

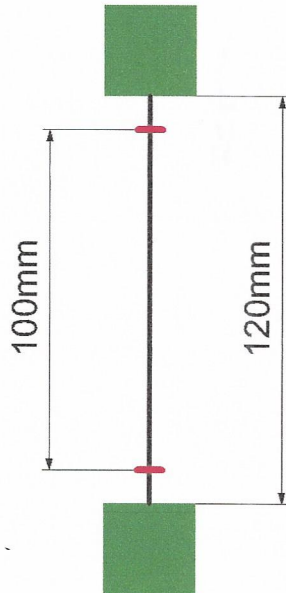
Ref.: Estudio tecnológico: 01-12-2014_1

UHMWPE FIBER PERMANENT DEFORMATION AFTER A 120 NEWTON TENSILE STRENGTH TEST

	EDITED	REVIEWED	APPROVED
Name	F. López	M. Sánchez F. López J.L. Ceamanos	F. Farrer
Date	02-12-2014	02-12-2014	02-12-2014

Tensile strength testing machine preparation:

Distance between grips = 120mm
Distance between marks = 100mm



Number of samples:

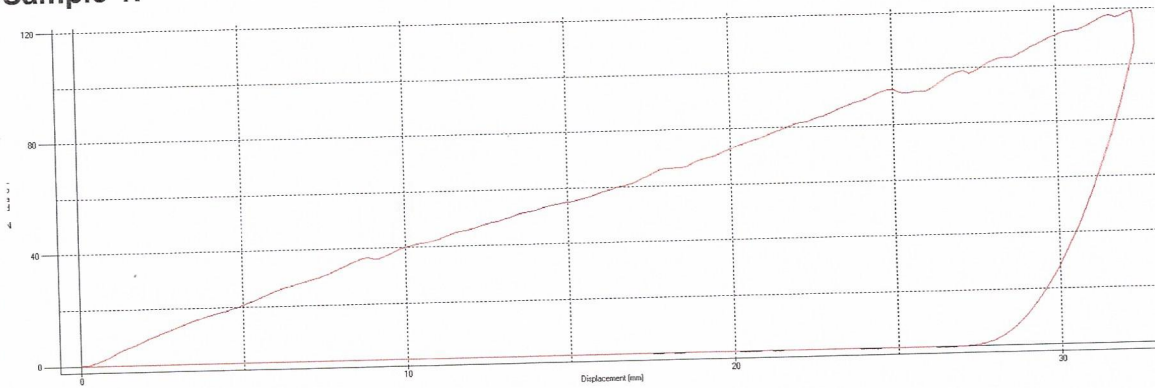
2 fiber samples are tested.

Tensile strength testing machine program:

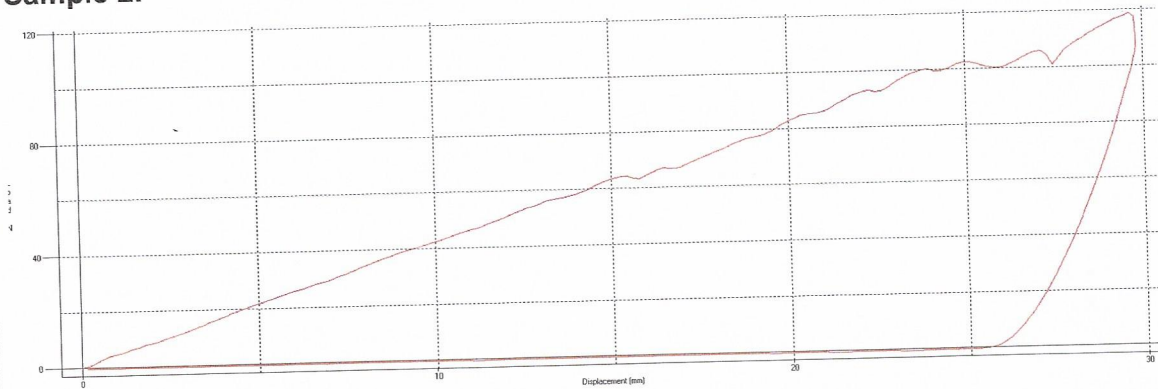
Set Load=0N
Set Elongation=0mm
Run at 10mm/min until load=0.4N
Stop
Set Load=0N
Set Elongation=0mm
Run at 100mm/min until Load=120N
Stop
Run at 100mm/min until Elongation=0mm

7.- Description test steps and test results

Sample 1:



Sample 2:



	Sample 1	Sample 2
Distance between marks before 120 Newton strength test (mm)	100	100
Distance between marks after 120 Newton strength test (mm)	100	100
Permanent deformation after 120 Newton strength test (mm)	0	0

8.- Conclusions

The UHMWPE fiber permanent deformation after a 120 Newton tensile strength test is zero.

DIMA	Estudios Tecnológicos TENSILE STRENGTH AND ELONGATION UHMWPE FIBER	
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TENSILE STRENGTH AND ELONGATION UHMWPE FIBER

	EDITED	REVIEWED	APPROVED
Name	F. López	M. Sánchez F. López J.L. Ceamanos	F. Farrer
Date	01-12-2014	01-12-2014	01-12-2014

DIMA	Estudios Tecnológicos TENSILE STRENGTH AND ELONGATION UHMWPE FIBER	
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	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Displacement at 20N (mm)	3,8	3,0	2,4	6,6	3,3
Displacement at 40N (mm)	6,7	5,7	4,6	9,5	5,7
Displacement at 60N (mm)	10,9	7,9	6,9	12,7	8,4
Displacement at 80N (mm)	14,7	11,2	9,1	16,2	11,4
Displacement at 100N (mm)	18,1	15,4	11,5	19,4	14,2
Displacement at 120N (mm)	21,1	25,1	13,1	21,8	17,5
Displacement at 140N (mm)	24,2	28,5	-	-	-
Displacement at break (mm)	25,7	29,3	14,9	28,2	18,5

	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Tensile strength at break (Newton)	150,01	147,32	137,34	138,90	127,42

8.- Conclusions

	Maximum	Minimum	Average	Standard deviation
Displacement at 20N (mm)	6,6	2,4	3,82	1,70
Displacement at 40N (mm)	9,5	4,6	6,44	1,94
Displacement at 60N (mm)	12,7	6,9	9,36	2,38
Displacement at 80N (mm)	16,2	9,1	12,52	2,88
Displacement at 100N (mm)	19,4	11,5	15,72	3,18
Displacement at 120N (mm)	25,1	13,1	19,72	4,73
Displacement at 140N (mm)	28,5	24,2	26,35	2,15
Displacement at break (mm)	29,3	14,9	23,32	6,16

	Maximum	Minimum	Average	Standard deviation
Tensile strength at break (Newton)	150,01	127,42	140,20	9,09