NSP
Nordic Standardization Programme
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Withdrawal from 2007-02-01 - SCAN-test methods of physical character

Fibre furnish analysis – General procedure	**SCAN-G 3:90** (withdrawn)	**ISO 9184-1:1998** (replacing SCAN)
Applicable to	All kind of pulps and most papers and boards. Not applicable to impregnated and highly coloured papers and boards.	All kinds of pulps and most papers and boards. Not applicable to impregnated and highly coloured papers and boards.
Principle	Analysis on a small quantity of fibres under microscope. The sample is disintegrated in water and slides containing coloured fibres are prepared. Identification based on stain reactions and morphology. Quantitative testing by counting the number of various types crossing the counting line and converting the number into proportions by applying weight factors.	Analysis on a small quantity of fibres under microscope. Qualitative testing based on stain reactions and morphological characteristics. Quantitative testing by counting the number of crossings with the counting line and converting the number into proportions by applying weight factors.
Apparatus		
Microscope	Magnification: 60x – 120x (identify and count 200x – 500x (study structural details)	Magnification: 40x – 120x (identify and count) 200x – 500x (study structural details)
Filtering device	60 – 80 um sieve opening	Wire cloth 60 – 80 um aperture size Glass filter 15 – 40 um pore size
Procedure		
Qualitative analysis	Examine at least 2 slides	Examine at least 2 slides
Quantitative analysis	Always use 2 slides, total no of counts should exceed 600.	Not less than 600 fibres, on not less than 2 slides.
Report		
Qualitative analysis	List all types of fibres observed	List all types of fibres observed
Quantitative analysis	The percentages by weight of each type of fibres to the nearest whole number	The percentage by weight of each type of fibres to the nearest whole number
Weight factors	Included in table form – report used factors	Included in table form – report used factors

Fibre furnish analysis – Staining procedures	**SCAN-G 4:90** (withdrawn)	**ISO 9184-2:1990 –** (replacing SCAN)
Applicable to	See SCAN-G 3	Paper, board and pulps ISO 9184-2 Staining guide = Appendix A in SCAN-G 4
Field of application		
The Herzberg stain	For differentiating between chemical, mechanical and rag pulps.	
The Alexander stain	For differentiating of chemical softwood pulp from chemical hardwood or straw pulps and from mechanical pulp.	Not covered by ISO
The Lofton-Merritt stain	For differentiating between: - unbleached and bleached in chemical softwood pulps; - kraft and sulphite in unbleached chemical softwood pulps; - unbleached semichemical kraft and sulphite.	

The Graff "C" stain	Can identify most all common papermaking fibres. The use is based on very small differences in shade and intensity of colour. The main application in practice is for differentiating the following types: - chemical, semichemical and mechanical; - bleached kraft and sulphite, of softwood; - kraft and sulphite hardwood, especially when unbleached; - softwood and hardwood, except dissolving grades; - bleached straw and esparto in softwood pulps.	
Procedure		
The Herzberg stain		ISO 9184-3 Herzberg staining test
The Alexander stain	Herzberg stain + $Ca(NO_3)_2$	Not covered by ISO
The Lofton-Merritt stain		ISO 9184-5 Lofton-Merritt staining test
The Graff "C" stain		ISO 9184-4 Graff "C" staining test
Fibre coarseness	Appendix A.3 in SCAN-G 3:90	ISO 9184-6 Fibre coarseness
Weight factor	Appendix A in SCAN-G 3:90	ISO 9184-7 Weight factor
Report		
Qualitative analysis	See SCAN-G 3:90	See ISO 9184-1
Quantitative analysis	See SCAN-G 3:90	See ISO 9184-1
Weight factors	See SCAN-G 3:90	As a dimensionless value to 2 decimal places
Fibre coarseness	-	In mg/m to 3 significant figures

