

## RESEARCH REPORT - LABORATORY

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RESEARCH OBJECT	: Artificial turf sample "FINE 35DG" Bi-color
PURPOSE RESEARCH	: Testing the environmental compatibility of an artificial turf according to standard DIN V 18035-7 (June 2002)
PRINCIPAL	: J&E Sports Constructions V.O.F. Contact: Mr. J.A.M. van Gennip
EXECUTION	: ISA Sport Project manager: Ms. N. Siemes
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### CONCLUSION

The artificial turf sample "FINE 35DG" Bi-color meets the environmental requirements according to standard DIN V 18035-7 (June 2002).

February 2009

Instituut voor Sportaccommodaties B.V.



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## RESEARCH DESCRIPTION

J&E Sports Constructions V.O.F. asked ISA Sport to execute a laboratory research to test the environmental compatibility of the artificial turf "FINE 35DG" Bi-color according to standard DIN V 18035-7.

The research includes the following items:

1. DOC (Dissolved Organic Carbon);
2. EOX (Extractable Organic Halogen);
3. Toxicity (nitrification-inhibition);
4. Heavy metals content of the following metals:
  - Lead (Pb);
  - Cadmium (Cd);
  - Chromium (Cr);
  - Mercury (Hg);
  - Zinc (Zn);
  - Tin (Sn).

The environmental research is performed by a third party.

Also the artificial turf has been characterised.

The results of the research are described on the next page.

## RESEARCH RESULTS

### Test results environmental research

The results for the DOC, EOX and toxicity research of the rubber granulate are given in table 1.

The results for the heavy metals research are listed in table 2.

Table 1: DOC, EOX and toxicity.

Characteristic	Result	Standard
DOC	7.6 mg/l	≤ 20 mg/l
EOX	70 mg/kg	≤ 100 mg/kg
Toxicity	< 50%	≤ 50%

### Conclusion

From the results listed in table 1 it is concluded that artificial turf sample "FINE 35DG" Bi-color meets the requirements from the DIN V 18035-7 standard for the DOC, EOX and toxicity.

Table 2: Pb, Cd, Cr, Hg, Zn and Sn content in eluate.

Metal	Result [µg/l]	Standard [µg/l]
Lead (Pb)	18	≤ 40
Cadmium (Cd)	0.2	≤ 5
Chromium (Cr)	< 2,0	≤ 50
Mercury (Hg)	< 0,03	≤ 1
Zinc (Zn)	51	≤ 3000
Tin (Sn)	< 15	≤ 50

### Conclusion

From the results listed in table 2 it is concluded that artificial turf sample "FINE 35DG" Bi-color meets the requirements from the DIN V 18035-7 standard for the heavy metals content.

### Characterisation artificial turf

The following material analyses of the artificial turf are listed in the appendix:

- Artificial turf; analysis number: 2009020040;
- DSC analysis fibre: analysis number: 2009020041 and 2009020042.



