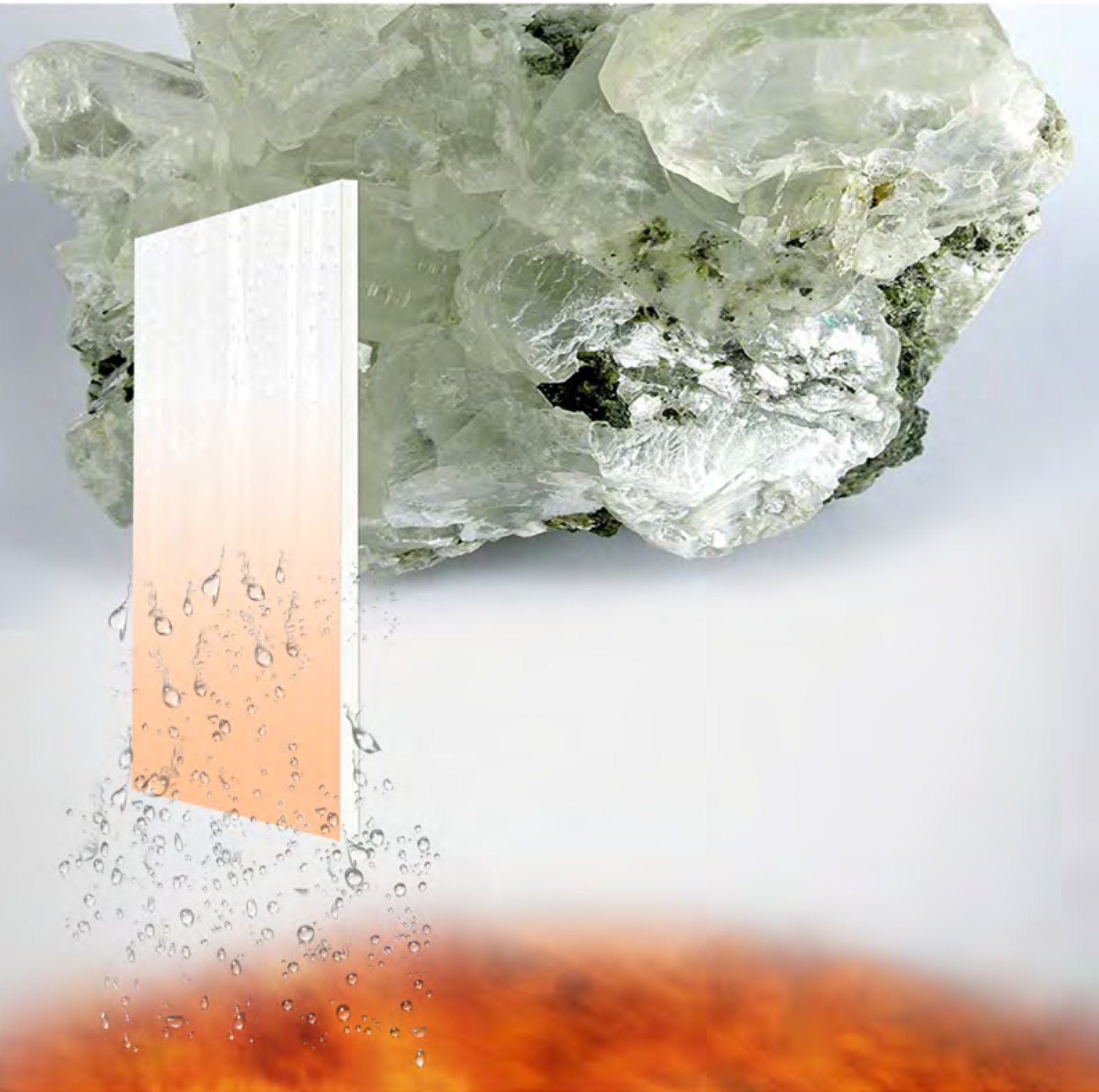


Alubond - Stone

Fire Retradant Stone Panel



THE NEW CLADDING WONDER
RELEASES WATER WHEN HEATED



ZENIT ARENA - ST PETERSBURG, RUSSIA (The stadium expected to be completed in 2016 will host matches for 2018 FIFA World Cup)



Alubond - stone is from the Alubond u.s.a range of Fire Retardant Panels.

Alubond u.s.a is a registered brand name of American Building Technologies located in Rockford Illinois with production bases in Europe, Middle East, Iran, Turkey and India with an annual production capacity of 25,000,000 M2 (Twenty Five Million square meters) . The brand ownership is now fully tranfered to Mulk Holdings is now fully tranfered to Mulk Holdings .

is the new generation exterior fire retardant Panels with over 90 % Stone core sandwiched between two layers of metal skins . Alubond - Stone's patented core formulation with a high percentage of Magnesium Hydroxide provides superior fire retardant capabilities making it an extremely safe cladding solution for buildings worldwide. Alubond – Stone has passed stringent Fire test certifications all over the world achieving product classifications as per EN 13501 – 1 A2 S1 D0 (Over 90% Stone core content) and EN 13501 – 1 B S1 D0 (Over 70% Stone core content).



The solid mineral magnesium hydroxide, with the chemical formula $Mg(OH)_2$, is a common alteration product of periclase in marble; a low-temperature hydrothermal vein mineral in metamorphosed limestones and chlorite schists; and formed during serpentinization of dunites. It is often found in association with serpentine, calcite, aragonite, dolomite, magnesite, hydromagnesite, artinite, talc and chrysotile.

Advantages of Magnesium Hydroxide

- ▶ Filler and Flame Retardant/Smoke Suppressant in one product
- ▶ Environmentally Acceptable
- ▶ Halogen Free
- ▶ Non-Corrosive
- ▶ Reduces Smoke Density
- ▶ Non-Volatile
- ▶ Largely Inert
- ▶ Thermally Stable up to $340^\circ C$ and thereafter undergoes Endothermic Decomposition releasing Water

What is Endothermic & Exothermic Reaction ?

Endothermic and exothermic reactions

Step 1: Energy must be SUPPLIED to break chemical bonds:

Step 2: Energy is RELEASED when new chemical bonds are made:

Endothermic process: a change (e.g. a chemical reaction) that requires (or absorbs) heat.

Photosynthesis is an endothermic reaction (requires energy input from sun)

A reaction is EXOTHERMIC if more energy is RELEASED than SUPPLIED. If more energy is SUPPLIED than is RELEASED then the reaction is ENDOTHERMIC

LDPE (Low density Polyethelene) is a hydrocarbon material which exhibits exothermic reaction by releasing energy when exposed to heat (LDPE IMAGE)

$Mg(OH)_2$ is a natural mineral which exhibits Endothermic reaction by absorbing heat when exposed to energy/ heat.

Some MCM Manufacturers use Aluminum Hydroxide due to the easy availability of the mineral in proximity to production plants. Alubond – Stone 's choice of Magnesium Hydroxide as its prime core mineral is based on the following data.

Reactivity : Magnesium Hydroxide is much more reactive than Alumina Trihydrate (ATH). Whereas ATH releases the available water over a broad range ($230^\circ C$ to $430^\circ C$), Magnesium Hydroxide releases the available water over a much narrower range ($330^\circ C$ or $630^\circ F$ to $430^\circ C$). In simple terms this compares to spraying a fine mist of water over a fire (ATH) as opposed to dousing the fire with a full bucket of water (Magnesium Hydroxide). The quick release of water enhances the flame retardant properties of Magnesium Hydroxide.

Water Release : Magnesium Hydroxide releases water at a higher temperature than ATH. The higher temperature release is at a more critical point that reduces the spread of the flame.

Particle Shape : Magnesium Hydroxide particles, if viewed under a microscope, are plate-like versus the spherical particles of ATH. These plate-like particles overlap one another similar to fish scales or roofing shingles. Pound for pound these plate-like particles offer much more exposed surface area than spherical ATH particles. Therefore more particles are directly exposed to the flame. Also, the plate-like particles provide more strength, flexibility and reinforcement in the finished product as opposed to spherical particles.

Particle Integration : Magnesium Hydroxide is a natural mix of particles. There is particle penetration and integration within Magnesium Hydroxide rather than having ATH and calcium carbonate particles mixed side by side. This allows a better distribution of the fire retardant and smoke suppressant properties.

Stability : Magnesium Hydroxide has stabilizing characteristics that tend to neutralize acid and toxic smoke. ATH does not provide these benefits.

Char Ash : Magnesium Hydroxide during the burning reaction forms a "Char-Ash" in front of the flame, which suppresses the flame.