Bursting strength and bursting energy abs.	**SCAN-P 24:99** (withdrawn)	**ISO 2758:2001** (replacing SCAN)
Applicable to	Papers having bursting strength 70 – 1400 kPa.	Paper having bursting strength 70 – 1400 kPa. Determination of bursting energy absorption (BEA) is not included.
Principle	A test piece, over a circular diaphragm, is clamped. Hydraulic fluid is pumped at a constant rate, bulging the diaphragm until the test pieces rupture. The bursting strength and BEA is calculated.	A test piece, over a circular diaphragm, is clamped. Hydraulic fluid is pumped at a constant rate, bulging the diaphragm until the test pieces rupture. The bursting strength is the maximum value of the hydraulic pressure.
Apparatus		
Upper clamp	Diameter: 65 ± 1 mm Circular opening: 30,5 ± 0,1 mm (diameter)	- Circular opening: 30,5 ± 0,1 mm
Lower clamp	Thickness: 3,5 ± 0,5 mm Circular opening: 33,1 ± 0,1 mm (diameter)	Thickness: 3,5 ± 0,05 mm Circular opening: 33,1 ± 0,1 mm (diameter)
Force and pressure	Force:2900 ± 200 N	Pressure: 30 ± 5 kPa
Pump rate	1,6 ± 0,1 ml/s	95 ± 5 ml/min
Procedure		
No of test pieces	Separate results: 20 for each side One value: 10 for each side	Separate results: 20 for each side One value: 10 for each side
Report		
Bursting strength	In kPa to 3 significant figures	To the nearest kPa
Burst index	In megaN/kg to 3 significant figures	In kPa m^2/g to 3 significant figures
Bursting energy absorption	In J/m^2 to 3 significant figures	(not included)

Air permeance – Bendtsen	**SCAN-P 60:87** (withdrawn)	**ISO 5636-3:1992** (replacing SCAN)
Applicable to	Paper and board, having air permeance 0,35 – 15 µm/Pa s.	Paper and board, having air permeance 0,35 – 15 µm/Pa s.
Principle	A test piece (10 cm^2) is clamped between a rubber gasket and annular flat surface. One side of the test piece to atmospheric pressure, the other to a higher pressure, the air pressure difference is constant during the test. The air flow through the test area is measured and the air permeance is calculated.	A test piece (10 cm^2) is clamped between a rubber gasket and annular flat surface. One side of the test piece to atmospheric pressure, the other to a higher pressure, the air pressure difference is constant during the test. The air flow through the test area is measured and the air permeance is calculated.
Procedure		
Test area	10,0 ± 0,2 cm^2	10,0 ± 0,2 cm^2
No of test pieces	At least 10 (5 top side/5 bottom side)	At least 10 (5 top side/5 bottom side)
Pressure difference	1,47 kPa	1,47 ± 0,02 kPa (or 0,74 or 2,20 kPa)
Air flow meter: Rotameter tubes	 1: 10 – 150 ml/min 2: 50 – 500 ml/min 3: 300 – 3000 ml/min	 1: 5 – 150 ml/min 2: 50 – 500 ml/min 3: 300 – 3000 ml/min
Report		
Air permeance	In µm/Pa s to 2 significant figures.	In µm/Pa s to 2 significant figures.
Remarks	The corresponding SCAN-test method (P 21:67) for surface roughness has already been replaced with the corresponding ISO standard (ISO 8791-2:1990).	

Water absorption rate and water absorbency	**SCAN-P 62:88** (withdrawn)	**EN ISO 12625-8:2006** (or EN ISO 12625-10, see below) (replacing SCAN)
Applicable to	Low density paper	Tissue paper and tissue products – Water absorption time and water absorption capacity – basket method
Principle	Water is applied onto the sample and is allowed to penetrate the sample in all directions. During penetration the sample is compressed. Absorption rate in all directions (MC, CD, ZD) and penetration time (by measuring the time needed) are determined and water absorbency is determined (by weighing).	A test piece is placed in a basket and allowed to immerse in water under its own weight. The time to complete wetting is measured, the mass of absorbed water is determined.
Apparatus		
	Absorption tester as described in Clause 5 of SCAN-P 62:88	A water container, a cylindrical basket for the manual test method or a apparatus.
Procedure		
No of tests	At least 6	5 test pieces (76 mm width and a length to give a test piece mass of 5 g)
Report		
Absorption rates (MD, CD, ZD)	In ml/s to 2 significant figures	-
Penetration time	In s to 2 significant figures	-

