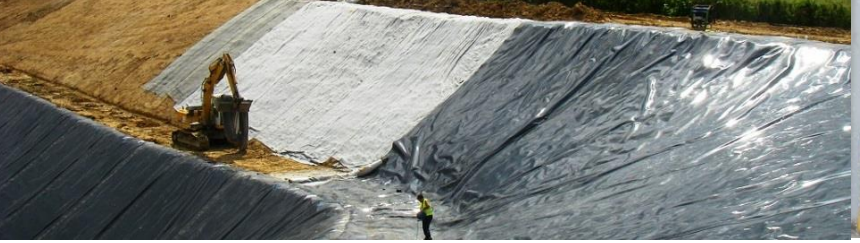


EUROGEO LILLE 2025 15-18 September

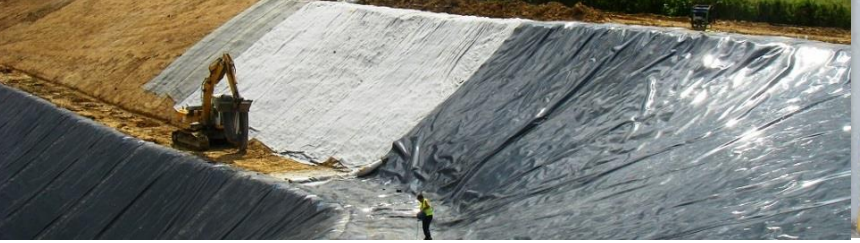
ASQUAL SERVICE
APPLICATION DE GÉOMEMBRANES SOUDAGE

ASQUAL SERVICE
APPLICATION DE GÉOMEMBRANES RESPONSABILITÉ DE CHANTIER

ASQUAL
GÉOTEXTILES ET PRODUITS APPARENTÉS CERTIFIÉS

ASQUAL
GÉOMEMBRANES CERTIFIÉES

ASQUAL LE PROGRÈS PAR LA QUALITÉ CERTIFIÉE



Your contacts at ASQUAL

Mélanie ALCARAS / Fadila MERAANE

melanie.alcaras@asqual.com / fadila.meraane@asqual.com

Arnaud RAGOT

arnaud.ragot@asqual.com

Fadila MERAANE

fadila.meraane@asqual.com

Certified géomembranes

Application of Geomembranes Welding

Application of Geomembranes Site of responsability

Geotextiles and Related products

ASQUAL GÉOMEMBRANES CERTIFIÉES

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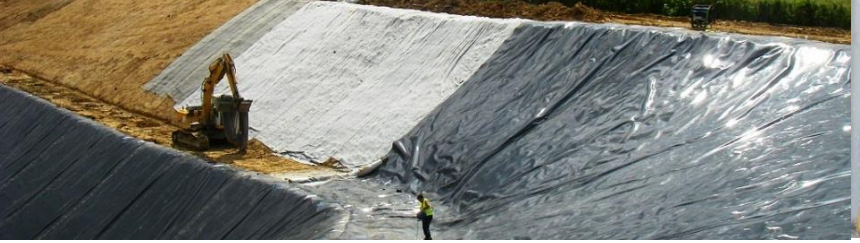
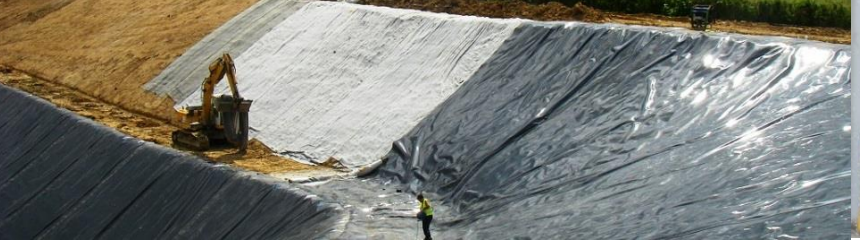


What is ASQUAL ?

