



**CERTIFICATE OF
QUALITY
N° 1402 CQ 16**

Valid from : 26/03/2017
to : 26/03/2020

Geomembrane : COLETANCHE ES 4

Labelled on roll as : **COLETANCHE ES 4**
Distributed by : **AXTER**

producer : **AXTER**
manufacturing site : **COURCHELETTES - FRANCE**

- The entreprise requesting this certificate is ISO 9001 certified.
- The geomembrane is exclusively manufactured from non-recycled raw material.
- The geomembrane does not contain more than 3% of processed raw material, with identical formula, from the same manufacturing unit (except selvedge cuts).

PRODUCT FAMILY : MODIFIED BITUMEN*		Certified value		95% relative range							
CERTIFIED CHARACTERISTICS				Min		Max					
PHYSICAL		Maximum production width : 5,2 m									
		Functional thickness (mm) (EN 1849-1)		5,00		5,00		5,75			
		<ul style="list-style-type: none"> ▪ Smooth (average value) ▪ Non smooth ▪ Minimum individual value 								4,50	
		AND		Mass per unit area (g/m ²) (EN 1849-1)		6100		6100		7015	
MECHANICAL		Static puncture : (NF P 84-507)		550		495		-			
		<ul style="list-style-type: none"> ▪ Strength (N) ▪ Displacement (mm) 								14,0	
		Tensile strength (kN/m) (EN 12311-1)		MD	CD	MD	CD	MD	CD	MD	CD
		<ul style="list-style-type: none"> ▪ Strength at 15% elongation ▪ Strength at break ▪ Elongation at break 		19,0	15,0	14,3	11,3	-	-	-	-
HYDRAULIC		Water permeability (NF EN 14150)		COMPLIANT							
*Verification of bitumen product family was carried out using the characteristics described on the back page.											

MD : Machine Direction CD: Cross Direction
Tests are performed according to the quoted standards completed with the collection of procedures.

Approved by the Director,
P. LEBON

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Certification ensures compliance of the manufactured product with the enterprise declared performances. In no way, it guarantees the appropriateness of the certified product to the technical requirements of projects. It is the sole responsibility of the project designer to insure that specific standards required for any particular application, are justified by the use of specific products. ASQUAL can not be held responsible for any problems arising from a mismatch of the certified product with its application.

The following characteristics, checked during manufacturing or verified by an ASQUAL authorized laboratory, reflect the durability and constancy of the product.

Product family definition (according to Technical Rules annex 10)

Modified bitumen geomembrane

- a) Binder homogeneity: impregnation and coating should be done with the same binder.
- b) Maximum filler rate:
- 35 % of the filler added binder (mastic) collected in production by solvent extraction process or calcination
 - 35 % by solvent extraction process on the finished product or by calcination of the dry recovered mastic on the finished product.
- The producer will provide correlations between Ring and Ball Temperature values issued from 10 geomembrane dry scrapings, and those originating from filler added binder samples during production.

Conservative samples of these shall be made.

- c) Ring and Ball Temperature (TBA) in accordance with NF EN 1427 on the filler added binder (mastic), filler added binder samples during production or originating from dry scrapings on the finished product.
 $110^{\circ} \text{C} \geq \text{TBA} \geq 140^{\circ} \text{C}$

- d) Cold bending of the geomembrane in air according to UEAtc (*) with 20 mm mandrel (**)
cold bending $\leq - 20^{\circ} \text{C}$

- e) Ageing of the filler added binder (mastic) at 70°C during 6 months in a ventilated test oven, then tested as following:

TBA on filler added binder (mastic) aged according to NF EN 1427

$\text{TBA} \geq 100^{\circ} \text{C}$

Cold bending in air according to UEAtc (*) with a 20 mm mandrel, on a 2 mm film of aged filler added binder (mastic)

$\text{PAF} \leq - 5^{\circ} \text{C}$

Elastic recovery of a 2mm aged filler added binder film (according to UEAtc*)

For a 25 % elongated sample, remanence $\leq 20 \%$

(*) Specific UEAtc directives for the agreement of homogeneous waterproofing membranes with elastomeric SBS binder. Supplement n° 246-4 of the 1984 January/February ATEC newsletter.

(**) 30 mm diameter if the geomembrane thickness is greater than 5 mm.

IMPORTANT NOTE :

For each product - family, tests can be done on samples taken by the auditor.

Associates materials recommended for welding :

No associate material. Junction between 2 COLETANCHE geomembranes is done by torch welding.