

# FIRE RETARDANT SCAFFOLD BOARDS

## NON-COMBUSTABLE | IGNITION-RESISTANT | FIRE-RETARDANT EURO CLASS B SCAFFOLD BOARDS FOR THE ENERGY INDUSTRY

**DUSCAFF FIRE SAFE**

**FIRE RETARDANT  
TIMBER SCAFFOLD  
BOARDS FOR THE  
ENERGY INDUSTRY**

Duscaff Fire Safe are the world's only timber scaffold boards that offer ASTM E84 CLASS A fire protection. The boards are also compliant to EN 13501-1:2007 Euro Class B and are as noncombustible as carbon steel when subject to an open flame source of up to 750° C. The boards do not self-ignite, nor can they be set on fire by atmospheric heat radiation. The boards are ideal for use in Oil, Gas and Energy projects where the temperatures of the work environments are relatively high and there are risks of the wooden boards self-igniting into flames. The ignition-resistant nature of the Euro Class B rated boards prevent them from automatically burning at high temperatures; hence maintaining their structural integrity up until temperatures at which carbon steel would melt. In the unfortunate event of a fire, the boards will not fail (before the metalwork would fail) as the fire-retardant properties of the boards will repel the flames until above 1000° C. When the temperature crosses over 1,000 °C, the boards start reacting to the fire by producing char that acts to insulate underlying wood and slows the rate at which the cross-sectional area is reduced in size. The carbon dioxide and water vapor dilute the combustible gases to help reduce flame spread. The flame spread index (FSI) of a Duscaff Fire Safe Euro Class B boards is below 15, and the smoke developed index (SDI) is below 15. In comparison, the FSI of a Class C board is 50 and the SDI is 250. The differences are huge, as are the health and safety regulations at Energy projects with extreme working conditions. There are two types of the Duscaff Fire Safe Euro Class B boards. The LVL Range is manufactured using 14 ply DUPLANK premium European Laminated Veneer Lumber (LVL) and the SW Range is manufactured using European Softwoods visually graded to BS2482:2009 Standards.

### DUSCAFF FIRE SAFE EURO CLASS B PLANK SPECIFICATIONS

#### LVL Range (DUPLANK) Specifications

Section Size: 38mm x 225mm  
 Length: 0.50 – 6.0m  
 Unit Weight: 5.40 kg/m  
 Surface finish: Un-sanded faces, arised edges and square cut, painted sealed ends.  
 Embossed Branding:

Product Code DFS-LVL-DUP-EB: DUPLANK LVL 1.6E OSHA CLASS B PROOF TESTED SCAFFOLD PLK MADE IN UAE MM/YY OF PRODUCTION

#### Solid Wood (SW Range) Specifications

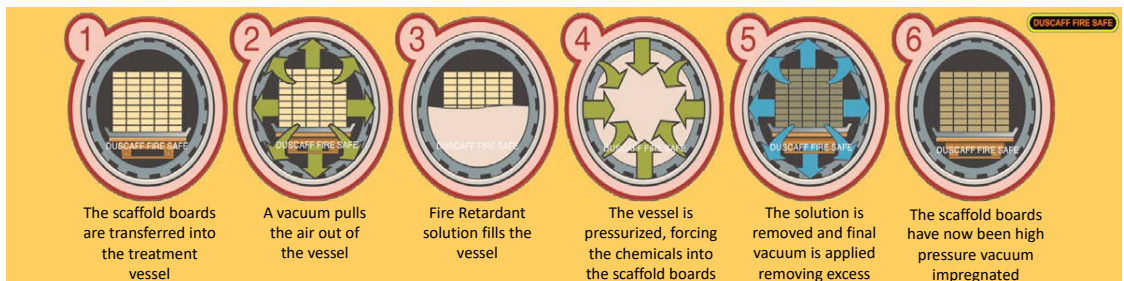
Section Size: 38mm x 225mm  
 Length: 0.50 – 3.9m  
 Unit Weight: 3.84 kg/m  
 Surface finish: Rough Sawn and square cut. Galvanized end-band on both ends.  
 Embossed Branding:

Product Code DFS-SW-EB: CLASS B CLIENT NAME | PRODUCTION BATCH CODE

### TREATMENT PROCESS

Our fire retardant treatment processes are carried out under controlled conditions in modern industrial treatment plants within our treatment center. Each treatment process involves a high pressure impregnation of the fire retardant solution followed by drying to a specific moisture content. Duscaff is a ISO 9001 registered company and our continual assessment against this quality standard includes it's treatment centers. This treatment facility is also now accredited to BS EN ISO 14001 in terms of environmental aspects of our business. All our center staff are fully trained and updated on all aspects of timber treatment technology and treatment plant operation. Installation of the very latest technology treatment plant control software, helps ensure accurate and cost effective treatments for our customers. Each pack of timber is labelled to confirm the treatment applied and customer details and confirmation treatment certificates are available on request.