The French certification body (CB) for GSY ASQUAL certification and the French notified body for the CE marking

Status	• Non-profit association, created 40 years ago by technical institutes for indutries
Mission	• Promotion of quality of technical textile: medical devices, personnel protective equipments, constructive products
Activities	• CE marking (CE 0334) • Quality Product Certification • Proficiency Testing Programs, Standardisation, involvement in working group, stakeholders information…



Genesis of the French quality certification Schemes

60 – 70's : Increase of the use of GSY in Construction Works

Development of technical recommandations

Increase of various GSY offers

Problematic for designers and users?
Reliability of the product specifications for the design of civil engineering works

1986: First working Group of the French Committee of Geosynthetics (CFG – IGS French Chapter) for drafting the product specifications for GTX
1993: Working Group of the CFG for drafting the product specifications for GBR
1995: Working Group of the CFG for drafting the service specifications for GBR installation



ASQUAL certification, it is…

- 250 certified GTX and 26 manufacturers
- 37 certified GBR and 16 manufacturers
- 55 companies granted for Installation of Geomembranes services with 363 welders and 106 construction site managers.
- One scheme of round robin test for GTX (GBR and installation of GBR in progress for 2026)

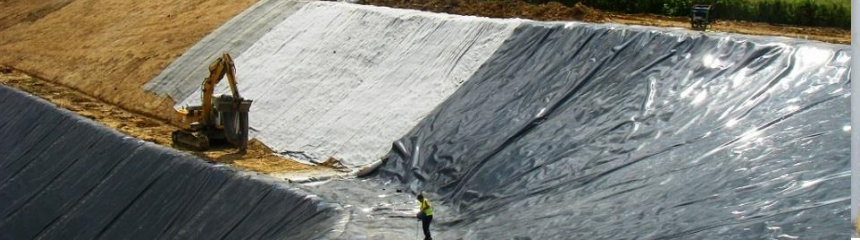


What is the added value of the ASQUAL certification schemes ?

- **Inclusive Stakeholder Participation**: All stakeholders are involved in both drafting requirements and awarding certifications to ensure diverse perspectives are considered.
- **Ongoing Monitoring**: Regular inspections and surveillance are systematically carried out to maintain compliance.
- **Claims Management**: Certified product/service user complaints are actively managed to ensure quality and accountability.
- **Trust Through Independence**: Independent certificates of conformity provide transparency, reliability, and trust for both users and specifiers.
- **Continuous Improvement**: Certification schemes are regularly updated to better meet the evolving needs of manufacturers, service providers, and project stakeholders.

In a technical point of view:

- **Optimized Design Through Reliable Product Data**: Designers can adjust safety factors more accurately when using certified products with proven, reliable characteristics.
- **Enhanced Durability via Certified Installation**: Construction durability is improved when certified service providers install products according to industry best practices.



ASQUAL
GÉOTEXTILES ET PRODUITS APPARENTÉS CERTIFIÉS

ASQUAL Geotextiles and Related products

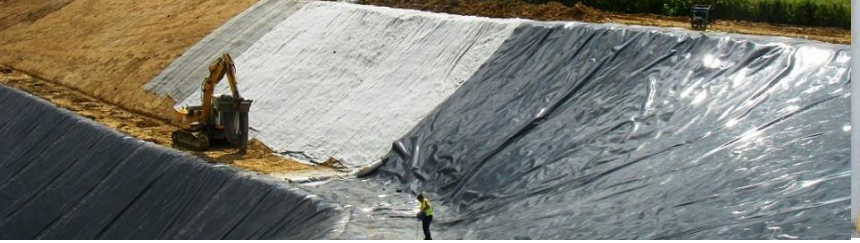
Product requirements: relative ranges of variation of the descriptive, mechanical and hydraulic characteristics linked to the declared functions (separation, filtration, reinforcement, drainage, protection)

Scope of certification: geotextiles and related products

Rules of certification: **GTX & RP**

Assessment (first application):
- on-site quality system inspection for ensuring the reproducibility of the product's characteristics
- random sampling of two rolls of the candidate products
- tests of the sample in an independent and accredited laboratory

Assessment (surveillance): unannounced inspection, random sampling of two rolls and tests of the sample are done within the 3 years



ASQUAL
GÉOTEXTILES ET PRODUITS APPARENTÉS CERTIFIÉS

Requirements

Rules of certification: **GTX & RP**

13% = Σ measurement incertainties from the product (raw materials) + production parameters + testing methods (R & r) of internal and external laboratories +…

FUNCTIONS	Filtration	Separation	Drainage Filtration	Protection	Reinforcement
			STICS		
				± 20 %	± 20 %
				± 10 %	± 10 %
				- 13 %	- 5 %
				not required	- 20 %
				+ 23 %	+ 20 %
			%	+ 25 %	+ 25 %
Punc			not required	- 30 %	not required
Static puncture test		10 %	not required	not required	- 10 %
HYDRAULIC CHARACTERISTICS					
Water permeability normal to the plane	- 30 %	- 30 %	- 30 %	not required	not required
Opening size	± 30 %	± 30 %	± 30 %	not required	not required
Water flow capacity in the plane	not required	not required	-30 % *	not required	not required
Compressive creep properties	not required	not required	- at 2 min -at 1 h - at 1008 h	not required	not required
Tensile creep	not required	not required	not required	not required	See annex 3



ASQUAL Geotextiles and Related products
What's new ?

