İSTANBUL/TÜRKİYE
NAMEOF THE MANUFACTURING PLACE	: ÇAĞ ENGINEERING ARCHITECTURE CONSTRUCTION TRADE COMPANY
ADRESS OF THE MANUFACTURING PLACE	: FEVZİ ÇAKMAK MAHALLESİ MAKPARSAN SANAYİ SİTESİ DEVECİ SOKAK 2. BLOK NO: 7 KARATAY KONYA/TÜRKİYE
INDICATION OF SUPERSEDED LICENCE (if any)	: 035767 - TSE - 01/01
REGISTERED TRADE MARK	: Cellu BOR
RELATED TURKISH STANDARD	: TS EN 15101-1 / Thermal Insulation Products for Buildings - In -situ formed Loose Fill Cellulose (LFCI) Products - Part 1: Specification for the Products Before Installation / 13.02.2014

SCOPE OF LICENCE

"CelluBOR" Trade Mark
Thermal Insulation Products for Buildings - In -situ formed Loose Fill Cellulose (LFCI) Products

Fire Resistance: B S1 d0
Thermal Insulation Coefficient: 0.037 W/m.
The Settlement Class of Horizontal Dry Applications: SH 10
Short Duration Water Absorption Ratio Class: WS2
The Resistance Class to Fungus: BA0
Weighted SoundAbsorption Coefficient (Qw) : 1,0 , Absorption Class : A

İBRAHİM YÜCEL AYDEMİR
KONYA BELGELENDİRME MÜDÜRÜ
(V)

Certificate of Registration

The Governing Board of
Q.A. International Certification Limited
hereby grants to:

CAG MUHENDISLIK MIMARLIK INSAAT TICARET LIMITED SIRKETI

... in compliance with ISO 9001:2000.

Address to which this Certificate refers :

Production and Sales of Insulation Materials Appliance Machines and Insulation Materials

Signed for and on behalf of the Board

CHAIRMAN SCHEME MANAGER

QA INTERNATIONAL

Insulation Sector
Performance Awards
2006
INVESTMENT AWARD
OF THE YEAR

ÇAĞ Engineering Arch. Const. Company

CelluBOR Manufacturing Facilities was elected
as the year's invesment by our readers and jury.

We congratulate you and wish for your new successes.

yalıtım

T.C.
TÜRK PATENT ENSTİTÜSÜ

TRADEMARK REGISTRATION CERTIFICATE

Marka No : 2006 56876 - Ticaret - Hizmet

Cellu MAK

Brand Owner : ÇAĞ ENGINEERING ARCHITECTURE CONSTRUCTION TRADE COMPANY
TÜRKİYE CUMHURİYETİ
Fevzi Çakmak Mah. Deveci Sok. Makparsan Sitesi B Blok No:7 Karatay KONYA
: 17 , 19 , 37
İlişiktedir.

Markaların Korunması Hakkında 556 Sayılı Kanun Hükmünde Kararnameye göre 22/11/2006 tarihinden itibaren ON YIL müddetle tescil edilmiştir.

Kutay KUMBASAR
Enstitü Başkanı a.
Markalar Dairesi Başkanı

TÜRK PATENT [ ] ENSTİTÜSÜ

Insulation Sector
Performance Awards
2006
INVESTMENT AWARD
OF THE YEAR

TS EN 15101

ISO 9001:2008

Cellu BOR®

Heat - Sound - Fire Insulation

Cellu BOR®

Heat - Sound - Fire Insulation

Head Office

ÇAĞ Engineering Arch. Const.Trade Company

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Fax : +90 216 640 54 55
www.cellubor.com info@cellubor.com

Factory

ÇAĞ Engineering Arch. Const.Trade Company

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No:7 42050 Karatay / KONYA
Tel : +90 332 342 03 62
Fax : +90 332 342 03 19

OBUZ OFSET : 0532.612 10 53