As specified by NASC (TG10:14 Fire Retardant Treatment for Timber Scaffold Boards and Battens) brush, spray or dip applied products offer only superficial protection which is quickly worn away under foot and should not be used. Since scaffold boards are always subject to surface wear, only flame retardants applied using a high-pressure impregnation process should be considered suitable. Duscaff Fire Safe Scaffold Board are impregnated under controlled conditions within a sealed autoclave using a pre-determined vacuum and pressure cycle to force the chemicals permanently into the cells of the wood. The Fire Retardant properties outlive the scaffold board therefore there is no concern for the fire retardance deteriorating.





## HOW IT WORKS – PASSIVE PROTECTION

An important feature of Duscaff Fire Safe boards are that they react automatically when exposed to fire. The chemicals react with combustible gases and tars normally generated by untreated wood and convert them to carbon char and harmless carbon dioxide and water. Wood loses strength in a fire only as its cross section is reduced. The surface char acts to insulate underlying wood and slows the rate at which the cross-sectional area is reduced in size. The carbon dioxide and water vapor dilute the combustible gases to help reduce flame spread. Preservative protection comes from the ingredients of the fire retardant solution. It renders the wood useless as a food source for termites and fungal decay, thereby avoiding damage caused by these organisms.



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## TREATMENT QUALITY CONTROL AND PRODUCT CERTIFICATION

### Quality control measures

The boards used in the production of Duscaff Fire Safe are first marked with the client's name and a specific job number. The fire retardant chemical is then checked for its viscosity, the autoclave's valves are checked, the pressure flow is monitored, and the operator notes the time and duration of the operation. Another company Quality Audit/Quality Control official first verifies the details, and then signs off on all the details that are noted by the operator as a confirmation. After the treatment is completed, the boards are individually marked as CLASS B. The FR boards are then shifted to the materials dispatch location, and the area of storage is noted. While dispatching to the client, the boards will have hard copies of treatment certificates, and certificates of conformity of standard affixed to them in transparent laminated plastic folders. A third-party test certificate from a UKAS approved testing laboratory will be provided for a random specimen of sample that the client picks up from their delivery.

### International standards

Duscaff Fire Safe is manufactured in accordance with ISO 9001 quality assured procedures. Duscaff is an ISO 9001:2008 and OSHAS 18001:2007 certified manufacturing company. The scaffold boards used in the production of LVL Range comply with OSHA, Standard 29 CFR 1926.451 (f) (1) and the SW Range with BS2482:2009.

### Traceability

Complete traceability of the product is available (right from the time of selection for treatment until the dispatch of the boards) and all relevant certificates confirming the strength and performance of the product is provided with each board marked with a traceability code.



## THE PROJECTED FIRE RETARDANCE LIFE SPAN

### 15 years to in excess of 60 years

Service life of Duscaff Fire Safe depends upon the end use and application rates. In general it can be expected that the fire retardance in scaffold boards used in Use Class 1 or 2 will last in excess of 60 years. Those boards exposed to weathering but installed above ground contact will achieve fire retardant life span of between 15-30 years. Boards serving in-ground contact with constant wetting (which would generally never be the case with scaffold boards) can achieve a fire retardant life of around 15 years.

**Table 1. Use Class Table**

Use Class Table	
Use Class (UC)	Use
1	Above ground. Permanently dry, insect risk.
2	Above ground. Occasional risk of wetting.
3	Above ground. Exposed to frequent wetting.
4	In contact with ground or fresh water. Permanently exposed to wetting.

## TYPES OF BOARDS

**The LVL Range:** The structural uniformity of LVL makes it the perfect solution for a safe and lightweight scaffold plank. The DUPLANK is made by laminating thin veneers together which increases the reliability and strength of the product. Each DUPLANK is individually proof tested to verify if the strength of each plank exceeds the requirements for the working loads set out in OSHA, Standard 29 CFR 1926.451 (f) (1) and (a) (1).

**The SW Range:** The European softwoods are visually graded to BS2482:2009 as specified by BSI that provide a safe working platform at heights.

## AVAILABILITY

38mm x 225mm Duscaff Fire Safe Euro Class B is standard ex. stock in 3.98, 3.90, 2.98 and 2.95 meters long. Other lengths and treatment options are available on order.