- **Minor revision of the technical reference :** SI 012 v9.3
  - Clarification on contradictory tests (instead of appeal tests)
  - Streamlining the process: automatic triggering of supplementary testing and contradictory testing
  - Simplification of the renewal file (Renewal products without modification)
  - Removal of systematic information on the list for suspended products.
  - Precisions on the expression of the values : rounding is defined towards the most restrictive (safest) value of the characteristic concerned



ASQUAL Geotextiles and Related products

What's new ?

- **New certificate format**
  Revision v9.3

ASQUAL
GÉOTEXTILES ET PRODUITS APPARENTÉS CERTIFIÉS

CERTIFICAT DE QUALITÉ PRODUITS

N° XXXX CQ 24

CERTIFICAT DÉLIVRÉ PAR :
ASQUAL 14, rue des Reculettes - 75013 PARIS
Tél. : 01 55 43 07 20

CERTIFICATE OF QUALITY
GEOTEXTILES AND RELATED PRODUCTS

Valid from : 20/09/2024
To : 21/09/2027

COMMERCIAL NAME
Trade Mark xxxx
Name xxxx

Mark Holder xxxx
Adress of manufacturing site xxxx
xxxx

Product type : GTX-NW
Main Polymers : PP
Maximum width : xx,00 m

ASQUAL certifies that the geotextile covered by this certificate complies with the ASQUAL Technical Reference "Geotextiles and related products" revision no. 9.3 of xx/xx/2024 and with the application of RME rev 08 of 02/01/2024.

For the function(s) claimed below:

FUNCTIONS	FILTRATION	SEPARATION	DRAINAGE FILTRATION	REINFORCEMENT	PROTECTION
Function(s) Claimed	X	X	X		

The certified value ranges for the relevant characteristics are on the back of this certificate.

Approved by the director
Pierre LEBON

Certification guarantees the conformity of the manufactured product to the nominal values announced by the manufacturer.
It in no way guarantees the suitability of the certified product to the technical constraints of the project.
It is the designer's responsibility to fully fulfill their mission and determine the performance requirements for the application in question, which may justify the use of specific products. ASQUAL cannot be held responsible for any problems resulting from a poor match between the certified product and the application.

ASQUAL
GÉOTEXTILES ET PRODUITS APPARENTÉS CERTIFIÉS

CERTIFICATE OF QUALITY
GEOTEXTILES AND RELATED PRODUCTS

CERTIFICATE N° : XXXX CQ 24
FUNCTIONS : F+S+DF

DESCRIPTIVE CHARACTERISTICS		VNAP (1)	Limit values (2) Mini	Maxi
Nominal thickness below 2 kPa (mm) NF EN ISO 9863-1		1,35	1,08	1,62
Mass per unit area (g/m2) NF EN ISO 9864		105	95	116
MECHANICAL CHARACTERISTICS				
Tensile strength (kN/m) (kN/m)	MD	12,0	10,44	
NF EN ISO 10319	CMD	12,0	10,44	
Elongation at maximum load (%)	MD	63%	50%	77%
NF EN ISO 10319	CMD	63%	50%	77%
Dynamic perforation resistance (mm) NF EN ISO 13433		17,0		21,3
Puncture test (kN) NF G 38-019		2,9	2,03	
Static puncture test (CBR test) (kN) NF EN ISO 12236		1,55	1,40	
HYDRAULIC CHARACTERISTICS				
Water permeability normal to the plane ($m.s^{-1}$) NF EN ISO 11058		0,069	0,048	
Opening size (µm) NF EN ISO 12956		73	51	95

Configuration	Grad (3)	Cont (4)				
Water flow capacity in the plane ((l/s)/m) NF EN ISO 12958-1	Foam / Foam	1	20	MD	5,3E-04	3,7E-04
				CMD		
	Foam / Foam	1	100	MD	2,3E-04	1,6E-04
				CMD		

SP : Sens production; ST : Sens travers; NR : Non requis

Compression behaviour NF EN ISO 25619-1	2 min	1 h	1008 h
Thickness (mm) at a maximum stress chosen for in-plane flow capacity kPa			

The expression of the values in this certificate (significant and rounded figures) is defined according to the terms of Appendix 2 of the Technical Reference.