Physical properties

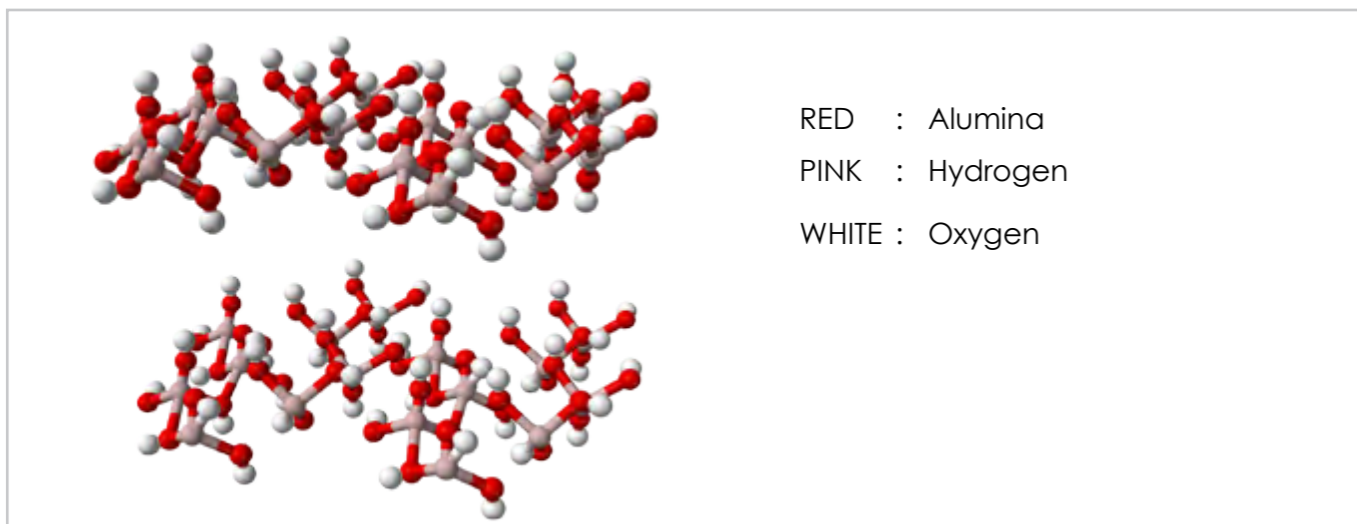
- ▶ Physical properties such as viscosity, cure rate, stress/strain and durometer, suggest that magnesium hydroxide is virtually indistinguishable from ATH from a filler performance standpoint.
- ▶ Magnesium Hydroxide, because of its acid scavenging properties, can play a useful role in halogenated compounds by reducing acid gas emissions.
- ▶ By absorbing the heat, magnesium hydroxide prevents or delays ignition and retards combustion of polymeric materials.

	ATH	Magnesium Hydroxide
Molecular Formula	Al (OH) 3	Mg (OH) 2
Water Content Loss on Ignition (LOI)	34% 31%	
Decomposition Temperature	Greater than 230° C	Greater than 330° C
Mohs hardness	2.5-3.5	2.0-3.0
Specific Gravity	2.42	2.36
pH	10-Sep	10.5
Electrical Conductivity	us/cm less than 350DIN	53208
Color	White	White
Physical Properties	Powder	Powder
Refractive Index	1.57	1.58
Particle Morphology	Hexagonal Platelet	Hexagonal Platelet

Magnesium Hydroxide Structure :

