
Summary of Fogging Causes and Anti-Fogging Skills of Goggles

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Goggles is an eye protection device used to close or protect the eyes. It is mainly used to prevent particles, water, chemicals, and infectious substances such as blood and body fluids from invading the eyes. There is literature that proves that wearing goggles is one of the important measures to directly prevent blood-borne occupational exposure and occupational infections.

The goggles will fog during wearing, which will seriously affect the sight of medical staff, increase the difficulty of operation, and increase the risk of pollution. It not only affects the accuracy of the medical staff's operation but also increases the psychological pressure.

Aiming at the phenomenon of fogging of goggles, recently reviewing the data, **hand tools manufacturers in china** summarized the causes of fogging of goggles and anti-fog techniques.

Safety Goggles or type unknown

Safety Goggles

Cause Analysis

1. For secondary protection, it is necessary to use N95 or N99 masks with good sealing performance, but as the wearing time prolongs, the sealing performance of the mask decreases with the operation and communication, causing some gas to escape from the sides of the nose bridge. The upper edge enters the goggles, fogging the goggles, reducing visibility, and obstructing vision.

2. When there is a significant temperature difference between the material and the environment, water mist will condense on the surface. This is because of the temperature decreases and the saturated vapour pressure of water decrease below the partial pressure of water vapour in the air, causing the water vapour to condense into water droplets.

The epidemic happened just in winter, and the air-conditioning system in the work area and the ward had been turned off. Zhang Liubo, a researcher at the China Centers for Disease Control and Prevention, pointed out: If a patient with new coronary pneumonia or a suspected patient is found within the scope of the air supply, the central air conditioner should be turned off in time, disinfected, and used after evaluation.

China hand tools factory believes that when medical personnel operate under secondary protection, the human body temperature is higher than the indoor temperature, and the temperature difference between the inner and outer layers of the goggles is large, so it is easy to cause fog in the goggles.

Anti-fog tips

Sealed mask

The indwelling needle mask closes the upper edge of the mask. The mask is cut into strips and applied horizontally to the upper edge of the mask and the skin of the lower eyelid to ensure that the upper edge of the mask fits the facial skin.

Disadvantages: This method can reduce the gas entering the goggles through the upper edge of the mask, but the film is directly attached to the eyelid skin, which easily causes medical adhesive-related skin damage. If you are allergic to the dressing, it will also aggravate skin damage. However, with the development of the epidemic, protective equipment is also in short supply. In order to save protective equipment, most nursing staff wear goggles for 4-6 hours. The film has been loosened due to sweat, and the film cannot be maintained firmly.

When using a paper infusion patch to close the upper edge of the mask, put a mask on the mask. After wearing the mask, use the infusion patch on the upper edge of the mask and the lower eyelid skin.

Advantages and disadvantages: The paper towel in this method is used to absorb a large amount of moisture in the mask. The low-sensitivity paper infusion paste has low viscosity, has little damage to the skin, and is not easily allergic. The disadvantage is that the infusion patch cannot guarantee the tightness of the upper edge of the mask, and some gas still enters the goggles from the upper edge of the mask.

2. Anti-fog lens treatment

Antifog coated lens

- Hu Jianmei and others pointed out that evenly applying the anti-fog agent for swimming goggles to the inner surface of the goggles lens, and leaving it to dry after wearing, can have an anti-fog effect.

Most of the anti-fogging agents are nozzle-type designs. If the anti-fogging agent is sprayed directly on the inner layer of the lens and worn after drying, although there is an anti-fogging effect, the water stains on the lens surface are mostly halo-like, and the clarity is reduced, affecting the field of vision and visibility.

- If you follow the instructions for use of goggles defogging agent: first half an hour before using the goggles, rinse the inside of the lens with cold water, drain the water from the lens to make the lens moist; spray the anti-fog agent evenly against the lens, wait 8 minutes, the anti-fog agent in the lens is half-dry. Take cold water and shake it in the lens, so that the anti-fog agent is evenly attached to the lens, and then drain the water to dry the beads. Fog effect, but long preparation time and low efficiency.

- Anti-fogging agents are effective in anti-fogging of goggles, and because anti-fogging agents are expensive and not easily available, they are rarely used in clinical practice.

Detergent supplies wipe lenses

- You can choose detergents commonly used in daily life, such as dish soap, soapy water, shampoo, shower gel, hand soap, etc.

Method: Take an appropriate amount of detergent with cotton swabs or gauze and evenly apply it to the inner layer of the lens, let it dry for later use; before wearing goggles, use gauze to wipe away the detergent that has been applied and dried. In the operation of wearing goggles, the residual detergent will form a transparent film when it encounters water vapor, which can play a role in destroying the surface tension of water droplets, so that the goggles are not prone to fog.

Each detergent contains a surfactant, which can reduce the surface tension of water droplets, but the surfactants contained in different detergents have different effects.

- This kind of method needs to wait for the detergent to dry and wipe before using it. The preparation time is long and the anti-fog effect cannot be obtained immediately, but the detergent is easy to obtain and the cost is low.

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Iodine coated lenses

- Apply the iodophor evenly on the inner layer of the protective glasses, and wear it after the iodophor is dry. This method is also commonly used for antifogging of laparoscopic lenses in the operating room.

The principle is that after the iodine is applied to the surface, the ion iodine becomes molecular iodine, which exerts an oxidation effect to form a protective film. At the same time, studies have confirmed that aqueous solutions containing iodine can be used as goggle disinfectants, and do not affect the life and use of goggles.

- This method has good anti-fog effect, iodophor is a medical disinfectant, easy to obtain, and widely used in clinical practice.

Dispensing lenses with disposable hand sanitizer

- Before wearing, apply a thin layer of disposable hand sanitizer evenly on the inner layer of the goggles, wait for the sanitizer to dry, and then wipe the dry sanitizer with gauze.
- This method can prevent the lens from fogging, but the disposable hand sanitizer contains ethanol. During the wearing process, the wearer is irritated by the smell of ethanol and has poor comfort.

Automotive glass water painting lens

- Before wearing, apply the car glass water evenly on the inner layer of the goggles, wait for the glass water to dry, and wear it directly.
- This method can prevent the lens from fogging, but the glass water also contains the ethanol component, which causes poor wearer comfort.

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Vaseline or liquid paraffin coated lenses

- Before wearing, evenly apply a small amount of vaseline or liquid paraffin to the inner layer of the goggles to ensure that the lens surface is covered with a thin layer.
 - In this method, vaseline is a semi-liquid mixture, which is smeared on the lens, which affects the field of vision and visibility. Although liquid paraffin is easy to obtain and simple to operate, it does not rule out that oily ingredients have other damage to the goggles material, and are rarely used in clinical practice.
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Conclusion:

The **china hand tools supplier** believes that the air exhaled from the upper edge of the mask and the temperature change between the inside and outside of the lens are the reasons for the fog in the goggles. In clinical work, everyone also summarized a large number of anti-fog techniques. Each method has advantages and disadvantages. According to the needs of actual operations, more appropriate methods can be taken to prevent fogging of the goggles, to ensure smooth operation of medical staff and avoid operation Pollution in the environment can alleviate the psychological pressure of medical staff in their work.

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