NOTE FOR THE SW RANGE: Crosscutting does not affect the structural integrity of the board and the board will still comply with BS 2482. Visually graded boards – all defects will have already been visually assessed. Machine graded boards – the board will have been mechanically assessed along its length.

## SUSTAINABILITY

CPET (Central Point of Expertise on Timber, <https://www.proforest.net/en>) is a government directive stipulating that only timber from legal and sustainable sources can be used on government funded projects. The use of legal and sustainable timber is also a condition of many contracts from main contractors. These directives are just starting to impact on the access industry. DUPLANK has full Chain of Custody with FSC and PEFC accreditation. Wherever possible Duscaff Fire Safe are individually labelled using ink jet printing/heat embossing with its chain of custody details.

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## LVL RANGE | STRENGTH : QUALITY CONTROL AND STRUCTURAL VERIFICATION



DUPLANK (used in the production of the LVL Range) is manufactured under the procedures of the VTT184/03 certificate and the EN 14374.

Each DUPLANK is individually proof tested to verify that the strength of each plank exceeds the bending moment requirements for the working loads set out in the Live Load Duty Category Table 2 below. Tables 3 and 4 represent the similar values as per OSHA requirements.

### DUPLANK Span and Load Tables

**Table 2.** Scaffold Platform Duty Categories (as per AS/NZS 1576 & 1577)

Live Load Duty Category	Maximum Span (m)	Working Load Limit (WLL)
Light Duty	2.4	2.2kN (inc 1.2kN concentrated load)
Medium Duty	2.0	4.4kN (inc 1.5kN concentrated load)
Heavy Duty	1.8	6.6kN (inc 2.0kN concentrated load)

**Table 3.** Span table based on 1/60 per OSHA requirements.

Single Span 1/60 (millimeters)	
Load Condition	38 x 225mm DUPLANK
50 PSF	3200
75 PSF	2743
One Man Load	3190
Two Men Load	2591
Three Men Load	1829

**Table 4.** Load Table

Load Table		
Span mm	UDL	PL
	kN/m <sup>2</sup>	kN
1,200	27.30	4.05
1,500	17.40	3.25
1,800	12.00	2.70

*1/60 deflection limit.*

*Applicable for single span and continuous planks.*

*UDL calculated with 3 load combinations.*

*PL calculated with 7 load combinations.*

*One PL allowed in each span. UDL = uniformly distributed load. PL = point load.*

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**TIMBER SCAFFOLD**  
**BOARDS FOR THE**  
**ENERGY INDUSTRY**

## SW RANGE | STRENGTH : QUALITY CONTROL AND STRUCTURAL VERIFICATION

The timber used in the production of the SW Range are made of species specified by BSI in the guidelines BS2482:2009 that are suitable for use as scaffold boards.

Duscaff is certified by a grading authority of UKAS to manufacture and supply BS2482:2009 graded boards (registration code CATG 1245-CPR-2265)

Each board is individually visually graded to verify that the strength of each plank exceeds the bending moment requirements for the working loads set out in the guidelines of BS2482:2009.

### SW Range Span and Load Table

**Table 5.** Method of test for determining bending strength (as per Table C.1 of BS2482:2009 by British Standard Institution)

Test Type	Span (mm)	Ultimate Moment (kNm)	Minimum ultimate moment of any board (kNm)	Conclusion
Bending Strength	1,200	2.26	≤53.33	Complies



**SW Range in the pressure treatment plant**

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**Placing of test specimen:**

The following tests were conducted on Euro Class B Duscaff Fire Safe and commercially available Euro Class B and Euro Class C Fire Retardant Scaffold Boards.

The test specimen consisted two interlocking "Duscaff Fire Safe" - Fire Retardant Scaffold Boards, Laminated Veneer Lumber (LVL) Range. The total dimensions of the specimen were 7320 x 600 x 38mm (length x width x thickness). Several sections of cement board butt jointed end-to-end with overall dimensions of 7350 x 600mm (l x w), were placed at the back of the sample to protect the furnace lid assembly.

**Test Specimen:**

The specimen was installed horizontally in the Steiner Tunnel and supported by the ledges. The boards were subjected to a flaming exposure during the 10-minute test duration. Flame spread and density of the smoke are measured and recorded while the results are computed against the standard calibration materials (cement board and red oak flooring).

**Observation:**

Test data and observation in the below table.