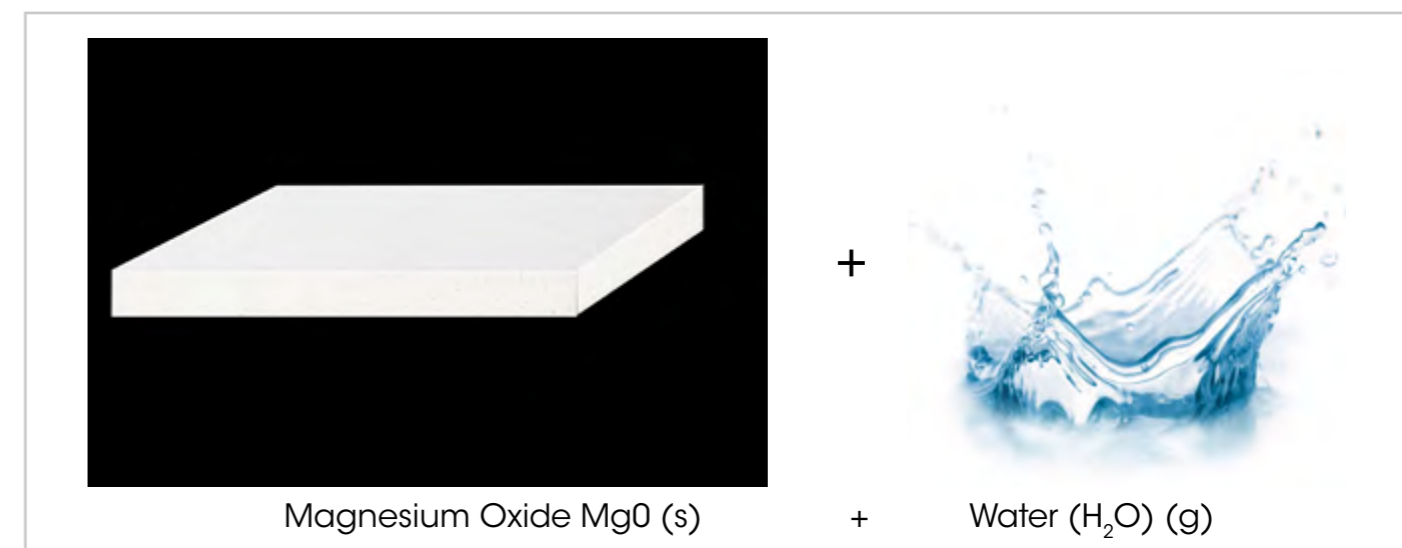


Aluminum Trihydrate Structure

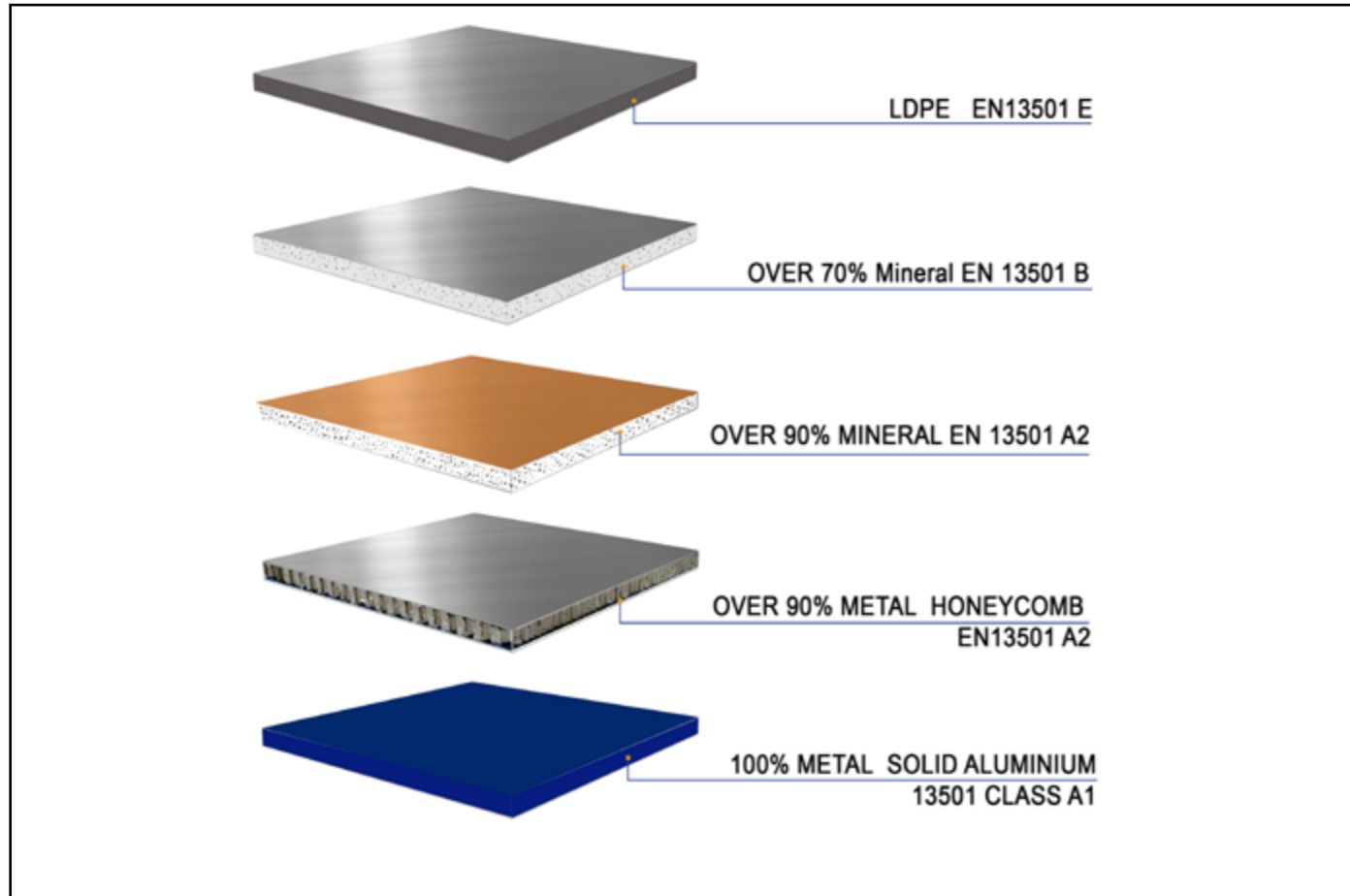


Alubond - Stone's formulated CORE exposed to a temperature over 332°C

Alubond - Stone - Endothermic Reaction



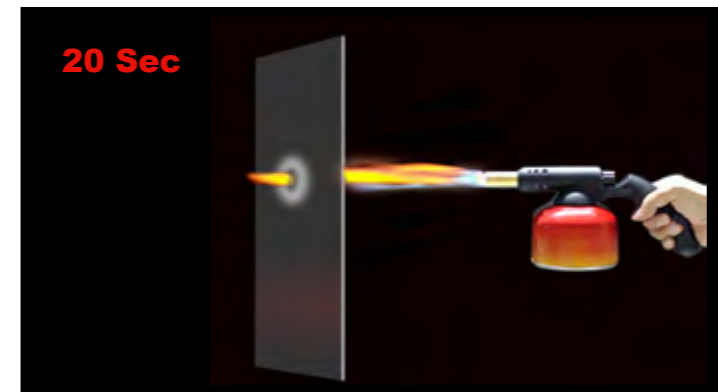
Different Types of Cores



PERFORMANCE	LDPE EN 13501 E	OVER 70% Mineral EN 13501 B	OVER 90% MINERAL EN 13501 A2	OVER 90% METAL HONEYCOMB EN13501 A2	100% METAL SOLID ALUMINIUM 13501 CLASS A1
Combustibility Rating	Combustible	Low Combustibility	Non Combustible	Non Combustible	Non Combustible
NFPA 285/ BS 8414 Pass	No	Yes	Yes	Yes	Yes
ASTM E 84 Core Burning Class A Rating	No	Yes	Yes	Yes	Yes
ASTM D 1929 Ignition Test Pass	No	Yes	Yes	Yes	Yes
EN 13501 S1 D0 Rating	E	B	A2	A2	A1
Direct Flame Over 1000 ° C Fire Penetration	20 Seconds	18 Minutes	30+ Minutes	55 Seconds	30 Seconds

A panel burning test was conducted with direct flame @ a temperature of 1500 °C on five different panels. The time the panels withstood fire was recorded as follows.

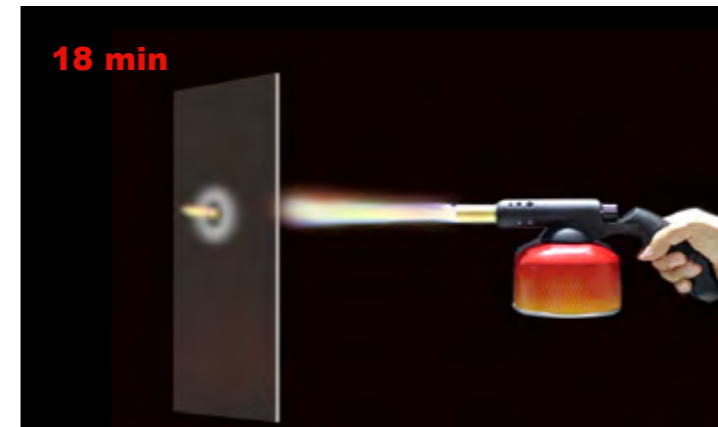
Panels	Time withstood by Panel
LDPE Core - ACP	20 Seconds
Solid Aluminium	30 Seconds
B1 Core -ACP	18 Minutes
A2 Core -ACP	30 Minutes
HONEYCOMB CORE A2 -ACP	55 Seconds



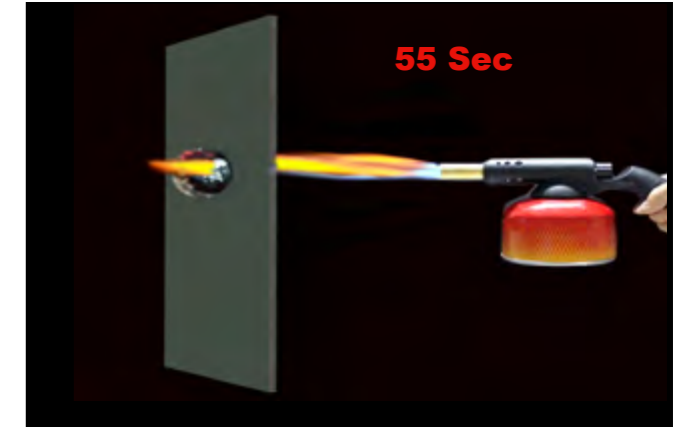
LDPE Core - Aluminium Composite Panel Fire Penetrated In 20 Seconds



Solid Aluminium Panel Fire Penetrated In 30 Seconds



B 1 CORE - ACP PANEL - Fire Penetrated In 18 Minutes



HONEYCOMB PANEL - A2 - Fire Penetrated in 2 Minutes



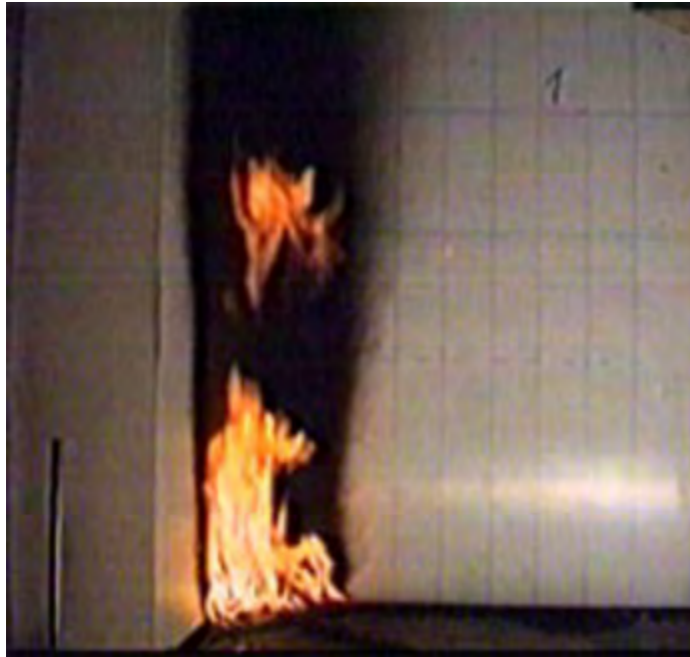
A2 MINERAL CORE - ACP PANEL - Fire Penetrated In 30 Minutes

EN 13501 - Part 1
(Non combustibility test)

Alubond-Stone
Fire Retardant Stone Panel

An full classification serves as the standard of evaluation for the reaction to fire of construction and building materials.

En13501- Part 1 test consists of EN 13823 and BS EN ISO 1716 tests.



EN 13501 - PART ONE : EN ISO 1182
(Non combustibility test)



EN 13501 PART TWO : EN 13823 - Single Burning Item in a Room



EN 13501 PART THREE : Small flame attack



EN 13501 PART FOUR : EN ISO 9239-1 Wind opposed horizontal spread of flame

NFPA 285; 2012 Standard Test
Alubond -Stone with
ABTI Substructure System

Alubond-Stone
Fire Retardant Stone Panel

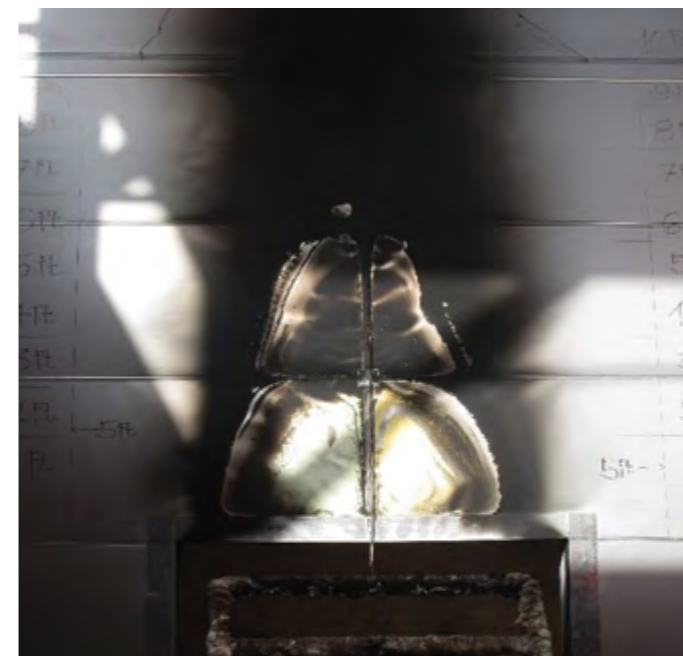
Alubond - Stone (Alubond A2 & Alubond B1) undergoing the NFPA 285 Test in two International Third Party Laboratories Intek USA and Thomas Bell-Wright International Consultants, U.A.E



EXTERIOR FACE PRIOR TO FIRE TEST.



EXTERIOR FACE AT 25 MINUTES OF THE TEST.