RRV95 corresponds to the confidence interval within which at least 95% of the measurement values for a given characteristic for certified products fall. In the case of multi-function products, the most stringent RRV95 applies.

(1) VNAP : Nominal Value Announced by the Manufacturer
(2) Acceptance limit values expressed as a function of RRV95 for the claimed functions.
(3) Pressure gradient
(4) Pressure stress (kPa)

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14, rue des Reculettes - 75013 PARIS
01 55 43 07 20
www.asqual.com - info@asqual.com
N° Siret : 38926579400013 - N.A.F. : 9499Z
Association Qualité sans but lucratif

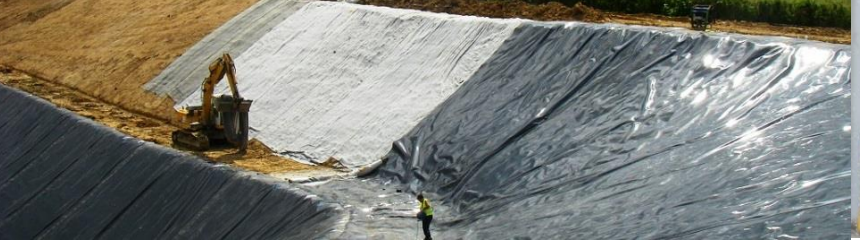


ASQUAL Geotextiles and Related products
What's new ?

- **New Technical Reference System- Revision 10 : (under development)**

For better product selection, ensuring certified performance for better work quality, and increasing alignment with European standards and regulation.

- **Certification by function F/S, D/F, P, R** : Certification now focuses on specific functions for each product type, with updated certificates displaying only certified functions (today functions are claimed).
- **Performance and Consistency Standards**: Minimum performance thresholds are set by function, with production consistency monitored through indicators like thickness and mass per unit area.
- **Improved added value on Quality System** : Verification of the compendium tests methods application, Strengthening audit verifications in laboratories (calibration), participation of the ASQUAL RRT.



ASQUAL Geomembranes

Product requirements :
Formulation (virgin polymers and stabilizers content) physical and chemical characteristics (OIT, density, UV resistance, …), relative ranges of variation of the descriptive, mechanical and hydraulic characteristics

Scope of certification :
Geomembranes (polymeric and bituminous)

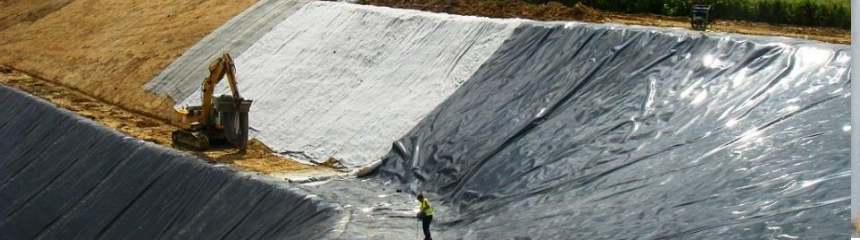
Rules of certification: **GBR**

Assessment (first application):
- on-site quality system inspection for ensuring the reproducibility of the product's characteristics