Observation	Result for Duscaff Fire Safe Euro Class B	Result for Commercially Available Class B	Result for Euro Class C
Ignition Time (min:sec)	0:17	0:20	00:13
Time to maximum flame front advance (min:sec)	9:53	9:33	09:21
Maximum flame spread (ft)	4.2	19.5	19.5
Time to end of tunnel reached (min:sec)	Not Reached	9:33	09:21
Maximum temp recorded at the exposed thermocouple located near the end of the tunnel (°F / °C)	558/292	1076/580	1076/580
Dripping (min:sec)	None	None	None
Flaming on the floor (min:sec)	None	None	None
After flame on the top (min:sec)	0:12	Note 1	Note 1
After flame on the floor (min:sec)	None	None	None
Delamination (min:sec)	None	4:55	3:49
Sagging (min:sec)	None	None	None
Shrinkage (min:sec)	None	None	None
Fallout (min:sec)	None	None	None
FS*Time Area (ft*min)	28.10	97.10	111.23
Smoke Area (%A*min)	13.95	223.43	357.39
Red Oak Smoke Area (%A*min)	87.9	87.8	85.2

*Note 1 – The flame was extinguished immediately due to high temperature recorded and continuous burning of the sample after the 10 minutes test, therefore after flame on top was not observed.*

**Summary:**

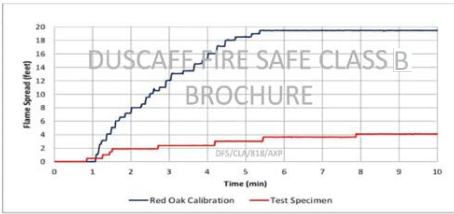
The test specimen were evaluated, and the test results were:

SUMMARY	Result for Duscaff Fire Safe Euro Class B	Result for Commercially Available Class B	Result for Euro Class C
FLAME SPREAD INDEX (FSI)	15	50	77
SMOKE DEVELOPED INDEX (SDI)	15	250	400

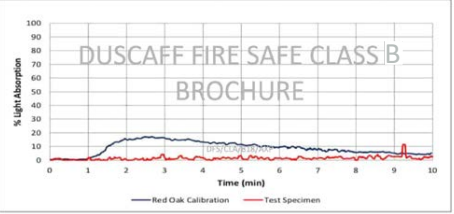
**The Duscaff Fire Safe Euro Class B Boards:**

- The boards developed minimal smoke when the specimen were exposed to a flame source.
- The flame did not reach the other end of the tunnel and achieved a FSI result of below 25; hence non-combustible.
- The timber at the exhaust end of the tunnel did not ignite at 292° C (the auto-ignition temperatures of Picea Abies (Norway Spruce), Abies Alba (Douglas Fir) and Pinus Sylvestris (Pine) are 250° C); hence ignition-resistant.
- When the 1076° C flames to the surface of the boards were turned off, The Duscaff Fire Safe Euro Class B boards were the only specimen that lost only 2mm of its thickness and auto-extinguished the flame while the other specimen were already burned out; truly fire-retardant.
- The temperature recorded at the exhaust end of the tunnel was not more than that of the flame; hence low thermal conductivity.
- There was no delamination recorded at 1076° C.

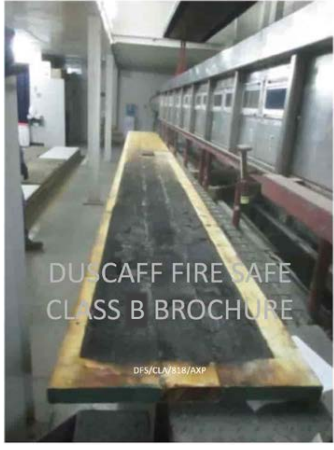




Graph 1: Flame Spread Index (FSI)



Graph 2: Smoke Developed Index (SDI)



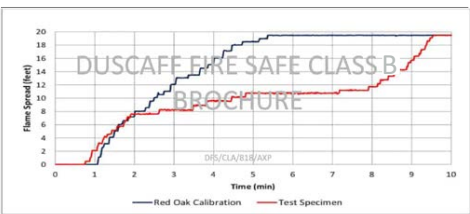
Specimen after the test. (As seen from the fire-end)



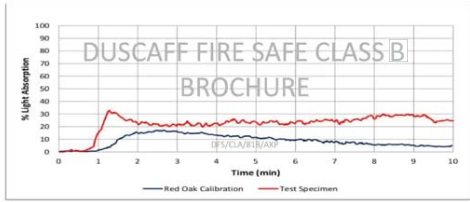
Specimen after the test. (As seen from the exhaust end)

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Graph 3: Flame Spread Index (FSI)



Graph 4: Smoke Developed Index (SDI)

