RESEARCH REPORT - LABORATORY

PROJECT	:	glued artificial turf connection with seaming tape "Stauf Ibola Sportrasenvlies C145"
RESEARCH PURPOSE	:	determination of the direct tension strength and peel strength according to the standards NEN-EN12228 and EN13744
PRINCIPAL	:	STAUF Klebstoffwerk GmbH contact: Mr. U. Becker
EXECUTION	:	ISA Sport International Project Manager: Ms. N. Siemes
RESEARCH DESCRIPTION	:	page 2
RESEARCH RESULTS	:	page 3 - 4

CONCLUSION

The glued connection is suitable as joint connection in artificial turf football constructions, according to the FIFA requirements;

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ia.

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DESCRIPTION RESEARCH

ISA Sport was provided with an artificial turf sample (Fieldturf Revolution 60-12) with a joint connection. The connection consists of a glued seaming tape "Stauf Ibola Sportrasenvlies C145". The used glue is "Stauf Ibola R201 2K-PU Kunstrasenklebstoff".The joint strength of the glued connection is determined before and after ageing (immersion in hot water).

The joint strength of the sample is determined according to standard NEN-EN 12228 (October 2002). This standard describes to use a 100 mm wide sample. In the present research 50 mm wide samples are used. This does not influence the measurement results.

Standard NEN-EN 12228 describes two measurement methods for the joint strength, based on the type of the connection:

- for seamed joints the direct tension strength shall be measured. For the determination of the direct tension strength, an increasing tensile force is applied perpendicular to the joint until it breaks. The direct tension strength is determined from the applied maximum force F_{max};
- for bonded (glued) joints the peel strength is measured. An increasing tensile force is applied on the turf and the seaming tape. The tape is peeled off near the glued connection. The peel strength is determined from the peak forces between 25% and 75% of the length of the joint.

For the peel strength the FIFA uses the following requirement:

- $\geq$ 25 N/100 mm.

Furthermore, the peel strength has been measured after immersion in hot water, according to standard EN 13744. The samples are immersed in hot water (70°C) for 336 hours. After a relaxation period of one to six days, the tests have been executed.

RESEARCH RESULTS

Table 1 gives an overview of the mean values for the peel strength of the sample with the glued connection, before and after ageing (immersion in hot water). The individual test results for the peel strength are listed in table 2

Table 1: Mean peel strength before and after ageing.

Sample condition	C145
	Peel strength (N/100 mm)
before ageing	178
after ageing	187

From the peel strength research results it is concluded that the sample with seaming tape "Stauf Ibola Sportrasenvlies C145" meets the FIFA requirements for artificial turf football constructions.

Table 2: Individual test results for peel strength of seaming tape "Stauf Ibola Sportrasenvlies C145".

	Peel strength	
Measurement	Before ageing (N/100 mm)	After ageing (N/100 mm)
1	210	256
2	222	108
3	152	158
4	124	248
5	116	164
6	240	228
7	204	172
8	132	184
9	172	142
10	212	208
mean	178	187