

## RESEARCH ON THE PRODUCTION OF MEDICAL SUITS BASED ON FLAX FIBER FABRICS

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**Annotation :** This article examines the possibilities of using linen gauze in the production of medical gowns. The naturalness, ecological purity and hygienic properties of flax fiber have been evaluated as a suitable material for use in the field of medicine. In the study, aspects such as air permeability, natural protective properties against bacteria and the ability to protect the skin of the linen fabric are analyzed.

**Keywords:** Flax fiber, medical gown, environmentally friendly, hygiene, tolerance, feature, natural.

Linen has the most valuable, truly unique hygienic properties, such as high air permeability and the ability to remove heat and moisture. Flax is good for residents of both southern and northern regions. In hot weather, the skin temperature of a person wearing linen clothes is 3-4 degrees lower than that of clothes made of cotton or silk fabrics.

The distinctive properties of linen fabrics are: smoothness, moderate hardness, the ability to absorb moisture droplets from the surface it comes into contact with, minimal electrification, low stickiness, which creates a pleasant feeling in a person when his skin comes into contact with linen. Sufficient air permeability, hygroscopicity and moisture capacity ensure rapid removal of heat and moisture from the human body. Even the presence of a small amount of flax fiber (up to 10%) completely eliminates the electrification of the fabric. Therefore, fabrics blended with linen are very popular now.

Scientists have proven that the use of linen prevents a number of diseases, since linen has rare bacteriological properties - neither bacteria nor fungi can penetrate it. This completely clean ecological fabric is a natural antiseptic. Linen kills germs, infections, suppresses harmful microflora, wounds under linen bandages heal faster. Flax contains silica, which inhibits the growth of bacteria. Now flax is an invaluable and unique plant material used in surgery for internal sutures: instead of rejecting it, our body accepts it and gradually dissolves it completely. Linen fabric made from

flax is the most appropriate material to choose in every way, especially for children, due to their unique health benefits. In addition, since ancient times, wrapping a newborn baby in linen has been considered a guarantee of the baby's future health.

Studies conducted by the Ministry of Health of the Republic of Belarus have shown that the high hygiene, durability, and comfort of products made from linen fabrics help to further activate blood circulation, stimulate the body, and reduce fatigue. Doctors believe that flaxseed helps reduce colds. Scientists recently conducted a very interesting experiment. Comparative studies have shown that sleeping on linen sheets helps increase the level of immunoglobulin A in the blood, which restores the immune system. As a result, a person feels more refreshed and healthier. Neither synthetics nor cotton give such an effect.

Recent studies have shown that linen clothing reduces radiation levels several times, reduces gamma radiation by half, and protects against chemically aggressive environments. In addition, it turned out that flax is able to partially suppress electromagnetic waves, radiation from household and industrial equipment. For people prone to skin diseases and various allergies, bronchial asthma, rhinitis, dyes, bleaches, antistatic agents, artificial fibers and simply woolen fabrics are contraindicated, nothing can be compared with linen. Scientists have proven that every object, every material, has its own energy. Linen has perhaps the strongest energy of all materials. It evokes in a person a sense of calm concentration, thoughtfulness, and measuredness. Psychotherapists are convinced that flax fibers protect a person from depression, neurosis, and mental illness. Therefore, flax is relevant now, in times of constant stress. In addition, flax threads are an excellent filtering material that protects not only from chemically aggressive environments, noise, dust, radiation, but also from mental irritants.

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Figure 1 Samples of women's medical gowns made of linen fabric.

Using linen fabric for medical gowns has several advantages. Linen is a natural fiber, known for its environmental friendliness and high quality. The main advantages of using linen fabric in the medical field are:

1. **Air permeability** : Linen fiber has high air permeability, providing good ventilation inside the robe. This helps keep doctors and healthcare workers comfortable, even when they need to wear gowns for long periods of time.
2. **Moisture absorption and dryness** : Linen fiber absorbs moisture quickly and releases it quickly, which prevents sweating and ensures dryness.
3. **Antibacterial and antimicrobial properties** : Flax has natural antibacterial and antimicrobial properties, which play an important role in ensuring hygiene, especially in medical environments.
4. **Ecological purity and naturalness** : Flax is a natural product, and its production process does not harm the environment. This helps ensure stability.



5. **Endurance** : Linen fiber is strong and durable and can withstand multiple washes. This ensures long-term use of the gowns.

6. **Anti-allergic properties** : Linen fabric is hypoallergenic, does not harm the skin and does not cause allergic reactions. This is especially useful for healthcare workers and patients with sensitive skin.

7. **High temperature resistance** : Flax fiber can withstand high temperatures, which makes it suitable for disinfection processes, such as boiling or sterilization. This is very important in maintaining hygiene in a medical environment.

8. **Nice structure** : Linen fabric feels pleasant against the body and provides comfortable wear, especially for those who have to wear medical clothing for long periods of time.

9. **Biodegradation** : Because linen is made from natural fibers, it is biodegradable. This helps ensure environmentally friendly and sustainable production.

The following are the main requirements for the production of medical gowns:

1. Material requirements:

- Hygienic and anti-allergenic: Medical gowns should be made of antibacterial, anti-allergenic, and skin-friendly materials. This is important for maintaining the health of patients and medical staff.

- High breathability: Gowns should be made of breathable material, which provides comfort during long-term use.

- Water and liquid resistance: Medical gowns must have the property of repelling or not absorbing liquids.

- Sterility: Gowns intended for operations must be sterile and resistant to sterilization processes.

2 Ergonomic and design requirements:

- Freedom of movement: Gowns should be sewn in a way that allows healthcare workers to move freely. They should have a broad chest and shoulders, and comfortable sleeves.

- Sizes and fit: Gowns should come in a variety of sizes. Comfort is ensured with elastic cuffs and ties.

- Closure methods: Robes should be tied or closed with a zipper, which helps maintain cleanliness and safety.

3. Safety requirements:

- Protection level: Gowns used in operational and other high-risk environments must have a specific level of protection, such as protection against biological agents.

- Flammability protection: Gowns must be flame-resistant or made of low-flammability materials.

4. Compliance with standards:

- Medical gowns must comply with international and local medical standards (such as EN 13795, ASTM F2407).

- Meet environmental requirements: Gowns must meet specific environmental standards to be recyclable or environmentally friendly.

**Conclusion:** This study aims to study the possibilities of using flax fiber fabrics in the production of medical gowns. During the study, it was found that the natural and ecological purity, hygienic properties, and high air permeability of flax fiber make it very suitable for the medical field, especially in the production of medical clothing. Linen fiber has a number of advantages for medical gowns, including its natural antibacterial properties, high breathability, and skin-drying ability. In addition, the minimal presence of chemicals in flax fiber makes it less likely to cause allergic reactions, which is important in creating safe clothing for medical workers and patients.

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