EN 13501 PART FOUR : EN ISO 9239-1 WIND OPPOSED HORIZONTAL SPREAD OF FLAME



WALL CAVITY IN WALL ASSEMBLY AFTER FIRE TEST

Alubond - Stone (Alubond A2 & Alubond B1) undergone the GOST R Certification in Russia



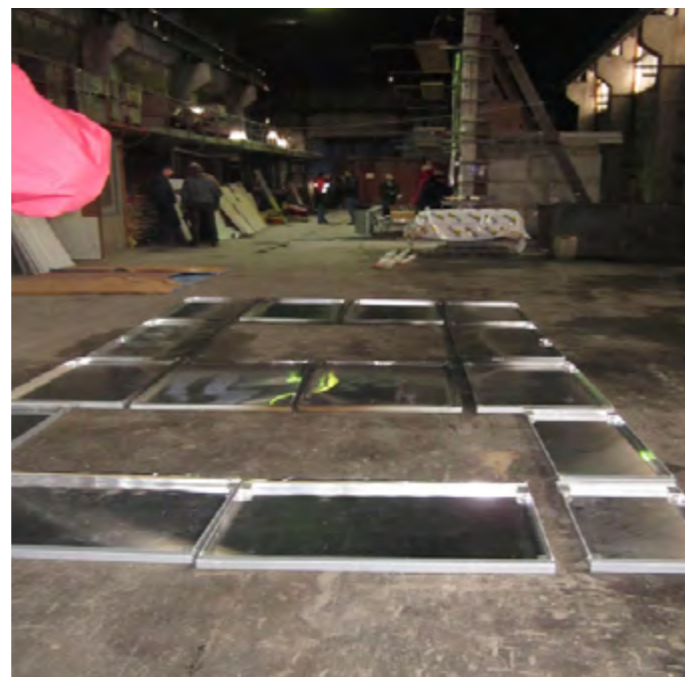
FULL FIRE IN BOTH FLOORS - TEMPERATURE 850 °C



FIRE STOPPED AFTER 60 MINUTES ALL PANELS WITHOUT DAMAGE



ALUBOND PANELS – REMOVED FROM WALL ASSEMBLY



PANELS AFTER TEST ON THE GROUND TO CHECK CONDITION



Steiner Tunnel Fire Machine



Fire exposed inside Tunnel



Core Before the test Fire side



Core after the test (located near the fire end)



Core after the test (located near the exhaust end)



TECHNICAL DATA SHEET

Alubond-Stone (FR-A2)

Alubond-Stone
Fire Retardant Stone Panel

Alubond-Stone (FR-A2)

Panel Thickness	4 mm
Alloy Series	1xxx, 3xxx, 5xxx
Width	1000 mm, 1250mm, 1500 mm
Length	upto 6000 mm

*special sizes on request, min quantity 2000sqm (incl 1000mm width)

Dimension Tolerance

Thickness	± 0.05	0.5 mm
Weight	± 0.05	8 Kg/m ²
Standard Width	± 2	1250 mm
Panel thickness	± 0.03	4 mm

Mechanical Properties

			Alloy 1xxx,	Alloy 3xxx,	Alloy5xxx
Section Modulus(W)	DIN 53293	cm ³ /m	1.62	1.7	1.75
Rigidity (Poisson's ratio $\mu = 0,3$)	DIN 53294	KN cm ² /m	2300	2320	2400
Alloy	EN 573-3	.....	EN AW- 1100	EN AW- 3105	EN AW- 5005A (Al mg1)
Temper	EN 515	.....	H16/H18	H14/H16	H16/18
Modulus of Elasticity	EN 1999 1-1	N/mm ²		≥70000	
Tensile Strength of Aluminium	EN 485-2	N/mm ²	Rm ≥ 135	Rm ≥ 140	Rm ≥ 145
0.2% Proof Stress	EN 485-2	N/mm ²	Rpo ≥ 85	Rpo ≥ 90	Rpo ≥ 95
Elongation	EN 485-2	%	A ₅₀ ≥ 6	A ₅₀ ≥ 5	A ₅₀ ≥ 5
Linear Thermal Expansion	EN 1999 1-1	mm/m @100°C		2.4	



TECHNICAL DATA SHEET

Alubond-Stone (FR-A2)

Alubond-Stone
Fire Retardant Stone Panel

Thermal Properties

Thermal resistance R	ASTM C518	M2 K/W	0.007	0.009
Temperature resistance	ASTM C518	°C	-50....+80	

Core Properties

Core	EN +1:2007-13501 A1:2009 CLAUSE 8 & NFPA 285 /BS6853 UBC5-17	CLASS- A2,S1,d0 Passed	Mg (OH) ₂ Based polymeric bonded core
Surface Burning test	ASTM E84	.....	passed
Fire Behaviour	AS 1530 PART 3	.....	passed
Fire Behaviour	BS 476	Part 6 Class 0 & Part 7 Class 1	Passed

Surface Finish Properties

Type / Finish	PVDF / FEVE			
Gloss @60°C	ECCA T2	%	PVDF 30-45	FEVE 20-80
Pencil hardness	ECCA T4	.....	min HB	

Accoustical Properties

Sound absorbtion factor	ISO 354	.....	0.05
Sound transmission Loss (Rw)	ASTM E90	dB	STC: 26 OITC:22



TECHNICAL DATA SHEET
Alubond-Stone (FR- B1)

Alubond-Stone
Fire Retardant Stone Panel

Alubond-Stone (FR- B1)

Panel Thickness	4 mm
Skin Thickness	0.5 mm
Weigh	7 Kg / M ²
Alloy Series	1xxx, 3xxx, 5xxx
Width	1250mm, 1500 mm
Length	upto 6000 mm

*special sizes on request, min quantity 2000sqm (incl 1000mm width)

Fire Behaviour Properties

Fire Behaviour	FR Classification	Section Number	Document Number	Testing Agency
BS 476 part 6&7	part 6 class 0 part 7 class 1	6&7	Certificate No : CF 5061	EXOVA WARRINGTON-UK
EN 13501-1	B, s1, d0	1	Certificate No : ME 5059	EXOVA WARRINGTON-UK
ASTM E 119	Min 1 hr 42 Min fire rating	-	Report No : 01.12694.307	SOUTH WEST RESEARCH INSTITUTE
DIN 4102-1	Class B1	Part 1	Report No : 2013-1400-2	EXOVA WARRINGTON-UK
NFPA 285	Assembly Meet The requirements / Passed	As per UAE civil defense code 4.2.6	Certificate No : WHI15 - 26553701	Intertek usa & Thomas Bell Wright International Consultant
ASTM E 84-12	Class A : Passed	As per UAE civil defense code 4.2.4 &4.2.5	Certificate No : WHI15 - 26553702	Intertek usa & Thomas Bell Wright International Consultant

Core Properties

Core	CLASS B	Mg (OH) ₂ Based polymeric bonded core
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TECHNICAL DATA SHEET
Alubond-Stone (FR- B1)

Alubond-Stone
Fire Retardant Stone Panel

Mechanical Properties

Section Modulus(W)	DIN 53293	cm ³ /m	1.62	1.7	1.75
Rigidity (Poisson's ratio $\mu = 0,3$)	DIN 53294	KN cm ² /m	2300	2320	2400
Aloy	EN 573-3	.....	EN AW- 1100	EN AW- 3105	EN AW- 5005A (Al mg1)
Temper	EN 515	.....	H16/H18	H14/H16	H16/18
Modulus of Elasticity	EN 1999 1-1	N/mm2	≥70000		
Tensile Strength of Aluminium	EN 485-2	N/mm2	Rm ≥ 135	Rm ≥ 140	Rm ≥ 145
0.2% Proof Stress	EN 485-2	N/mm2	Rpo ≥ 85	Rpo ≥ 90	Rpo ≥ 95
Elongation	EN 485-2	%	A ₅₀ ≥ 6	A ₅₀ ≥ 5	A ₅₀ ≥ 5
Linear Thermal Expansion	EN 1999 1-1	mm/m @100°C	2.4		

Surface Finish Properties

Type/finish	.....	.....	PVDF / FEVE
Gloss @60°c	ECCA T2	%	20-45 / 20-80
Pencil hardness	ECCA T4	.....	min HB

Acoustical Properties

Sound absorbtion factor	ISO 354	.....	0.05
Sound transmission Loss (Rw)	ASTM E90	dB	STC: 26 OITC:22

Thermal Properties

Thermal resistance R	ASTM C518	M2 K/W	0.03
Temperature resistance	ASTM C518	°C	-50.....+80
Thermal Transition co-efficient (h)	DIN 4108	W/M ² k	5.34



