

The research apply for green alkaline exfoliate agent

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Summary:

The green alkaline exfoliate agent is suitable for a variety of coating layer. The speed of removing paint is fast and good effect and small corrosion resistance. It is not containing carrene and has the function of incombustibility and low volatility.

1. Introduction:

Some workpieces will be having bad adhesion or bubbles appearance during pre-treatment process before coating. Therefore, it needs to proceed on the process of removing paint and re-coating. Currently, the exfoliate agent is divided into acid, alkaline, and solvent. As for traditional solvent, carrene is its main component which has good effect and is widely used. However, this kind of exfoliate agent contains carrene, phenol, toluene, xylene, ester, easy for volatility and other hazardous substances. These will destroy the ozonosphere of atmosphere and has the risk of cancer for people. It also has high volatility, easy combustibility and is harmful for public safety. Hence, create a new low volatility, low poison or free-poison to reduce the erosion of metal surface becomes a major subject. Chingfeng used a low poisonous and volatile with organic solvent to replace traditional Chlorinated hydrocarbon solvent. It also used the component and paint film to proceed a series of physical and chemical reaction such as dissolving, permeation, swelling and exfoliating and so on to achieve the goal with coating layer separating the adhesion layer quickly. Compared to traditional Chlorinated hydrocarbon solvent, it is having the advantage of low poison, volatility and pollution and remains its good effect of solvent.

2. Test method

2.1 Material and treatment

2.1.1 Trial material Q235 steel、 6067 aluminum、 customer's workpiece

2.1.2 The component of green alkaline exfoliate agent

Benzyl alcohol is its main solvent, alkyl alcohol is its assistant solvent, inorganic alkali is accelerator and contains the organic chemicals of nitrogen and sulphur as corrosion inhibitor to become a new exfoliate agent.

2.2 Experimental process and test method

2.2.1 Experimental process

(1) Use Q235 steel plate, degreasing → water rinsing → phosphate → water rinsing → drying → coating → solidifying

(2) Use Q235 steel plate, degreasing → water rinsing → phosphate → water rinsing → cathode electrophoresis → solidifying

(3) Use 6067 aluminum plate, degreasing → water rinsing → phosphate → water rinsing → drying → coating → solidifying

(4) Use customer's workpieces

2.2.2 Test of its efficiency on removing paint

Use trial sample to immerse into the agent and conduct the test directly.

It depends on the time of swelling and exfoliating on the coating layer to observe its efficiency of removing paint.

3. Test result

Chart 1 is Q235 steel plate through experimental process(1) after the coating process of solidifying, (layer thickness is about $100 \sim 120 \mu\text{m}$), immersion on 70°C of the agent around 8 minutes, the ratio of immersion portion is up to 100%.

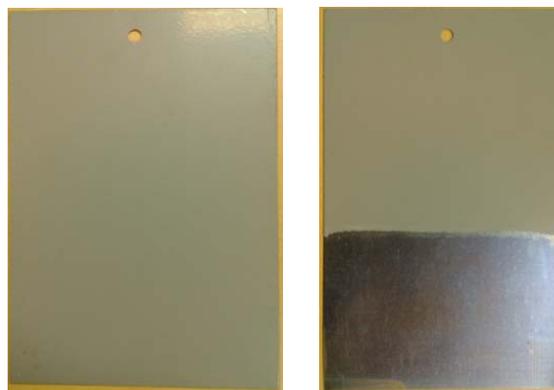


Non-immersion

Immersion

Chart 1

Chart 2 is Q235 steel plate through experimental process(1)after the coating process of solidifying, (layer thickness is about $25 \sim 30 \mu\text{m}$), immersion on 70°C of the agent around 6 minutes, the ratio of immersion portion is up to 100%.



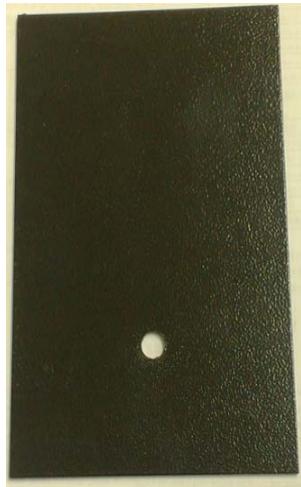
Non-immersion

Immersion

Chart 2

Chart 3 is Q235 cold steel plate through experimental process(1)after the coating process of solidifying, (layer thickness is about $75 \sim 85 \mu\text{m}$), immersion on 70°C of the agent within 5 minutes, the ratio of

immersion portion is up to 100%.



Non-immersion



Immersion

Chart 3

Chart 4 is Q235 steel plate through experimental process(2) after the coating process of electrophoresis solidifying, (layer thickness is about $21 \sim 23 \mu\text{m}$), immersion on 70°C of the agent within 6 minutes, immersion portion will be having wrinkles and water can be removed them, the ratio of immersion portion is up to 100%.



Non-immersion

Immersion

Chart 4

Chart 5 is 6067 aluminum plate through experimental process(3)after the coating process of powder paint solidifying, (layer thickness is about $110 \sim 120 \mu\text{m}$), immersion on 70°C of the agent within 5 minutes, the ratio of immersion portion is up to 100% and will not have the erosion appearance for surface.



Non-immersion



Immersion

Chart 5

Chart 6 the workpiece is provided by customer and the coating surface is liquid paint through experimental process after solidifying, (layer thickness is about $70 \sim 80 \mu\text{m}$), immersion on 70°C of the agent within 4 minutes, the ratio of immersion portion is up to 100% and will not have the erosion appearance for surface.



Non-immersion

Immersion

Chart 6

Conclusion:

1. Benzyl alcohol is its main solvent, alkyl alcohol is its assistant solvent, inorganic alkali is accelerator and contains the organic chemicals of nitrogen and sulphur as corrosion inhibitor to become a new exfoliate agent. It has good effect and is suitable for a variety of materials to replace the agent of carrene type effectively.

2. It also meets the requirements of low poison, low volatility, high effect and good for environmental protection. It also has a good removing effect for powder paint, liquid paint and electrophoresis paint to replace the type of Chlorinated hydrocarbon agent.