

Optical Glass Cleaning Process

Affecting factors:

1. The key of cleaning process: After cleaning, the optical glass does not have any oil or stain on it, and the surface is smooth no damage and scratch.

2. The factors and solutions of cleaning quality:

(1) The status of glass itself and contamination condition: mildew, bubble, scratch;

During mechanical treatment, man-made contamination caused by grinding, wiping, stress testing etc.

(2) The Detergent, temperature and water quality: internationally used detergent is CFC-113, Carbon tetrachloride, 1-1-1 Trichloroethane (abbreviation is ODS), etc, this type of detergent can damage the ozone, they are non-environmental detergent. Usually we use alkaline water type ODS as detergent, it is made up of water, alkali, surfactant, rust-resisting material, chemical formula C_3H_8 , the Cyclic olefin with side chain has strong oil-dissolved capacity; it is of low toxicity, non-ignitable and low cost.

(3) The concentration of solution will affect cleaning quality. Usually the PH is between 8.5 to 12, if the PH is more than 10, it will

weaken the surfactant; if the PH is more than 12, it will weaken the cleaning quality. In practice, if the concentration is high, over 15%, the cleaning quality won't be good, it will be difficult to rinse. The best concentration is 4%-7% to have the best cleaning effect.

(4) Solution temperature and soaking time also affect the decontamination efficiency; when temperature increase, the reaction of solution will go up, viscosity of contaminant will go down, it will help contaminant to break away, but the stability of solution will decline. With practice, found out that when solution is 50 degree, and soaking time is 30 minutes, can achieve the best cleaning effect.

(5) During cleaning process, should use purified water or deionized water.

If use tap water or hard water directly to wash optical glass, it is very difficult to clean the oil and dirt on the glass, also the Ca and Na ions will form a white misty film, contaminate the glass.

(6) After cleaning the glass need to be rinsed, and the rinsing cleanliness is also affected by the numbers of rinse process, volume of rinsing water, temperature and cleanliness of circulated water except for the quality and concentration of detergent.

(7) The cleanliness of cleaning environment.

(8) The drying technology and temperature after cleaning, try to

put the glass as vertical as you can, suggest to put ceramic polar under the glass to avoid water mark caused by drying. Drying oven temperature should be around 70 degree, drying time 20 minutes. If the temperature is too high, there will be stripe and mark at the edge of glass.