UNDERSTANDING GLOBAL FIRE TEST

Alubond-Stone
Fire Retardant Stone Panel

Alubond-Stone
Fire Retardant Stone Panel

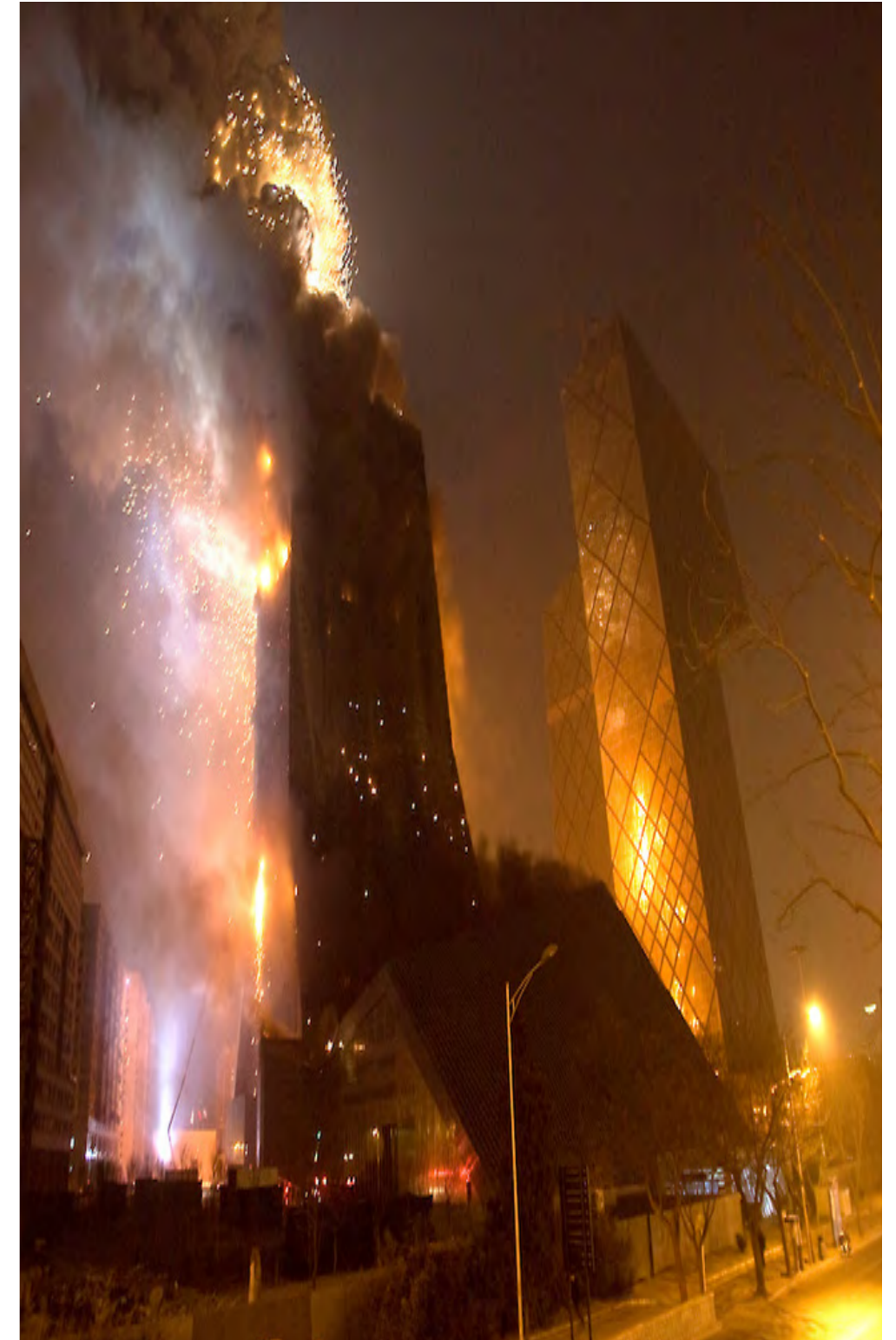
Torch Tower, Dubai



Grozny Tower, Russia

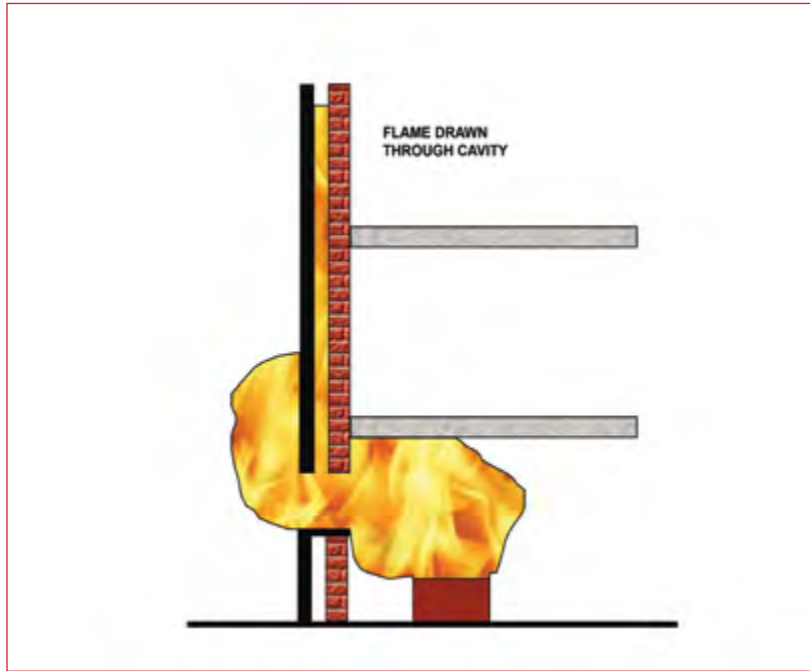


CCTV Tower, China



The fires happened in different parts of the world. But the factors that contributed to the fire in these buildings were found to be common; 100 % LDPE Panels with sealed Silicon Systems

