



# A REVIEW ON BERMUDA GRASS FINISH AND ITS APPLICATIONS IN TEXTILES

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## ABSTRACT

Numerous environmentally hazardous processes are needed in the development of clothing from its fibre stage to its fabric stage. Therefore, improving the sustainability of the textile sector is crucial. In order to prevent the world from being impacted by the dangerous effects of chemicals, a wide range of techniques and inventions linked to textile manufacture have been developed recently. The developing design philosophy and fashion of sustainability, sometimes known as eco textiles, aims to establish a system that can be sustained indefinitely in terms of human effect on the environment and social responsibility. This analysis provides a general overview of the textile sector, stressing environmentally friendly finishing techniques created to increase the sector's sustainability.

**Key words:** Sustainable Textile Finish using Bermuda Grass

## INTRODUCTION

Textile materials are vital piece living organism. In this essentially to roof the living organism for assurance. In comparison to synthetic filaments, natural material strands are more vulnerable to attack. As a result of transformations like acidic essential hydrosis and urination, human skin simultaneously supports the growth of microscopic organisms, while a great degree substantial barrier is conceivably present to prevent skin microbe. Since materials are used in addition to the second layer of skin, being mindful of environmental impact while choosing materials is one of the major challenges today. Based on global consumer requests, it can be assumed that new eco-friendly forms are now being investigated.

Eco-friendly clothing and material manufacturers must prioritise using herbal finishing techniques for fabrics. Eco-friendly techniques are used in textile production. Producing textiles eliminates the need for texture in favour of natural or herbal ingredients. Everyone is shifting to Ayurveda-based choices for supportability claim to fame finishes, which use plants with their unique finishing touches like anti-microbial, fragrance, anti-bacterial, self-covering, protecting, and herbs coating. These herbal varieties can be used in garments, clothing accessories, and other things in addition to their many therapeutic uses. The herbs used can be found in abundance in India.

## SELECTION OF FABRIC

To promote sustainability, use more natural resources, and cut back on dangerous synthetic and chemical materials, we can pick natural fibres for finishes like Cotton, Silk, Hemp, and Jute. Natural textiles make it simple to accomplish the desired result in textile finishing.

Only organic materials can speed up the process in an environmentally acceptable manner. Chemicals and synthetic fabrics will let the process down by utilising harmful, weighty materials.

## VARIOUS HERBAL FINISHES

The roots, stems, leaves, blossoms, and fruits of natural plants and herbs are used to create specialised finishes, which are then applied to various textile fabrics such viscose rayon, cotton, and wool. These fabrics are used to create goods where the maxi material is in contact with human skin.

Plants like catechus, pomander, madcap, risin oil, basil, lemon, saffron, hinah, kadipetta, amla, peepal leaves, garlic, tulsi, neem, spinach leaves, piper betel leaves, lemongrass leaves, Bermuda Grass, champas, jasmine, lavender, sandalwood, rose water, manjith, and rubia cordifolia are examples.

Numerous recently developed, eco-friendly finishes, including those that are antibacterial, antiseptic, self-extinguishing, and mosquito repellent, have been tested on a variety of fabrics using the extraction and microencapsulation methods.

## SELECTION OF HERB

Ayurvedic practitioners highly value the outstanding medicinal powers of Bermuda grass, also known technically as *Cynodon dactylon*. It is a weed that is widely produced in tropical temperature zones, including Bermuda, North America, the African savanna, India, and other tropical nations. The sword-shaped leaves have rough edges and a greyish green tint. Bermuda grass can withstand any kind of harsh weather and may flourish in dry conditions.

Conch grass, dog's tooth grass, doob grass, durva grass, and devil's grass are just a few of the numerous names for it. The phrase "Bermuda grass" refers to the plant, which is also known as "dog's tooth" because it was first discovered in Bermuda (USA), where it is used to cure digestive issues in animals, particularly in canines.