Water absorption time		The time, in s, required for complete wetting to the nearest 0,1 s.
Water absorption capacity		In g of water/g of sample to the nearest decimal.
Water absorption rate and water absorbency	**SCAN-P 62:88** (withdrawn)	**prEN ISO 12625-10:2006, ISO/DIS 12625-10:2006*** (to be published) (replacing SCAN when published)
Applicable to	Low density paper	Tissue paper and tissue products – Water demand absorption rate and capacity – Differential head pressure
Principle	Water is applied onto the sample and is allowed to penetrate the sample in all directions. During penetration the sample is compressed. Absorption rate in all directions (MC, CD, ZD) and penetration time (by measuring the time needed) are determined and water absorbency is determined (by weighing).	A circular test piece is placed on a weave screen and water is introduced to the bottom of the test piece. The test piece is allowed to absorb water, at a preset differential hydrostatic head, a constant fluid level is maintained. Absorption is measured as a function of time.
Apparatus		
	Absorption tester as described in Clause 5 of SCAN-P 62:88	An absorbency tester having a liquid delivery system, a test table platform, a head adjustment device and an electronic recording system.
Procedure		
No of tests	At least 6	
Report		
Absorption rates (MD, CD, ZD)	In ml/s to 2 significant figures	
Penetration time	In s to 2 significant figures	
Water absorption time	-	
Demand absorption rate	-	In g/s determined after t s. t = 2, 5 or 10 s.
Demand absorption capacity		In g of water/g of test piece or; In g of water/ cm^2 of test piece

* The method is submitted to voting within CEN and ISO, and it will be published during 2007. If you wish to know the current status of the draft, please contact NSP.

Tensile strength, strain at break, TEA and tensile stiffness	**SCAN-P 67:93** (withdrawn)	**ISO 1924-3:2005** (replacing SCAN)
Applicable to	Paper, board and ***pulps (laboratory sheets)***	Paper and board
Principle	A test piece is strained to break at a constant rate of elongation. The tensile force and the elongation are recorded. The tensile strength, strain at break, tensile energy absorption and tensile stiffness are calculated.	A test piece is strained to break at a constant rate of elongation. The tensile force and the elongation are recorded. The tensile strength, strain at break, tensile energy absorption and tensile stiffness are calculated.
Procedure		
Constant rate of elongation	1,7 ± 0,2 mm/s	100 ± 10 mm/min
Test span	100 ± 0,5 mm	100 ± 0,5 mm
Test piece width	15,0 ± 0,1 mm	15,0 ± 0,1 mm
No of tests	10 tests in MD 10 tests in CD 10 tests for isotrophic laboratory sheets.	10 tests in MD 10 tests in CD -

Accuracy in recording the elongation	Tensile strength, strain at break and TEA: 0,1 mm Tensile stiffness: 0,01 mm, in the range 0-1 mm	Tensile strength, strain at break and TEA: 0,1 mm Tensile stiffness: 0,01 mm, in the range 0-1 mm
Accuracy in recording the tensile force	1 % of the true force	1 % of the true force
Report		
Tensile strength	In kN/m to 3 significant figures	In kN/m to 3 significant figures
Tensile index	In kNm/kg to 3 significant figures	In kNm/kg to 3 significant figures
Strain at break	As a percentage with 1 decimal	As a percentage with 1 decimal
Tensile energy absorption, TEA	In J/m^2 to 3 significant figures	In J/m^2 to 3 significant figures
Tensile energy absorption index	In J/kg to 3 significant figures	In J/kg to 3 significant figures
Tensile stiffness	In kN/m to 3 significant figures	In kN/m to 3 significant figures
Tensile stiffness index	In MNm/kg to 3 significant figures	In MNm/kg to 3 significant figures
Elastic modulus	In GPa (not recommended property)	In MPa to 3 significant figures