

Eye Protection for Infection Control

Recommendations

The US National Institute for Occupational Safety and Health (NIOSH) is part of the US Centers for Disease Control and Prevention (CDC) and has provided the following information concerning the use of goggles, face shields, safety glasses, and full face respirators for infection control purposes in their publication *Eye Protection for Infection Control*.¹

CDC/NIOSH recommends eye protection for a variety of potential occupational exposure settings where workers may be at risk of acquiring infectious diseases via ocular (eye) exposure. Eye protection is intended to provide a barrier to infectious materials entering the eye and is often used in conjunction with other personal protective equipment (PPE) such as gloves, gowns, and respirators.

The World Health Organization (WHO) recommends that healthcare workers (HCWs) wear eye protection (goggles) or facial protection (face shield) to help avoid contamination of mucous membranes as part of both contact and droplet precaution, aerosol-generation precautions, and for HCWs collecting and handling laboratory specimens from patients with suspected 2019-nCoV infection.²

Eye protection should always be worn by all those present in the room during potentially infectious aerosol-generating procedures. Disposable, single-use eye protection is recommended; however, if re-usable eye protection is worn, then appropriate decontamination between uses is required.³

Goggles

Goggles are designed to fit snugly, but not necessarily seal around the wearer's eyes. CDC/NIOSH has stated¹: "appropriately fitted, indirectly-vented goggles* with a manufacturer's anti-fog coating provide the most reliable practical eye protection from splashes, sprays, and respiratory droplets. However, to be effective, goggles must fit snugly, particularly from the corners of the eye across the brow. While highly effective as eye protection, goggles do not provide splash or spray protection for other parts of the face. Goggles marked "3" on the frame indicate resistance to liquid droplets or liquid splashes."⁴

* Directly-vented goggles may allow penetration by splashes or sprays; therefore, indirectly-vented or non-vented goggles are preferred for infection control.

Face Shields

Face shields are designed to help protect portions of the wearer's face to certain exposures. While goggles help protect a wearer's eyes from splashes, sprays, and droplets, a face shield can help reduce exposure to both the eyes and other facial areas.** Face shields, whether disposable or reusable, should cover the front and sides of the face. This will help reduce the possibility of splash, sprays and droplets from going around the edges of the shield and reaching the eyes or other facial areas. Face shields alone may not provide sufficient eye protection from airborne droplets or aerosols, CDC/NIOSH recommends that they be used with goggles where airborne infection control precautions are required.

**Per CDC/NIOSH - Disposable face shields for medical personnel made of light weight films that are attached to a surgical mask that are relatively flat or fit loosely around the face should not be relied upon as optimal protection.¹

Safety Glasses

Safety glasses provide impact protection, but do not provide the same level of splash or droplet protection as goggles and generally should not be used for infection control purposes.

Full Face Respirators

In the event respiratory protection along with eye protection is needed, a full facepiece respirator or powered air purifying respirator (PAPR) may be selected in lieu of goggles and half face respirators. A full facepiece respirator or PAPR can be used as primary eye protection for splashes, sprays, and droplets that may be encountered in an infection control situation. A PAPR hood or headcover does not provide impact protection.

Infection Control Information Sources

Please refer to the latest information from sources such as the World Health Organization ([WHO](#)), the US Centers for Disease Control and Prevention ([US CDC](#)), and the European Centre for Disease Prevention and Control ([ECDC](#)) regarding selection, use, maintenance and cleaning of personal protective equipment for infection control.

3M Protective Eyewear Options

Unvented and indirectly vented goggles, when properly selected and used, help provide eye protection from splashes, sprays, and droplets.

The following 3M goggle products have demonstrated compliance with the requirements of European standard EN166:2001 and associated standards:

- Fahrenheit
- Goggle Gear (GG) 500
- 2890 Series
- 4800 Series
- Goggle Gear (GG) 6000

Face shields should wrap around the face to the point of the ear. 3M face shield options include H8A ratchet headgear with a WP96 clear polycarbonate face shield.

