

Functions and Actual Cases of the Erosion Control Mat made of Non-Woven Fabric

January 7, 2025 Nobuyuki Kohno Takino Filter Inc.



Company introduction





Company motto "Restoration of Nature"



We contribute to society by providing products and services that excel in <u>creating a green, soil</u>, <u>and water environment</u>.

Company name	a Takino Filter Inc.	Sales offices	Hokkaido office
Address	904-16, Hayama-2-chome, Kudamatsu-shi, Yamaguchi-ken, 744-0061 Japan	Constant and the second	
Foundation	June 6, 1994		
Capital	JPY 50,000,000	Kyushu office	~
President	Hiroyuki Shiga		FRU
Employees	51 staff (As of September 21, 2024)		53215
Business	Development, Manufacture and Sales of Erosion Control and Vegetation mat to use for the slope protection		Kanto office
Risunavi Squirrel		Head office Chugoku office Shikoku office	ce ce

Introduction





Structure of the Erosion Control Mat made of non-woven fabric Type SP





Slope Protection mat, that is called "Type SP"Not containing Seeds



Erosion control mechanism

Structure of "Web"



Extremely High Porosity

Non-woven fabric made of characteristic fibers

The web is very flexible and keeps the constant porosity even if it rains.



Erosion control mechanism



Raindrop impact is cushioned and the rainwater infiltrates into the slope soil.



Soil grains and the web fibers become entangled, so the friction resistance is created on the slope surface.



After the soil water becomes saturated, the rainwater flows out in through the web.



Rainwater flows out in through the web and over the protection net surface with little resistance.



Erosion control mechanism



The web fibers entangle many surface soil grains and adhere to the surface soil tightly. The surface soil does not run off by this function.

Erosion prevention function



Large scale erosion control experiment with the artificial rainfall apparatus in National Research Institute for Earth Science and Disaster Prevention, Japan in 1991

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Experiment condition: -Presence/absence of muddy water at bottom after 10 min. of the rainfall of 100mm/h.



Erosion prevention function

Slope prepared for Test

Products applied to slope

After 50mm/h rain

After 100mm/h rain

ASTM D6459 Erosion Control Performance Evaluation (TRI Environmental Inc., South Carolina, US, Dec. 2017)





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Rain-fall conditions:

50mm/h rain-fall for 20min. and then 100mm/h rain-fall for another 20min.

Result: Muddy water was not collected.



The critical flow rate in the overflow experiment at the slope gradient of 30 degrees



The critical flow in the combination of the Type SP and the vegetation was much higher than the vegetation or sole use of the Type SP.

Penetration of germinated plants Takino Filter



After the germination from the seeds under or on the Type SP, the plants can penetrate through the web.



Water holding function



The web fibers catch the night dew and retain the water in the web.

Soil water holding function



Soil water potential at 12 cm under the soil surface in Yamaguchi University, Japan in summer, August, 1998



The soil water potential under the Type SP was kept higher than the bare soil.

Soil temperature control function



The soil temperature under the Type SP was kept lower than the bare soil.

Improvement of soil microorganisms **T** Takino Filter

Shirasu (volcanic ash) soil slope in Miyazaki Prefecture



At installation work

After 2 months

The soil microorganisms under the mat were much more than the bare soil and they increased over time.



Improvement of soil environment **T** Takino Filter



Application in the Industrial estate development site slope in Indonesia





Application in the Villa resort development site slope in Indonesia

SP-45 <u>100m²</u> SP-60 <u>100m²</u> Construction : November 28-29, 2016











Application in the private field slope **T** Takino Filter in Vietnam

Combination of the Type SP with the seed broadcasting







After 1year and 9 months (July 13,2020)





Application in the riverside slope in Nepal



Combination of the Type SP with the steel wall material using welded wire mesh

Construction : June, 2012



Application in the devastated bare slope in Bhutan



Combination of the Type SP with the non frame construction method

SP-45 5,000m² Construction : April to May, 2016



Application in the road construction **T** Takino Filter slope in the Philippines

Combination of the Type SP-45wn with the non frame construction method and hydroseeding

Construction : February, 2019



Photos provided by PNS ADVANCED STEEL TECHNOLOGY, INC.





Thank you for your attention

If you want to know more information, please search for "Takino Filter" or see the URL, "https://takino.co.jp"