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## APPENDIX I

### MATERIAL ANALYSES



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## LABORATORY REPORT

**Material** : artificial turf  
**Sport** : landscaping  
**Description** : Fine 35 DG  
**Principal** : J & E Sports

**Analysis number** : 2009020040  
**Date** : February 9<sup>th</sup> 2009  
**Project number** : 25090002

### Color

**Fibre A** : pale and dark green  
**Fibre B** : green and beige (MN/K0.1/00)

### Shape

**Fibre A** : straight, not fibrillated (MN/K7.1)  
**Fibre B** : curled, not fibrillated

**Stitches per 100 mm** : 18 (MN/K4.1/00)

### Fibres per stitch

**Fibre A** : 2 x (2 x 3)  
**Fibre B** : 2 x (2 x 4)

**Distance stitches rows** : 10 mm (MN/K1.1)

### Pile length

**Fibre A** : 36 mm (MN/K1.1)  
**Fibre B** : 37 mm

### Tensile strength

**Fibre A** : 87 N (N/S2.3)  
**Fibre B** : 71 N

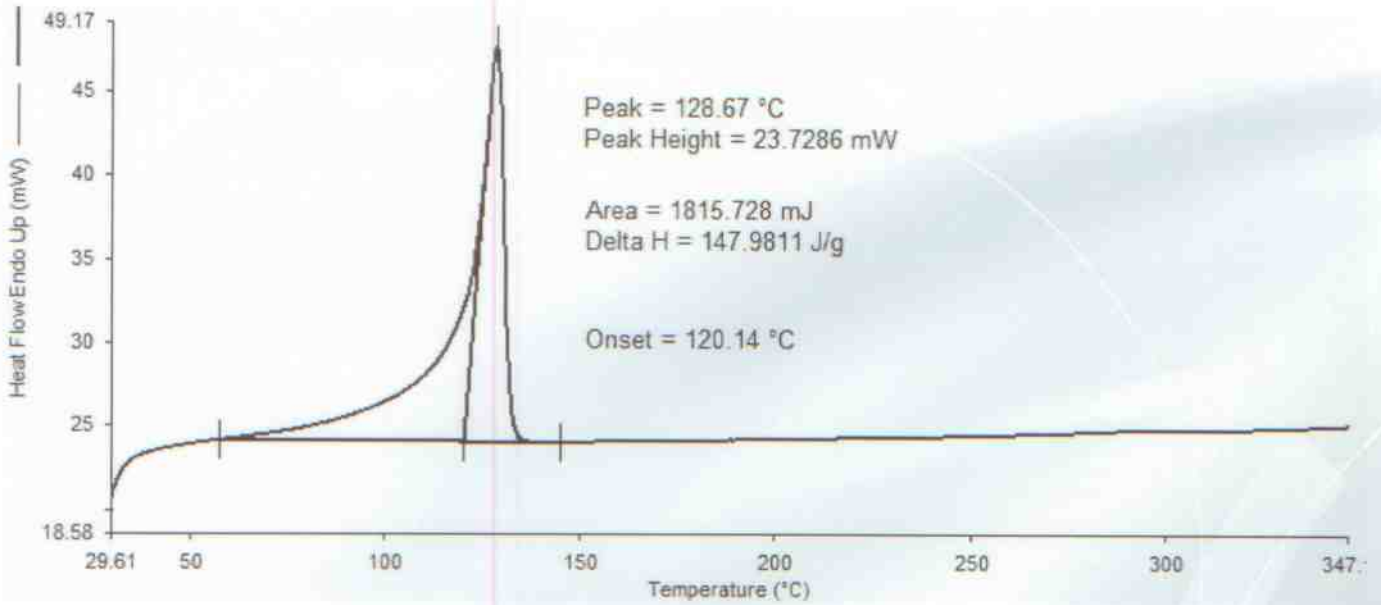
### Pile weight

**Fibre A** : 5375 dtex  
**Fibre B** : 4507 dtex

**Water permeability** : >300 ml/min (MN/Wa1.1)

Material : fibre A (straight)  
 Sport : landscaping  
 Description : Fine 35 DG  
 Principal : J & E Sports

Analysis number : 2009020041  
 Date : February 5<sup>th</sup> 2009  
 Project number : 25090002



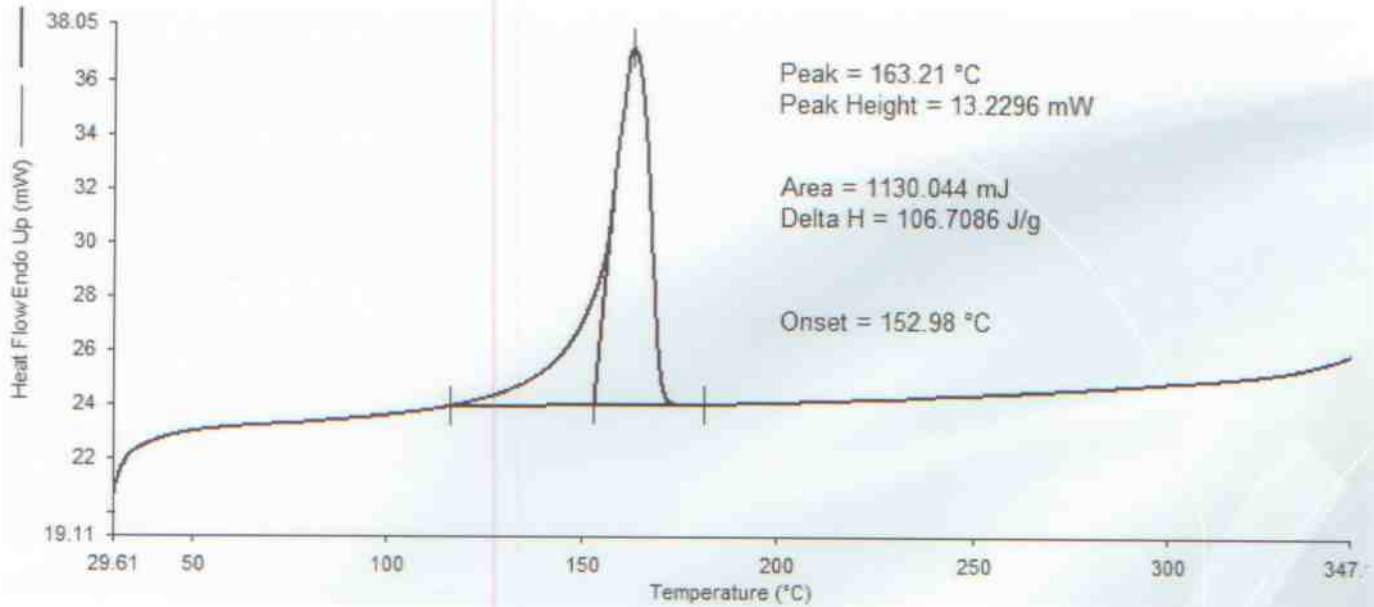
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|--|--|
| 1. Heat from 30.00 °C to 300.00 °C at 50.00 °C/min | 3. Hold for 8.0 min at 30.00°C                     |
| 2. Cool from 300.00 °C to 30.00 °C at 40.00 °C/min | 4. Heat from 30.00 °C to 350.00 °C at 10.00 °C/min |



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Material : fibre B (curled)  
 Sport : landscaping  
 Description : Fine 35 DG  
 Principal : J & E Sports

Analysis number : 2009020042  
 Date : February 5<sup>th</sup> 2009  
 Project number : 25090002



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| 1. Heat from 30.00 °C to 300.00 °C at 50.00 °C/min | 3. Hold for 8.0 min at 30.00°C                     |
| 2. Cool from 300.00 °C to 30.00 °C at 40.00 °C/min | 4. Heat from 30.00 °C to 350.00 °C at 10.00 °C/min |



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