If a face shield is used, a primary means of eye protection, such as goggles is still required. Ensure that goggles do not hinder the face shield from coming all the way down, low profile options are available if needed.

Protective Eyewear Cleaning and Disinfection Options when used for Infection Control

The 2008 US CDC publication Guideline for Disinfection and Sterilization in Healthcare Facilities⁵ (updated May 2019) includes information on disinfecting equipment and surfaces potentially contaminated by coronaviruses. The US CDC investigated many chemicals and cited several chemical germicides as being effective for coronaviruses, when used as indicated in the product user instructions. Bleach (sodium hypochlorite) was one of these products.

- **Effective after a 1-minute contact time: - Sodium hypochlorite (at a free chlorine concentration of 5,000 ppm – typically 1:10 ratio of bleach to water)**

Your facility should review this information thoroughly prior to selecting this disinfecting product for your equipment and specific application. Follow the hygiene and infection control practices established by your employer for the targeted organisms, including or for coronavirus. Please note that 3M has not evaluated the effectiveness of this agent with regards to inactivating viruses on 3M equipment.

Standard Eyewear Cleaning and Disinfection Steps

1. Cleaning is recommended after each use. Nitrile or vinyl gloves should be worn during cleaning as well as other personal protective equipment (PPE) as indicated.
2. Clean eyewear by immersing it in a warm cleaning solution, water temperature not to exceed 49°C (120 °F) and scrub with soft cloth until clean. Add neutral detergent if necessary. Do not use cleaners containing lanolin or other oils.
3. Disinfect by soaking the eyewear according to the user instructions for the selected disinfectant, including usability, application and contact time.
4. If indicated in the disinfectant user instructions, rinse thoroughly with fresh warm water.
5. Air dry in a non-contaminated area.

IMPORTANT NOTE

Eyewear coatings and components may become damaged over time with prolonged or extended use of disinfecting products. Users must inspect the eyewear following each disinfecting cycle and prior to re-use. If you discover any signs of damage, remove the eyewear from service and appropriately discard.

Before using any of the products or information detailed herein, you must evaluate it and determine if it is suitable for your intended use. You assume all risks and liability associated with such use. 3M makes no warranties relating to the efficacy of any of the products detailed herein in preventing the spread and/or contraction of coronavirus. 3M will not be liable for any loss or damage arising from any information contained herein, whether direct, indirect, special, incidental or consequential, regardless of the legal or equitable theory asserted, including warranty, contract, negligence or strict liability.

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If you have any questions or concerns, please contact your local 3M representative.

References

1. US Centers for Disease Control and Prevention/National Institute for Occupational Safety and Health (NIOSH). Eye Safety - Infection Control – Archived Document, page last reviewed by NIOSH July 29, 2013. Viewed January 2020 <https://www.cdc.gov/niosh/topics/eye/eye-infectious.html>
2. WHO Infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected [https://www.who.int/publications-detail/infection-prevention-and-control-during-health-care-when-novel-coronavirus-\(ncov\)-infection-is-suspected-20200125](https://www.who.int/publications-detail/infection-prevention-and-control-during-health-care-when-novel-coronavirus-(ncov)-infection-is-suspected-20200125)
3. Journal of Hospital Infection, Guidance on the use of respiratory and facial protection equipment. <https://www.sciencedirect.com/science/article/pii/S019567011300279X>
4. EN 166:2001 Personal eye protection. Specifications. European Committee for Standardization, Brussels.
5. Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008; updated 2009. United States Centers for Disease Control. William A. Rutala, Ph.D., M.P.H., David J. Weber, M.D., M.P.H. and the Healthcare Infection Control Practices Advisory Committee (HICPAC). 2008. <https://www.cdc.gov/infectioncontrol/pdf/guidelines/disinfection-guidelines-H.pdf>

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