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Polypropylene fiber is made of polypropylene particles by hot pressing in continuous process. After special anti-static and anti ultraviolet treatment, the fiber is evenly dispersed in the mortar and can play its effect for a long time. The content of polypropylene short fiber is 0.6-1.8kg/m³ mortar, generally 0.9kg/m³ mortar. According to the engineering parts and different regions, the fiber content should be different, and the content should be higher for the parts with severe impact wear and the areas with severe freeze-thaw.

1、 Physical properties and main parameters

Material: 100% polypropylene; elongation at break: 30%

Fiber type: bundle monofilament, specification: 3-12mm, or other specifications

Density 0.91 tensile strength $\geq 400\text{MPa}$

Acid and alkali resistant, very high Young's modulus $\geq 3.5\text{gpa}$

Melting point about 160 °C fiber diameter 31 μM

Extremely low thermal conductivity, ignition point about 580 °C

Non toxic material with humidity $< 0.1\%$

Low temperature resistance, no change in fiber properties measured by - 78 °C

The aging resistant fibers have been treated with special aging resistance.

2、 Function

·Greatly improve the crack resistance of mortar

In mortar, the disordered distribution of fibers can greatly weaken the plastic shrinkage and freeze-thaw stress of mortar,

Thus, the toughness of the mortar is effectively enhanced and the generation of micro cracks is restrained.

·Greatly improve the waterproof and impermeability of mortar

A large number of fiber wires, which are evenly distributed in the mortar and intersect with each other, play the role of "supporting" the aggregate, reducing the segregation of water and aggregate on the surface of the mortar. In the aspects of putrefaction pool, basement engineering, roof, water storage pool, external wall plastering, the effect of using fiber as waterproof material is particularly significant, which can effectively solve the problem of penetration.

·Enhance impact resistance and seismic resistance

After the mortar with fiber products solidifies, the high-strength fiber wires of the cement are adhered to form a dense mesh reinforcement system with random distribution, which increases the toughness of the mortar and improves the ultimate tensile rate. When the mortar is impacted, the fiber absorbs a lot of energy, which enhances the anti impact and anti-seismic ability of the mortar.

3、 Packaging: 20kg or 25kg woven bags, 1kg for each small bag.

4 、 Transportation and storage: the product shall be protected from rain during transportation. It shall be stored in a cool and ventilated warehouse to avoid direct sunlight.

Polypropylene fiber is a kind of synthetic fiber, which is made of 100% polypropylene raw materials added into masterbatch, blended, spun and stretched, and made by special processes such as antistatic and UV resistant. It is a special fiber for concrete and mortar, which can effectively control the cracks of concrete and mortar due to shrinkage, dry shrinkage and temperature change, greatly improve the anti crack and anti permeability performance, anti impact and wear performance, and increase the toughness of concrete So as to improve the service life.

Polypropylene fiber is mainly suitable for:

1. Anti crack, anti seepage and thermal insulation mortar for industrial and civil buildings.
2. Basement and underground engineering, sea embankment dam and other salt water projects with high requirements for crack resistance and seepage control.
3. Various precast concrete products.
4. Highway, bridge, tunnel, airport runway and other concrete.
5. The requirements for alkali resistance and chemical corrosion are higher in chemical plants.

Principle of polypropylene monofilament fiber:

The product can be evenly distributed in concrete after special anti-static and anti ultraviolet treatment. Its fiber trefoil section increases the specific surface area of the fiber. The surface of the fiber is rough and porous after chemical grafting and physical modification treatment, so the binding force with cement is greatly improved. As the fiber is very thin, it can form a disorderly supporting system, effectively control the early plastic shrinkage and dry shrinkage of concrete and mortar, hinder the formation of settlement cracks, greatly improve the impermeability, impact resistance, toughness and wear resistance, so as to achieve the purpose of prolonging the life of buildings.

Physical properties and important parameters of polypropylene monofilament products:

- ◆ material: 100% modified polypropylene
- ◆ melting point: 165 ° C ~ 175 ° C
- ◆ breaking strength: $\geq 690\text{mpa}$
- ◆ ignition point: 590 ° C
- ◆ breaking elongation: $20 \pm 5\%$
- ◆ acid and alkaline resistance: strong
- ◆ modulus of elasticity: $\geq 7000\text{mpa}$
- ◆ fiber length: 3mm 4mm, 6mm 12mm 16m 19mm 180mm (according to customer requirements)
- ◆ section shape: Y type

◆ recommended dosage: high strength polypropylene $\geq 1\text{kg} / \text{m}^3$, concrete with special requirements can reach $10\text{kg} / \text{m}^3$

Advantages and process of polypropylene products

Advantages of polypropylene monofilament products:

The most effective way to solve the non structural shrinkage crack of concrete is to add secondary reinforcement in the concrete to enhance the tensile resistance of plastic concrete.

The fibers commonly used in the secondary reinforcement of concrete are asbestos fiber, glass fiber, steel fiber and synthetic fiber. But among them, asbestos fiber has been banned internationally because of its carcinogenicity to human body. The alkali resistance of glass fiber is poor. Although the alkali resistance of glass fiber is changed, its effect can not last. There are many problems in steel fiber, such as large quantity, high cost, complex operation, special construction technology team, and machine wear. Therefore, the modified polypropylene synthetic fiber is the most ideal material for the secondary reinforcement of concrete. Its advantages are: good dispersion, high grip, random distribution, secondary strengthening, physical reinforcement, crack resistance and reinforcement, anti-magnetic rust, anti-corrosion and alkali resistance, non-toxic, tasteless, high safety, simple construction, economic and reliable.

◆ recommended dosage of polypropylene monofilament fiber construction process:

One kilogram of high-strength polypropylene fiber is added to each cubic meter of mortar / concrete, and the concrete with special requirements can be increased to 2-10kg. (for example: 2-6kg / m^3)