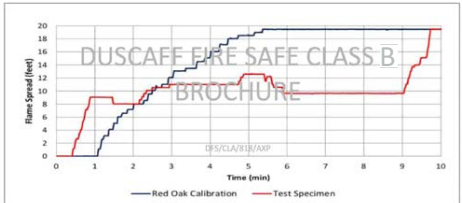


Specimen after the test. (As seen from the fire-end)

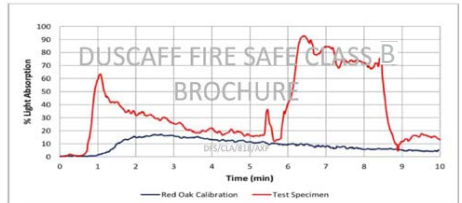


Specimen after the test. (As seen from the exhaust end)

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Graph 5: Flame Spread Index (FSI)



Graph 6: Smoke Developed Index (SDI)



Specimen after the test. (As seen from the fire-end)



Specimen after the test. (As seen from the exhaust end)

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For quick, clear product answers, our technical support phone line +44 20 3318 2509 links you to our expanded, engineering support team. Our experienced support team can assist with enquiries ranging from sizing and design to installation advice. It's fast, easy and it's free.

## WHY CHOOSE DUSCAFF FIRE SAFE OVER STEEL PLANKS?

- CLASS B FIRE PROTECTION
- NON-SPARKING
- NO ELECTRICITY CONDUCTION
- LOW THERMAL CONDUCTIVITY
- LIGHTWEIGHT
- DURABLE
- VERSATILE
- BIODEGRADEABLE

Duscaff Fire Safe	Steel Scaffold Planks
<b>Health and safety</b>	
No risk of sparks from falling tools or from friction	Risk of spark; a fire hazard
Does not conduct electricity	Is a conductor of electricity; a safety hazard
No sharp edges or safety hazards from signs of weathering	Sharp edges from oxidized surfaces can cause severe injuries and infections; a safety hazard
Into a 750° C fire, Duscaff Fire Safe would have lost only about 10% of its strength and retain its structural integrity	A steel plank would have lost over 90% of its strength and failed
Does not absorb heat, nor does the surface heat up	Absorbs heat and the surface heats up
Presence does not raise the temperature of the atmosphere	Heating up leads to rising atmospheric temperature
<b>Cost efficiency</b>	
Lightweight; lesser man-hours to handle, easy to transport	Heavy; more man-hours and equipment are required to handle and transport
Durable; Does not dent, bend or damage easily whilst handling or transporting	Prone to damages whilst handling and transporting
Versatile; can be cut to shorter lengths in case of damage or change of design	Can not be cut for shorter length planks
Does not weather like metals	Metals heavily oxidize under extreme climatic conditions
<b>Sustainability</b>	
Low energy is required to prepare the raw material	3 x the energy is required to extract, manufacture, transport and construct steel
Low energy is required to manufacture the final product	In general, products made from steel require 24 times more energy than steel does to make a final product
Low CO2 emissions in the manufacture of the final product	At least 3 times more CO2 emissions
FSC and PEFC Certified sustainable timber	No sustainability certifications are provided

- Danger**  
Fire and explosion hazard
- Danger**  
Electric shock risk
- Danger**  
High temperature risk
- Danger**  
Sharp objects
- Danger**  
Forklift trucks operation
- Danger**  
Risk from crane
- Danger**  
Environmental Hazard

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**SCAFFOLDING PRODUCTS**

**WELLFIX SCAFFOLDING SUPPLIES LTD**  
27 Old Gloucester Street,  
London, United Kingdom.  
WC1N 3AX  
+44 20 3318 2509

**DUSCAFF SCAFFOLDING INDUSTRY LLC**  
Dubai Industrial City, Dubai,  
United Arab Emirates  
PO Box 28263  
+971 4 425 0232

**WELLFIX LLC**  
Suite G-20, Building 1, Dubai,  
United Arab Emirates  
PO Box 126377  
+971 4 243 2440

## USEFUL LINKS

- [NASC \(TG20:13 Good Practice Guidance for Tube and Fitting Scaffolding\)](#)
- [NASC \(TG10:14 Fire Retardant Treatment for Timber Scaffold Boards and Battens\)](#)
- [BSI British Standard 2482:2009 \(Specification for timber scaffold boards\)](#)
- [CAN/CSA-O80 Series of Standards, Wood Preservation. National Building Code of Canada \(NBCC\)](#)
- [A Guide to Scaffold Use in the Construction Industry - OSHA](#)
- [Duscaff Fire Safe Fire Retardant Scaffold Boards](#)

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