- random sampling of two rolls of the candidate products

- tests of the sample in an independent and accredited laboratory

Assessment (surveillance):
Out of factory sampling within the 3 years

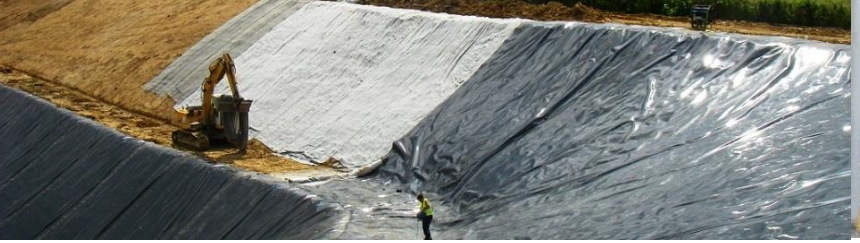


ASQUAL
GÉOMEMBRANES CERTIFIÉES

ASQUAL Geomembranes - Requirements

Family of product (material)	PVC-P	PEHD	PP-F	EPDM	BITUMINOUS
FORMULATION, PHYSICAL AND CHEMICAL CHARACTERISTICS					
The physical and chemical characteristics of polymers and formulation are inspected during the audit and tested according to the rules of certification					
PHYSICAL CHARACTERISTICS					
Functional thickness (mm) - Smooth GBR (average value) - Non smooth GBR (average value) - Minimum individual value	 0 / +6 % 0 / +15 % -5 %	 0 / +6 % 0 / +15 % - 5 %	 0 / +6 % 0 / +15 % - 5 %	 -5 / +5 % -5 / +10 % -10 %	 0 /+ 15 % 0 / + 15 % - 10 %
Mass per unit area	0 / +6 %	0 /+6 %	0 / +6 %	0 / +5 %	0 / +15 %
MECHANICAL CHARACTERISTICS					
Static puncture - strength at maximum force - strength at maximum displacement - yield strength - displacement at yield	 - 10 % - 15 % - -	 - 10 % - 15 % - -	 - - - 10 - 15	 - 10 % - 15 % - -	 - 10 % - 15 % - -
1 – Tensile strength: - at 15 % of elongation - at 50 % of elongation - at maximum stress - at 250% of elongation	 - 10 % - - - 15 %	 - - - - 10 %	 - 15 % - 15 % - - 15 %	 - 10 % - - - 15 %	 - 25 % - - 25 % -
2 – Elongation at the maximum stress	-	-	-	-	- 20 %
3 – Yield point strength	-	- 10 %	-	-	-
4 – Yield point elongation	-	± 15 %	-	-	-
HYDRAULIC CHARACTERISTICS					
Water permeability	Flow < 0,1 l/j/m²				

Rules of certification: **GBR**



ASQUAL Geomembranes - What's new ?

- **Technical reference V14.3 ongoing**

→ Major modification : Measures for the achievement of the **follow-up controls** : <u>if it not possible to sample outside the factory, it will be allowed in the factory</u> (V.1.2, appendix 6 et 7).

This requirement is indicative during a one year period, without suspensive effect regarding the certification in case of non-compliant results.

- Technical reference V15 : Start of discussions, with manufacturers, in 2026.



ASQUAL SERVICE
APPLICATION DE GÉOMEMBRANES SOUDAGE

ASQUAL Application of Geomembrane

Service requirements:
preparation, adjustment of welding machines, assembly of geomembranes, self-inspection and realization of singular points

Scope of certification:
Welding of the geomembranes for the geomembranes installation of waterproofing constructions

Rules of certification: **Welding - GBR installation**

Assessment - first application:
- Knowledge and skills of the welder about the GBR and the "state of the art" of the welding
- Calibration and use of the welding and inspection equipment's,
- On-site self-inspections of the quality of the weld
- Tests (resistance and break modes) on a welded sample in an accredited laboratory.

Assessment (surveillance):
Inspection on "construction site" conditions of the same requirements as the initial inspection



ASQUAL Application of Geomembrane

Service requirements:
Supervision of one or more teams, ability to take decision(s) relating to the site(s) managed, representation of the company on the site(s) managed, management of the internal quality control of the site(s).

Scope of certification:
Construction site managing for the geomembranes installation of waterproofing constructions

Rules of certification:
construction site managing GBR installation

Assessment - first application:
Three dossiers of “end of construction review and inspection” are evaluated (working plan records) including : support and material receipt, weld inspection, working plan follow-up, nonconformities, human resources and materials on site and file of interventions follow-up on works

Assessment (surveillance):
Inspection on “construction site” conditions of the same requirements as the initial inspection

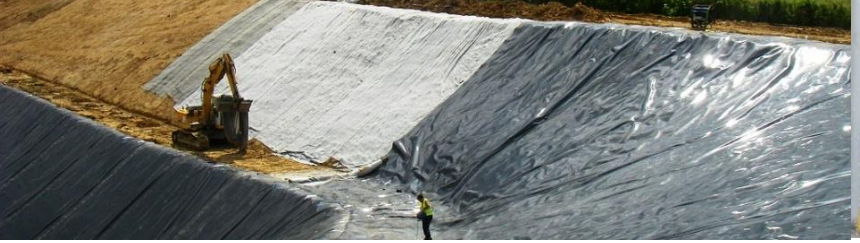


ASQUAL Application of Geomembrane - What's new ?

- Re-introduction of hot air welding on PP-F material, in addition to extrusion welding (with modification of extrusion welding on geotextile).

  There is no longer a distinction between PP-F extrusion certification and PP-F hot air certification on the list and on the welding cards.

- As part of a continuous improvement process, the technical reference document "Geomembrane Application Service - Site Responsibility" is now also undergoing revision. (+ questionnaire)



What's new ?

CE marking
Construction products

The **new Construction Products Regulation CPR 2024/3110** has been published in the Official Journal of the European Union (OJEU).
Its effective date is January 7 2025, and its application date is January 8 2026.

Newsletter no. 1 - NEW CPR.docx