

RESEARCH REPORT - LABORATORY

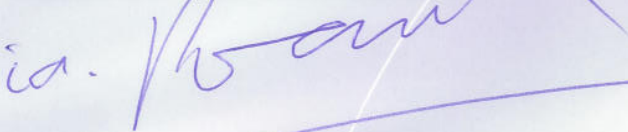
PROJECT	:	yarn "Mono Plus ALS 302-2000"
PURPOSE RESEARCH	:	testing the climatic resistance of a yarn sample in accordance with the International Artificial Turf Standard
PRINCIPAL	:	Alsan
EXECUTION	:	ISA Sport Project Manager: Ms. N. Siemes
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CONCLUSION

From the results of the climatic resistance research during 3000 hours it is concluded that the yarn sample "Mono Plus ALS 302-2000" has passed the test successfully.

7th May 2012

Instituut voor Sportaccommodaties B.V.



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Manager International Projects

RESEARCH DESCRIPTION

Alsan asked ISA Sport to execute a climatic resistance research on the yarn sample "Mono Plus ALS 302-2000".

The yarn sample is subjected to a climatic simulation, including Ultra Violet light, moisture and temperature changes during 3000 hours, which represents a period of five years of use in practice. The climatic simulation is performed in accordance with the International Artificial Turf Standard.

Before and after 3000 hours of climatic simulation, the following characteristics are determined at a temperature of approximately 23°C and a relative humidity of about 50%:

- tensile strength yarn (according to standard NEN-EN 13864);
- yarn colour (lab co-ordinates and grey scale according to standard ISO 105-A02).

Besides the yarn is specified by the determination of the following characteristics:

- shape;
- pile weight (dtex);
- thickness;
- width;
- RAL code (according to standard ISO 7724);
- yarn identification (DSC-analysis according to standard ISO 11357).

The results of the climatic resistance research are described on the next pages.

RESEARCH RESULTS

The climatic simulation is performed in accordance with the International Artificial Turf Standard.

Table 1 gives an overview of the specifications of the yarn.

Table 1: specification "Mono Plus ALS 302-2000"

Characteristic	Results
Shape	straight, not fibrillated, spine
Yarn weight	2042 dtex
Thickness (centre)	0.33 m
Width	1.5 mm
RAL code	6025
Yarn identification (onset)	89°C and 138°C



Photo: shape yarn

Table 2 gives an overview of the research results for the yarn "Mono Plus ALS 302-2000" before and after 3000 hours climatic simulation. The analysis of the yarn identification (DSC) is enclosed in appendix I (analysis number 2012010020).

Table 2: climatic simulation results "Mono Plus ALS 302-2000"

Characteristic	Results			
	Before simulation	After simulation 3000 h	Relative change	International standard
Tensile strength	35 N	32 N	-9%	≤50%
Colour				
	L 41.1	40.9	4 - 5	≥ 3
	a -10.9	-10.9	(grey scale)	(grey scale)
	b 16.9	16.9		

Conclusion:

From the results of the climatic resistance research during 3000 hours it is concluded that the yarn sample "Mono Plus ALS 302-2000" has passed the test successfully.



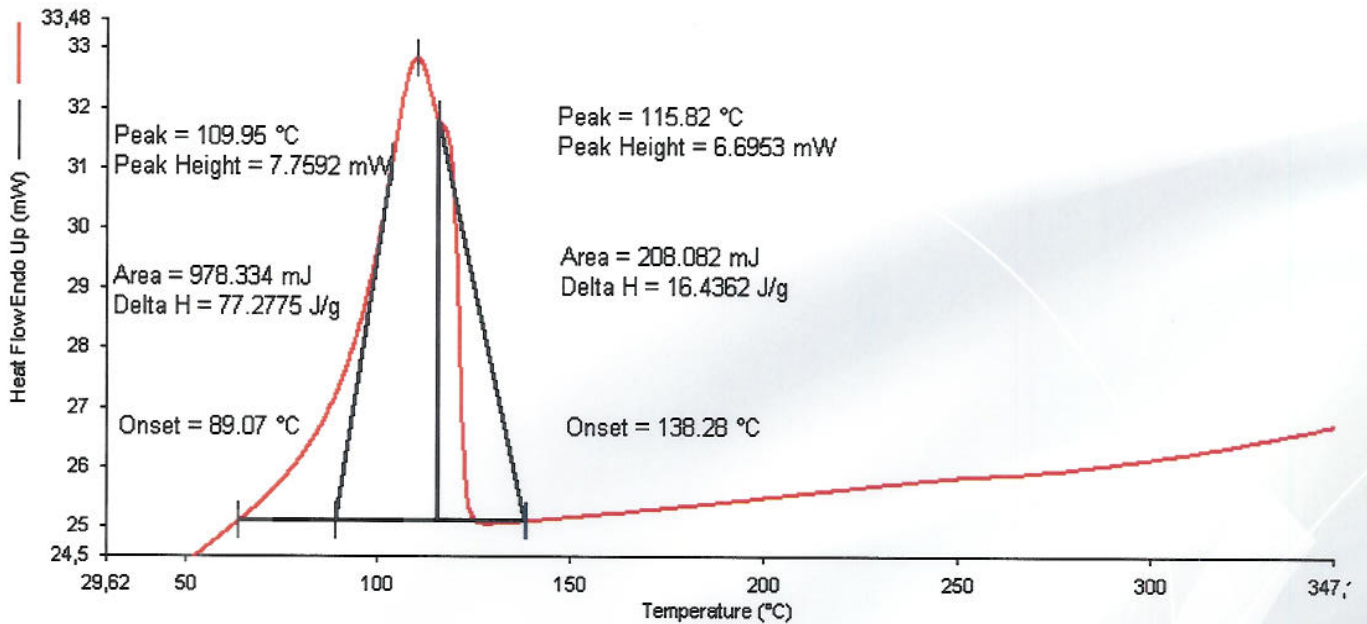
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APPENDIX I

yarn identification

Material : fibre
 Sport : football
 Description : Mono Plus ALS 302-2000
 Principal : Alsan

Analysis number : 2012010020
 Date : January 24th 2012
 Project number : 25120002



- | | |
|--|--|
| 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 |