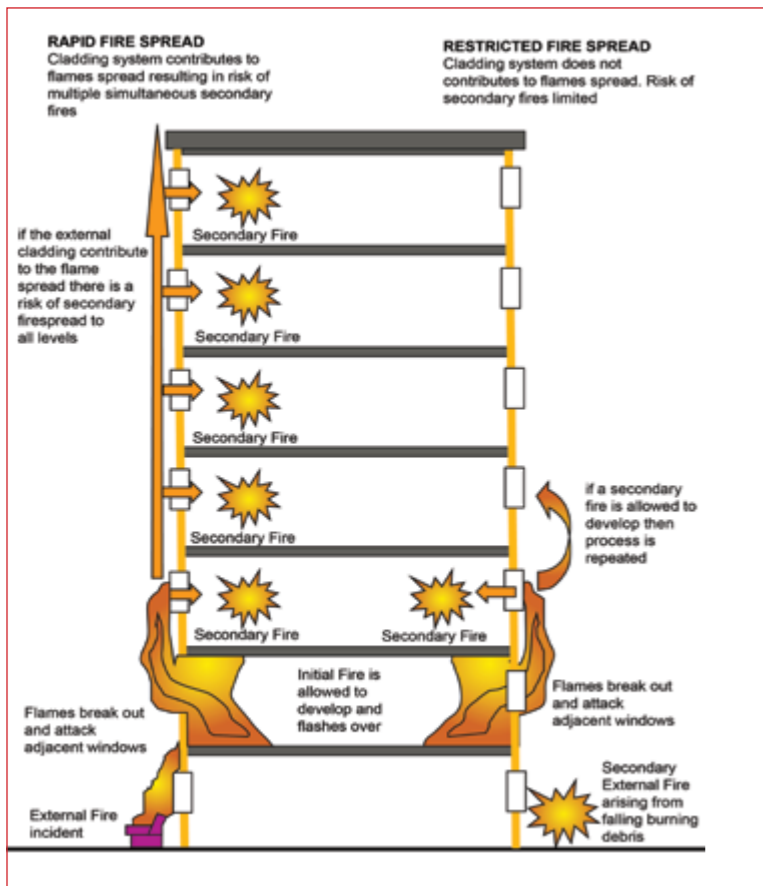
TUNNEL EFFECT DUE TO CAVITY CREATED BY SEALED SILICON JOINTS



Cavities

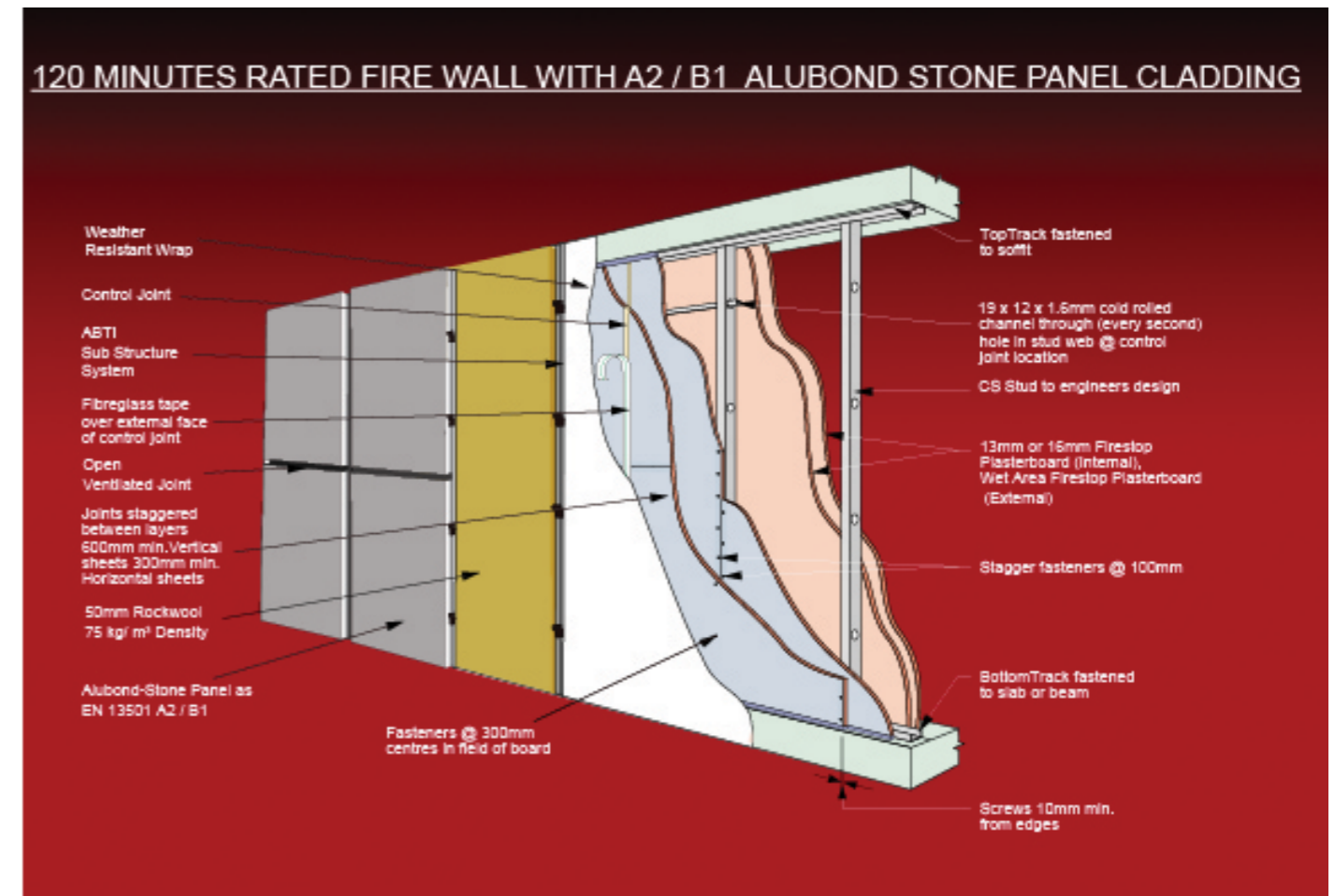
- Either Part of Silicon Joints System Or Created by delamination when fire burns the skin and core of ACP.
- Flames in cavities can extend 5 to 10 times original length regardless of materials present.

EXTERNAL FIRE SPREAD



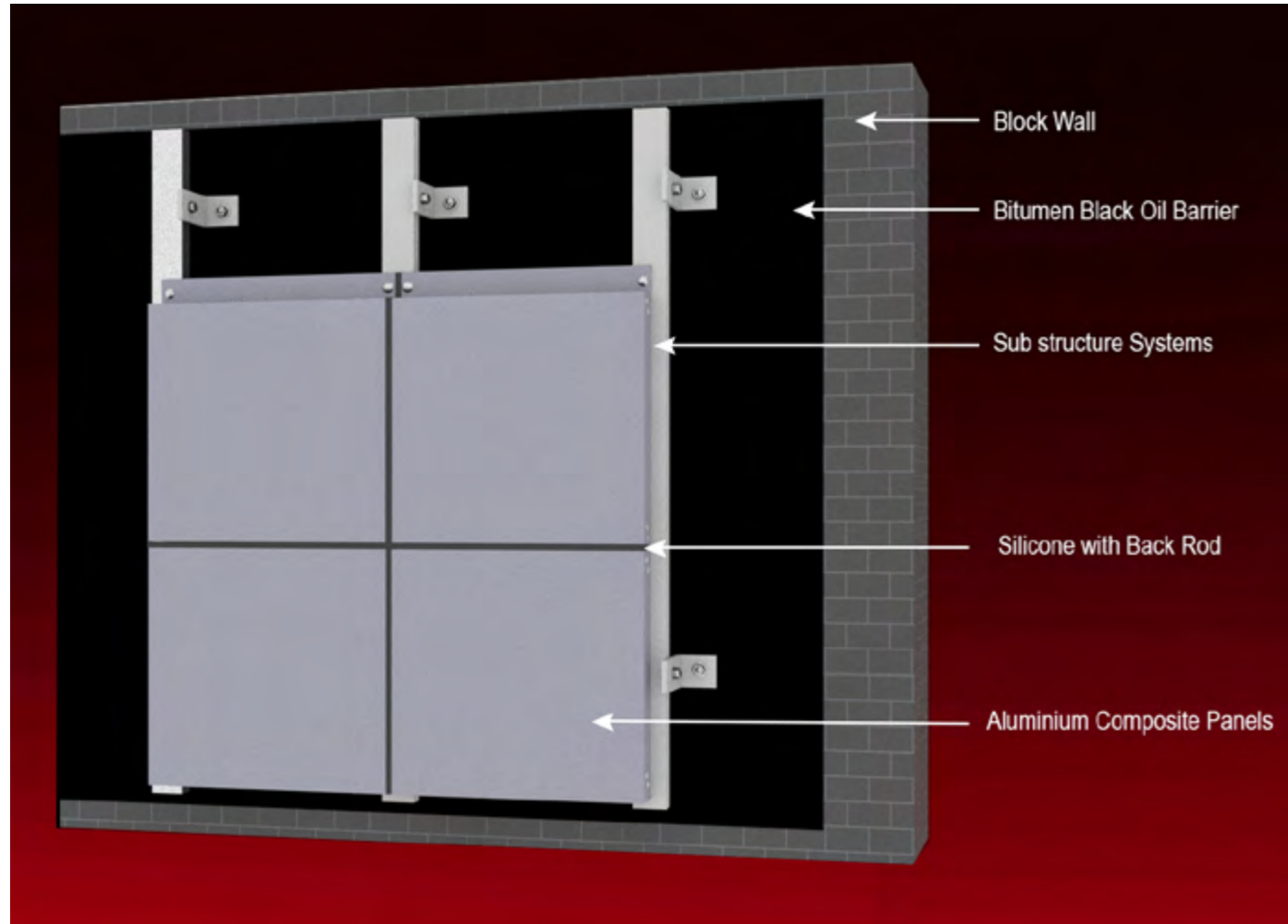
- Fires allowed to develop may flash over and break out through windows.
- Flames spread up over or through the cladding.
- Flames can extend over 2m above window opening. Regardless of cladding materials.
- If fire re-enters building secondary fires may then develop.

120 MINUTES RATED FIRE WALL WITH ALUBOND-STONE A2 ACP CLADDING



PROBLEM

High LDPE Core Panels With Insulation & Sealed Silicon System With ASTM E119 Fire Wall

