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SELECTION AND JUSTIFICATION OF RUBBER, WHICH INCREASES THE PROTECTIVE PLASTICITY IN THE DESIGN OF SPECIAL CLOTHES

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Annotation:
In this article, the increasing protective properties of rubber used for special workwear in various industries are selected and justified.

Keywords: Special clothing, deformability, extensibility, strength, rubber, linear density, modulus of elasticity.

Rubber pads or other pads are placed on the special clothing of construction workers, such as knees, shoulders. Several methods are used to calculate the geometric parameters of these resins and their protective function. The geometric parameters of the resins are usually calculated by the following methods: To determine the deformation thickness of the elastic element (rubber) layer in the clothing area, we use the following formula:

$$\Delta d = \frac{F}{A \cdot E} \quad (1)$$

where d is the rubber deformation thickness, F is the force acting on the rubber, i.e. the effect of human weight force on another body (e.g. to the ground) through the knee, A Is(Area) the contact surface of the knee with another body, E is the thickness of the slippery element (rubber). Corresponding to the above expression, the same expression:

$$d = \frac{F}{A \cdot E} \quad (2)$$

For example a human-figure with a weight of m=100 kg (c) sits with his knee resting on the ground at an angle of 900. In this, almost the weight of a person affects the Earth through the knee.weight force:

$$G = mg$$

determined by expression. Neoprene. Neoprene rubber is elastic and strong and resistant to various temperature conditions. It is waterproof and provides thermal insulation. The elasticity modulus of neoprene rubber can typically range from 0.5-5 MPa. This determines its resistance to tension and elastic properties. Silicon. Silicone rubber is highly elastic, has chemical resistance and is resistant to temperature changes. It is used in natural or artificial tissues. The elasticity modulus of silicone rubber may be in the range of 0.5-5 MPa, but for high elastic silicones this value may be slightly lower. Ethylene Propylene Diene Monomer. EPDM rubber has long-term durability, toughness, and good elastic properties. It is often used for clothing that is resistant to external conditions. The elasticity modulus of EPDM rubber can usually be in the range of 1-10 MPa. Butyl Rubber. Butyl rubber is gas-tight and highly elastic. It is more commonly used in special protective clothing and seals. The elasticity modulus of butyl rubber can be in the range of 1-4 MPa. Polyurethane. Polyurethane rubber is highly elastic and strong, and also has surface resistance. It is widely used in sportswear and special protective coatings. The elasticity modulus of polyurethane rubber can range from 5-50 MPa, which varies depending on its hardness and flexibility.

Nitrile Rubber. Nitrile rubber is resistant to oils and chemicals and has elastic properties. The elasticity modulus of nitrile rubber is usually in the range of 5-10 MPa. Offered, the rubber selected for special clothing has its own characteristics, and in special clothing (such as protective clothing, sports uniform or other professional clothing), the rubber selected according to the modulus of elasticity and other mechanical properties is used according to different requirements. The elasticity modulus of resins determines their stiffness and flexibility, which directly affects their protective properties. Suppose the force exerted on the ground through the knee is F = 850 n, let the surface of the knee exertion be 8831.25 〖mm〗 ^2. Offered rubber elasticity module

$$E = 10\frac{N}{mm^2} = 10MPa.$$

Then the deformation of the rubber becomes:

$$\Delta d = \frac{F}{A \cdot E} = \frac{850\ N}{8831.25\ mm^2 \cdot 10 \frac{N}{mm^2}} = 9.625\ mm,$$

Conclusion In conclusion, it can be said that based on the obtained value, I recommend that a special garment be made of polyurethane rubber with a high return on its specific external impact value. it is proposed that the rubber thickness should be 12 mm so that the inequality d>d D is fulfilled.

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