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Testing. Advising. Assuring.

**Title:**

CLASSIFICATION OF  
REACTION TO FIRE  
PERFORMANCE  
IN ACCORDANCE WITH  
EN 13501-1:2007+A1: 2009.

**Notified Body No:**

0833

**Product Name:**

"Makrolon multi UV 5M/32-  
20 white 1146"

**Report No:**

190500

**Issue No:**

1

**Prepared for:**

Bayer Sheet Europe GmbH  
Certification  
Otto-Hesse-Strasse  
19/T9  
64293  
Darmstadt  
Germany

**Date:**

11<sup>th</sup> March 2010

## 1. Introduction

This classification report defines the classification assigned to “Makrolon multi UV 5M/32-20 white 1146”, an extruded multi-wall polycarbonate sheet, in line with the procedures given in EN 13501-1:2007+A1: 2009.

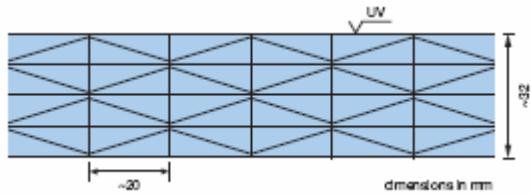
## 2. Details of classified product

### 2.1 General

The product, “Makrolon multi UV 5M/32-20 white 1146”, an extruded multi-wall polycarbonate sheet, is defined as being suitable for construction applications, excluding flooring and linear pipe thermal insulation.

### 2.2 Product description

The product, “Makrolon multi UV 5M/32-20 white 1146”, an extruded multi-wall polycarbonate sheet, is fully described below and in the test reports provided in support of classification listed in Clause 3.1.

General description		Extruded multi-wall-sheet
Trade Name		“Makrolon multi UV 5M/32-20 white 1146”
Name of manufacturer		Bayer Sheet Europe GmbH
Overall thickness		32mm (Stated by sponsor) 32mm (Determined by <b>Exova Warringtonfire</b> )
Overall weight per unit area		3.7 kg/m <sup>2</sup> (Stated by sponsor) 3.80 kg/m <sup>2</sup> (Determined by <b>Exova Warringtonfire</b> )
Orientation of ribs for purpose of test		Vertical
Diagram of cross section of multi-wall wall polycarbonate sheet		
Internal skin (test face)	Generic type	“Makrolon” Polycarbonate
	Density	1200 kg/m <sup>3</sup>
	Composition details	Polycarbonate
	Thickness	<b>See Note 1</b>
	Colour reference	“White 1146”
	Flame retardant details	<b>See Note 2</b>

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Inner skins	Generic type	"Makrolon" Polycarbonate
	Density	1200 kg/m <sup>3</sup>
	Composition details	Polycarbonate
	Thickness	<b>See Note 1</b>
	Colour reference	"White 1146"
	Flame retardant details	<b>See Note 2</b>
	Location	<b>See Note 1</b>
Ribs	Generic type	"Makrolon" Polycarbonate
	Density	1200 kg/m <sup>3</sup>
	Composition details	Polycarbonate
	Thickness	<b>See Note 1</b>
	Colour reference	"White 1146"
	Flame retardant details	<b>See Note 2</b>
	Rib spacing (centre to centre)	20 mm
'Cross ribs'	Generic type	"Makrolon" Polycarbonate
	Density	1200 kg/m <sup>3</sup>
	Composition details	Polycarbonate
	Thickness	<b>See Note 1</b>
	Colour reference	"White 1146"
	Flame retardant details	<b>See Note 2</b>
Outer, UV protected skin (reverse face)	Generic type	"Makrolon" Polycarbonate
	Density	1200 kg/m <sup>3</sup>
	Composition details	Polycarbonate
	Thickness	<b>See Note 1</b>
	Colour reference	"White 1146"
	Flame retardant details	<b>See Note 2</b>
	UV protection details	Outer layer containing high proportion of UV-absorber
Brief description of manufacturing process		Extrusion process

**Note 1 – The sponsor was unwilling to provide this information.**

**Note 2 – The sponsor stated that no flame retardant additives were utilised in the construction of the component.**

### 3. Test reports & test results in support of classification

#### 3.1 Test reports

Name of Laboratory	Name of sponsor	Test reports/extended application report Nos.	Test method / extended application rules & date
Exova warringtonfire	Bayer Sheet Europe GmbH	WF 190290	EN ISO 11925-2
Exova warringtonfire	Bayer Sheet Europe GmbH	WF 190291	EN 13823

#### 3.2 Test results

Test method & test number		Parameter	No. tests	Results	
				Continuous parameter - mean (m)	Compliance parameters
EN ISO 11925-2	30s exposure - surface	F <sub>s</sub>	6	Nil	Compliant
		Flaming droplets/ particles		None	Compliant
	30s exposure - edge	F <sub>s</sub>	6	43.3mm	Compliant
		Flaming droplets/ particles		Yes	<b>Non Compliant</b>
EN 13823		FIGRA <sub>0.2MJ</sub>	3	51.45	Compliant
		FIGRA <sub>0.4 MJ</sub>		42.47	Compliant
		THR <sub>600s</sub>		1.63	Compliant
		LFS		None	Compliant
		SMOGRA		11.40	Compliant
		TSP <sub>600s</sub>		64.03	Compliant

#### 4. Classification and field of application

##### 4.1 Reference of classification

This classification has been carried out in accordance with clause 8 of EN 13501-1:2007+A1:2009.

##### 4.2 Classification

The product, "Makrolon multi UV 5M/32-20 white 1146", an extruded multi-wall polycarbonate sheet, in relation to its reaction to fire behaviour is classified:

**B**

The additional classification in relation to smoke production is:

**s2**

The additional classification in relation to flaming droplets / particles is:

**d0**

**The flaming droplet classification of d0 awarded to "Makrolon multi UV 5M/40-20 white 1146", can only be achieved when the product is installed with sealed edges. Failure to seal the edges correctly during installation could lead to flaming droplets falling from the product in the event of exposure to fire.**

The format of the reaction to fire classification for construction products excluding floorings is:

Fire Behaviour		Smoke Production			Flaming Droplets	
<b>B</b>	-	<b>s</b>	<b>2</b>	,	<b>d</b>	<b>0</b>

i.e. **B – s2 , d0**

**Reaction to fire classification: B – s2, d0**

### 4.3 Field of application

This classification is valid for the following end use applications:

- i) Construction applications mechanically installed without the presence of a substrate and with a minimum air gap of 180mm.
- ii) Installation of the panel shall ensure that the edges are sealed.

This classification is also valid for the following product parameters:

Product thickness	No variation allowed
Product weight per unit area	No variation allowed
Product composition	No variation allowed
Product construction	No variation allowed
Product colour	No variation allowed
<b>Product installation</b>	<b>No exposed edges allowed</b>

### 5. Limitations

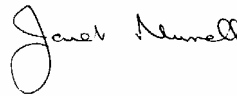
This document does not represent type approval or certification of the product

**SIGNED**



.....  
**Matthew Dale**  
Technical Officer  
Technical Department

**APPROVED**



.....  
**Janet Murrell**  
Technical Manager  
Technical Department  
on behalf of:  
**Exova Warringtonfire**

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