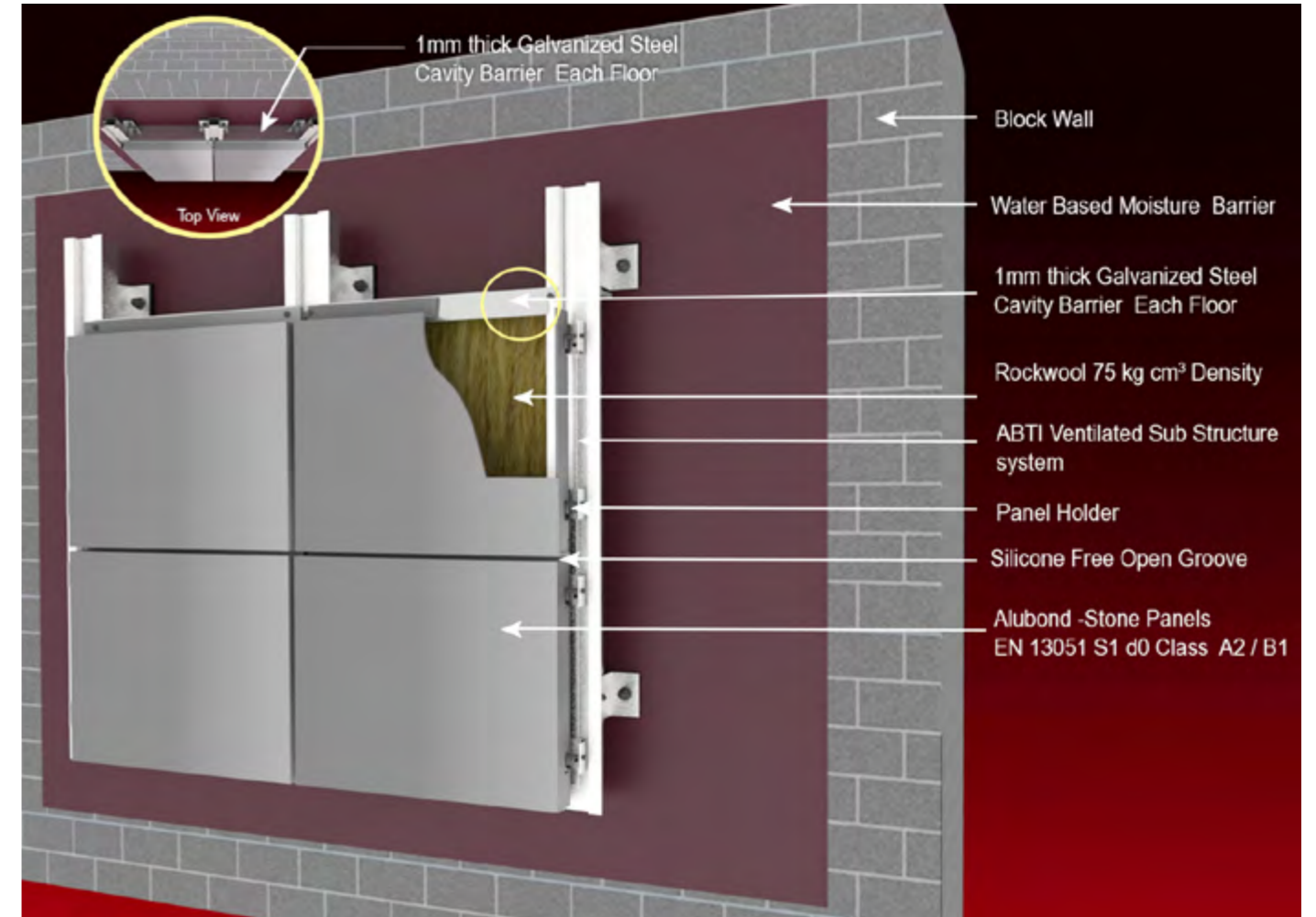


Four primary reasons for spread of fire in a typical LDPE core ACP Cladded Buildings in UAE & Worldwide

- The foam backer rod is one of the first to ignite and burns the polyethylene sealant. Fire moves swiftly through the continuous sealant and backer rod aided by bitumen paint.
- The cavity caused due to sealed façade and lack of cavity barrier
- Creates a tunnel effect for fire to spread up the floors very quickly.
- The LDPE core of the aluminium composite panel and aluminium skin both melt and droplets contribute to further spread of fire
- The fire spreads both from the back of the facade and front of the façade aided by winds and cavities and further fuelled by droplets of LDPE and falling debris of burning panels.
- No wonder we see buildings engulfed in fire within minutes !

SOLUTIONS

Silicon Free Open Groove NFPA 285 Compliant Ventillated Substructure System Certified By Third Party



Usage of super fire retardant Alubond - Stone Panels instead of highly flammable LDPE core panels.

- Instead of Bitumen the wall is coated with fire rated moisture free paint
- ABTI system is silicon free open groove system thereby not using backer rods and sealants which aid propagation of fire.
- Cavity barrier is installed at regular intervals depending on the size of the building.

Use of Alubond - Stone combined with ABTI Open Groove Ventillated substructure system provides the solution for a fire safe cladding.



FOLKART TOWERS / IZMIR - TURKEY
Total Quantity: 55,000 M²
Architect : Ahmet Yağcıoğlu



ARISTA LIFE / ISTANBUL - TURKEY
Total Quantity: 8,000 M²
Architect : Murat Kader



GOZTEPE HILTON HOTEL / ISTANBUL
Total Quantity: 14.000 M²
Architect : Gökhan Tunç



**BUSINESS EDUCATION ACCELERATION CENTER
EDUCATIONAL BUILDING, OLOMOUC, CZECH REPUBLIC**
Total Quantity :
Architect : Ing. Arch. Ladislav Opletal



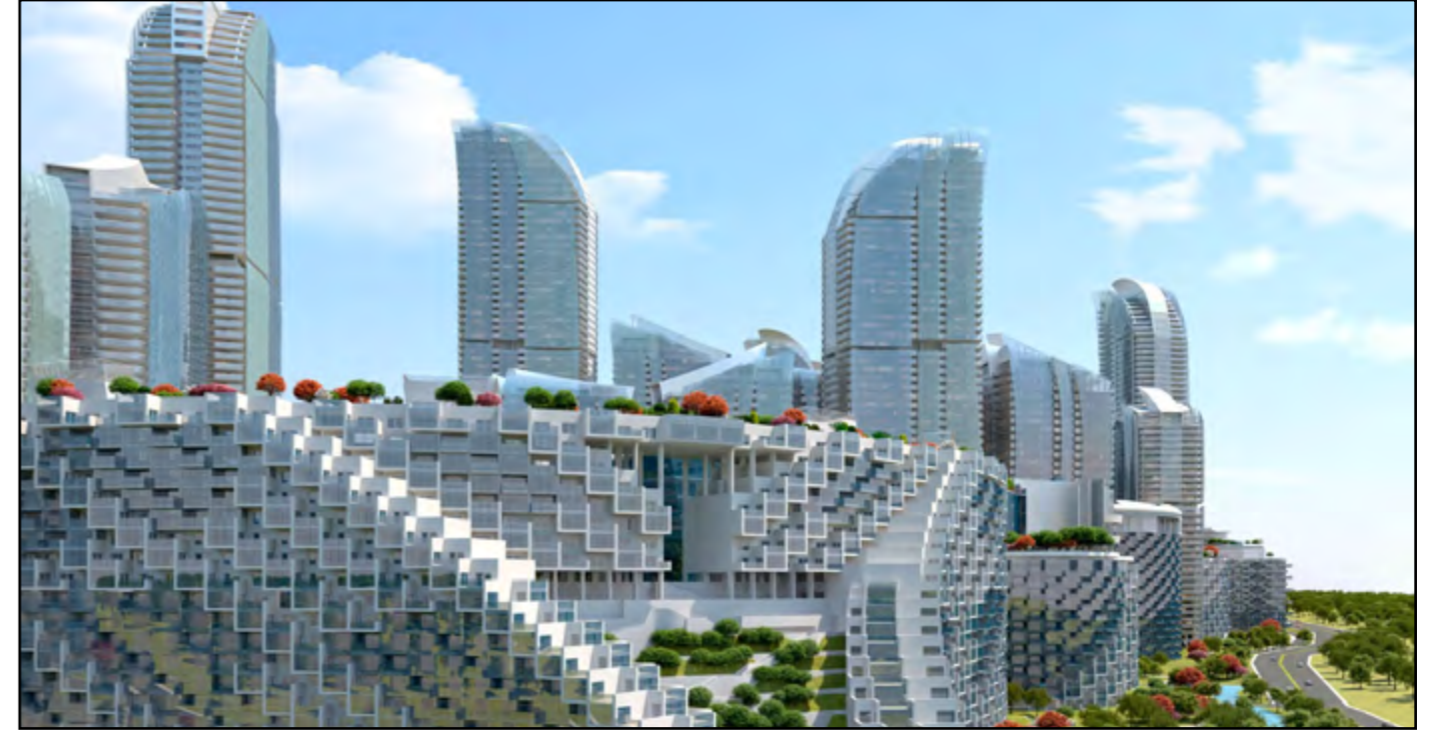
CONTINENTAL AUTOMOTIVE, ROMANIA
Total Quantity :
Architect : Adrian Corduneanu



DUMANKAYA MIKS - ISTANBUL, TURKEY
Total Quantity :20.000 M2
Architect : Tago Architects



ZENIT ARENA - SAINT PETERSBURG, RUSSIA
Total Quantity :
Architect : Kisho Kurokawa Architect & Associates



AGAOGLU MY HOME,- ISTANBUL, TURKEY
Total Quantity: 45,000 M²
Architect : Arslan Kaba



AKPLAZA - ANKARA, TURKEY
Total Quantity: 13,000 M²
Architect : Tabanlıoğlu Mimarlık



ITU TEKNOKENT - ISTANBUL, TURKEY
Total Quantity: 11,000 M²
Architect : Priedemann Cephe Danışmanlığı



Certificate of Compliance

You have been awarded:

Intertek Warnock Hersey Mark for Metal Composite Wall Panels

NFPA 285 (2012)
Certificate number: WHI15 – 26553701

Organization:

Eurocon Building Industries FZE (Group of Mulk Holdings International)
P.O. Box 42642
Hamriya Free zone
Sharjah, United Arab Emirates

Product: Exterior wall containing Alubond USA - FR B1 Aluminum Composite Panel 4 mm

Test Standard	Test Results
NFPA 285 (2012)	Passed

For full certification details and wall assembly construction, refer to Listing Report ref. **Spec ID 35247 & Design Listing ref. EBI-MCMWP 30-01**

Certification body: Intertek Testing Services NA, Inc.

Initial registration: June 04, 2015

Date of expiry: June 04, 2020

Issue status: 1

Dustin Behling
Certification Coordination Manager
Name Signature Date
04/06/2015

Registered address:
Intertek Testing Services NA, Inc. 545 E. Algonquin Rd., Arlington Heights, IL 60005 USA

www.intertek.com

The certificate and schedule are held in force by regular annual surveillance visits by Intertek Testing & Certification Ltd and the reader or user should contact Intertek to validate its status. This certificate remains the property of Intertek Testing & Certification Ltd and must be returned to them on demand. This Certificate is for the exclusive use of Intertek's Client and is provided pursuant to the Certification agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this certificate. Only the Client is authorized to permit copying or distribution of this certificate and then only in its entirety. Use of Intertek's Certification mark is restricted to the conditions laid out in the agreement. Any further use of the Intertek name for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. Initial Factory Assessments and Follow up Services are for the purpose of assuring appropriate usage of the Certification mark in accordance with the agreement, they are not for the purposes of product quality control and do not relieve the Client of their obligations in this respect.