Durva grass is served to Lord Ganesha on auspicious days in India since it is revered as a sacred plant and is his favourite food. Other common names for it include Karuka in Malayalam, Dhruva grass in Hindi and Sanskrit, Arugampul in Tamil, and Garikagaddi in Telugu.

Due to its outstanding therapeutic characteristics, Bermuda grass has been revered and used frequently in Ayurveda and Siddha medicine for more than a thousand years. Traditional medicine uses Bermuda grass' potent antiviral and antibacterial qualities to cure a variety of conditions, including piles, skin and eye issues, bleeding disorders, and other gynaecological issues. The possible antibacterial, astringent, cyano-genetic, demulcent, depurative, diuretic, and emollient properties of Bermuda grass have also been noted. Since ancient times, this miracle grass has been highly prized for its essential medical qualities.

The nutritional profile of Bermuda grass is quite rich. Calcium, phosphorus, potassium, salt, manganese, flavonoids, alkaloids, carbohydrate, enzymes—all of these minerals are abundant in Bermuda grass and contribute to its multitude of health advantages.

The textile industry is primarily going towards environmentally friendly or sustainable textiles, which involves using non-toxic textile processes to create fabrics with a variety of finishes for uses such as anti-viral, anti-bacterial, etc. Bermuda grass also has these capabilities to protect the user from bacteria, pests, and other irritants.

### **EXTRACTION OF THE HERB**

The current works were created and assessed using Bermuda grass. The dried plants were bought. The dried dry grinding apparatus. Three steps were involved in the extraction process: drying, grinding, and extraction. Two different extraction techniques—aqueous extraction and methanol extraction—were used for all of the chosen plants.

Extraction through aqueous method, for mixing the herbal powder with hot water at 100°C for one hour, 10 g of dried herb powder was combined with 100 ml of hot water in a shaking water bath. The extract solution then dropped to 40°C for further use.

For the methanol extraction of the chosen herbs, the approach below was employed. In order to use the methanol, it was evaporated in a chamber at 4°C after thoroughly mixing 10 g of the herbal powder with 80/20ml of water.

### **HERBAL FINISH**

This procedure was carried either with or without the use of an eco-friendly crosslinking agent. First, a dip procedure was used to treat the fabric with a herbal extract. The fabric was soaked in the herbal extract for 30 minutes before being dried. The final cloth was then evaluated for textile use. Second, a natural cross-linking agent was used to treat the fabric with the herbal extract as follows: 4% Aluminium Sulphate  $Al_2(SO)_3$  was added as a catalyst, along with 2% of a herbal extract and 6% of glyoxal. The treated cloth was padding dipped, dried at 80 degrees for 5 Mins, then cured at 120 degrees for 3 Mins.

### **BENEFITS OF BERMUDA GRASS FINISH FABRIC**

Various skin conditions like eczema, psoriasis, treating wounds, and fungal infections can all be cured with the goodness of Bermuda finish. Leprosy, eczema, itching, and skin rashes can all be treated with Bermuda grass's antibacterial and anti-inflammatory properties. Fungal infections can be treated by applying the treated materials to the afflicted skin area. The skin is also protected from damaging UV radiation by it.

The antifungal and antibacterial qualities of Bermuda grass make it suitable for use in medical textiles such as bandages, sanitary napkins to prevent bacterial infection during menstruation, wipes, etc.

Once applied to textile fabrics, these herbal finishes showed good results and products were made accordingly. Where human skin comes into contact with textiles directly, products like eye pads made of cotton, yoga mats, carpets, and clinic chairs are also created.

### **CONCLUSION**

Our future will unavoidably include sustainable finishing techniques using Bermuda grass, with all of its opportunities and limitations. Its applications are vast and varied. Products using the researchers' technique are beginning to appear on the market, and they are optimistic. Only human ingenuity will be

able to fully realise the potential of eco-friendly textile finishing. It is true to claim that the industrial revolution is moving slowly but surely towards sustainable finishes.

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