CERTIFICATE OF APPROVAL No. ME5063

Alubond Turkey
Alubond Alüminyum Kompozit Panel San. Tic. A.Ş.
Idealtepe Mah. Rifki Tongsir Cad.No:93, Demirhan Plaza,K:1
34841,Maltepe-Istanbul/TURKEY
Tel: + 90 216 518 14 14

Have been assessed against the requirements of the test standard(s) denoted below and are approved for use subject to the conditions appended hereto:

CERTIFIED PRODUCT	TEST STANDARD
Alubond U.S.A FR-A2	EN 13501-1

Signed and sealed for and on behalf of Warrington Certification Ltd

Sir Ken Knight
Chairman - Management Council
Page 1 of 2

Issued: 21st February 2015
Valid to: 20th February 2020



This certificate is the property of Warrington Certification Limited, Holmesfield Road, Warrington, Cheshire WA1 2DS, UK. Registered company No. 02250182.

إدارة السلامة الوقائية - إدارة إمتداد الشركات

رقم الترخيص: K25
سنة الترخيص: 2015
عدد الترخيص: 3 - 1

تم إصدار الترخيص استناداً إلى القرار الوزاري رقم (24) لسنة 2012 - في شأن تنظيم خدمات الدفاع المدني

اسم الشركة: بوروكون للتجارة
اسم صاحب الترخيص: فاطمة اسماعيل احمد الحاج عبي الفارمزي
أطراف الرخصة: ***
رقم الهاتف: 04-2221114
عنوان الشركة: مكتب رقم 106 ملك خليفة احمد بن حماد دبيرة - هورالعز
الموقع/البريد الإلكتروني: ismail@mulkholdings.com
تأسست بتاريخ: 2014/04/03
عدد المعدات والأجهزة المعتمدة: 0
عدد المهتمسين المعتمدين: 0

رقم السجل: 1084359
رقم الرخصة: 660724
الجنسية: الإمارات
رقم الفاكس: 04-2221500
تاريخ الانتهاء: 2016/03/08
تاريخ الإصدار: 2015/11/03

للمطوري
Emergency
997
www.dcd.gov.ae

أن تكون دولة الإمارات العربية المتحدة من أفضل دول العالم أمنياً وسلاماً

Dubai Civil Defense Certificate

حكومة دبي
GOVERNMENT OF DUBAI

بلدية دبي
DUBAI MUNICIPALITY

CERTIFICATE OF TECHNICAL APPROVAL
Dubai Central Laboratory Department (DCLD) of Dubai Municipality, hereby award this certificate to:
EUROCON BUILDING INDUSTRIES
For the product(s)
ALUBOND USA -FR
Aluminum composite panel
(As per the attached details)
Manufactured by:
EUROCON BUILDING INDUSTRIES
HAMRIYA FREE ZONE - SHARJAH - UAE

ENGR. HAWA ABDULLA BASTAKI
Executive Director, Dubai Central Laboratory Department
Dubai Municipality

TA Certificate No.: 122-2012
Valid Until : 07-07-2016

Current Issue Date: 08-07-2015
Original Issue Date: 08-07-2012

The above product(s) have been assessed and found fit for their intended use, provided they are used according to the supplier instructions.
The attached details bearing the same Certificate No. forms an integral part of this certificate.
This certificate is subject to the Terms and Conditions of the technical approval system

F-R5-007



ENVIRONMENTAL PRODUCT DECLARATION

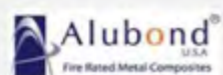
ENVIRONMENTAL PRODUCT DECLARATION

ALUBOND U.S.A.® FIRE RATED A2

FIRE RATED ALUMINUM COMPOSITE PANELS
ALUBOND TURKEY



World's Largest Aluminum Composite Panel brand



Worldwide presence of more than 20 years, cooperation on numerous projects all over the globe, with an annual production capacity of more than 25 million m² located in 8 countries makes Alubond U.S.A.® the World's Largest Metal Composite Brand.

Great potential of shaping, variety of finishes and highest fire resistant products, wide range of colors and possibilities of individualization makes Alubond U.S.A.® an architect's dream material. The willingness to support sustainability and create eco-friendly products leads us toward constant improvements and innovations. Our 100% recyclable panels meet LEED certification requirements. With special Alubond Green Series® and our environment-conscious production at all units, we are committed to keep on contributing to efforts to make the World more beautiful place.



EPD Transparency Summary

COMPANY NAME: **Alubond U.S.A.®**

PRODUCT TYPE: **Cladding System**

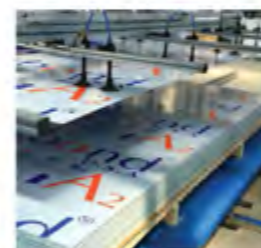
PRODUCT NAME: **Fire Rated A2**

PRODUCT DESCRIPTION: **Fire Resistant Aluminum Composite Panel**

PRODUCT CATEGORY (EPC): **UL Product Category Rule (PCR) for preparing an Environmental Product Declaration (EPD) for Product Group Cladding System Products, 2015**

DECLARATION PERIOD: **January 12, 2016 - January 12, 2021**

DECLARATION NUMBER: **476695827.101.1**



LIFECYCLE IMPACT CATEGORIES

The environmental impacts listed below were assessed throughout the product lifecycle - including raw material extraction, transportation, installation, use, and disposal at end of life.

ATMOSPHERE			WATER		EARTH	
Global Warming Potential refers to long term changes in global weather patterns - including temperature and precipitation - that are caused by increased concentrations of greenhouse gases in the atmosphere.	Ozone Depletion Potential is the destruction of the stratospheric ozone layer, which shields the earth from ultraviolet radiation that can cause harmful effects to humans and animals.	Photochemical Oxidant Potential is the result of human-made emissions and effects to the atmosphere, including acid rain, smog, and ozone depletion.	Acidification Potential is the result of human-made emissions and effects to the atmosphere, including acid rain, smog, and ozone depletion.	Eutrophication Potential occurs when excessive nutrients cause increased algae growth in lakes, blocking the underwater penetration of sunlight needed to produce oxygen and resulting in the loss of aquatic life.	Depletion of Abiotic Resources (Element) refers to the reduction of available non-renewable resources, such as metals and gases that are found on the periodic table of elements, due to human activity.	Depletion of Abiotic Resources (Fossil Fuel) refers to the decreasing availability of non-renewable carbon-based compounds, such as oil and coal, due to human activity.
626.91 kg CO2 eq.	0.016-08 kg CFC-11 eq.	53.47 kg O3 eq.	3.90 kg SO2 eq.	6.13 kg N eq.	5.51E-4 kg Sb eq.	6329 MJ

FUNCTIONAL UNIT: The Functional Unit is 100 sq ft of the rated aluminum composite panel produced in ALUBOND U.S.A. manufacturing plant located in Turkey



Environment



Environment

MATERIAL CONTENT

Material: 100% of the material (EPD)

COMPONENT	MATERIAL	AVAILABILITY	MASS%	ORIGIN
Top Sheet & Bottom Sheet	Aluminum	Metal Production	38	Turkey
Core Material	Fire Rated Mineral Core	Mineral	66	Duba
Top Sheet Coating	PVC	Polyester Resins	1	Turkey
Bottom Sheet Coating	PE	Polyester Resin	1	Turkey

ADDITIONAL ENVIRONMENTAL INFORMATION

PRE-CONSUMER RECYCLED CONTENT	%
POST-CONSUMER RECYCLED CONTENT	%
VOC EMISSIONS	
WATER CONSUMPTION	2.30E+03 m ³

ENERGY

RENEWABLE ENERGY	16.41 %	1.44E+03 MJ
NON-RENEWABLE ENERGY	83.59 %	7.34E+03 MJ

MANUFACTURER CONTACT INFO

NAME	Alubond TURKEY | Aluminum Composite Panel
PHONE	+90 262 746 1420
EMAIL	info@alubond.com.tr
WEBSITE	www.alubond.com.tr

RECYCLING OR REUSE

All Alubond U.S.A.® FR-A2 composite panel waste generated during manufacturing and at the end-of-life are resulting as recyclable or reusable materials. The aluminum scrap occurs during sizing activities are collected and directed to regional recycling services. The fire-rated core leaving the manufacturing system as rate of waste can be taken into the manufacturing system to reuse for the same product productions.

STANDARDS

-TS/EN ISO 9001:2005
-ME 5063
-ASTM E119
-TSEK 300

CERTIFICATIONS



www.ul.com/environment | environment@ul.com

This information is provided for informational purposes only. It is not intended to be used as a basis for any legal or regulatory compliance. The information is provided for informational purposes only. It is not intended to be used as a basis for any legal or regulatory compliance.

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MINERAL CORE PANELS

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