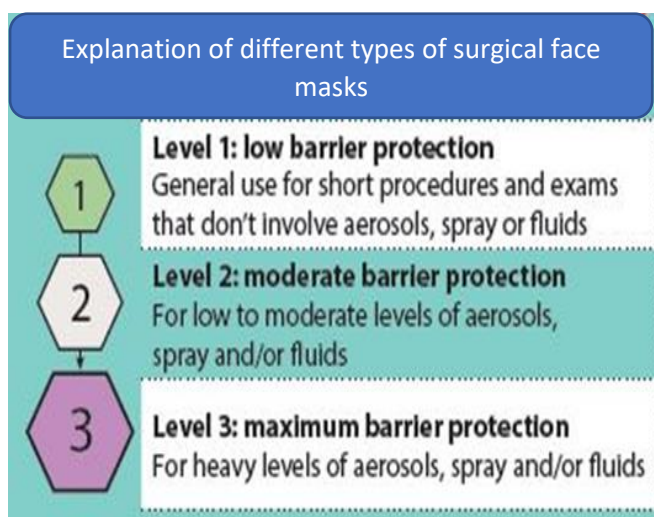


## OrangeDot Face Shield Frequently Asked Questions 8.08.2020

### Filter

1. **Why use a Level 3 face mask for the filter and not a N95/P2 one?** The N95/P2 masks are very thick and will reduce the airflow through the filter mechanism. N95/P2 are respirator masks that are used when treating medium risk and high risk Covid 19 patients. Level 1 to 3 surgical masks are for the treatment of low risk patients.



Following is an explanation of the different respirator mask classifications worldwide.

P1=FFP1=N80: masks that block 80% of airborne particles

P2=FFP2=KN95=N95: block 95% of airborne particles

P3=FFP3=KN99=N99; block 99% of airborne particles

WHO recommend P2/FFP2/N95 if treating COVID 19 patients.

2. **Why do you recommend a filter?** The filter is only there to prevent aerosol and other particles (such as dust) from above the visor been sucked in by the fan and pushed towards the eyes. If you have used the top two layers of the Level 3 mask, then the water impermeable barrier and microbial filter will prevent contamination and physical damage to your eyes. The shield with filter provides much more protection than normal eye protection such as safety spectacles.

3. **Where can I obtain more filter material?** Your local dental supplier will be able to sell you Level 3 masks. In the future, we are hoping to sell ready to use filters.

4. **Can I purchase more filter rings and filter caps.** Yes, please contact us at [admin@orangedot.com.au](mailto:admin@orangedot.com.au)

### Visor

1. **Why do you advise that the shield should not be rested on the visor?** The visor is quite thin and will buckle and crease under the weight.
2. **Are all visors compatible with this face shield?** No, this face shield is only compatible with these visors. Other visors may not have holes in the correct places, be too thick or too long. You can purchase PETG or Vinyl film from art supply shops, but make sure you take a sample of the one provided to compare thickness and visual clarity. We have provided a template for placing holes in the correct position but suitable only for the thickness of film that we provide.
3. **Can I purchase more visors?** Yes, please contact us at [admin@orangedot.com.au](mailto:admin@orangedot.com.au)

## Batteries

1. **How long will the batteries last?** With both the fan and two LED bulbs working, tests have shown that the internal lithium batteries will last for about 15 hours.
2. **How long will it take to charge the batteries?** Approximately three hours.
3. **Can I charge the shield while using it?** Yes, but it is recommended that you use a power bank rather than a mains charger.
4. **How do I know how much power is left in the batteries?** Please use the battery level indicator on the inferior surface of the shield housing.
5. **How do I know that the device is charged?** The charging status lights window is on the left side of the shield housing. Red light is for “charging” and blue light is for “charged”.
6. **Can I use any mains charger to recharge the batteries?** Yes, most 5V USB output chargers will work.
7. **Can I replace the battery?** Yes, but it is unlikely that you need to. The supplied batteries are good for 500 recharges and can be recharged using the micro USB cable provided. We have used model number 14500 Lithium Ion batteries 3.7V. These are the same physical size as normal AA batteries. Please note, lithium ion rechargeable batteries are not the same as Lithium Polymer, Lithium or Nickel Hydride batteries.
8. **Can I remove the batteries and recharge them?** Yes, but you must ensure that you have a battery recharger suitable for Lithium Ion batteries.
9. **Can I remove the batteries to reduce the weight and run the device using power from a power bank and USB cable?** Yes.
10. **Can I use Alkaline batteries?** No, not in this model.
11. **Why does my fully charged face shield run out of power quicker than I expect?** The reason for this is quite complex. The working components inside your shield use approximately 100mA of current from two 850mAh rechargeable lithium ion batteries. The energy stored in the batteries should theoretically  $2 \times 850 = 1,700\text{mAh}$ . The fan and LEDs should last  $1,700/100 = 17$  hours. Our studies have shown that the batteries last about 15 hours. The difference is that the quoted battery energy is not the same as the amount that is available. Some experts say that at least 10% is unusable and another 10% is lost in heat generation within the circuit.
12. **When I am running the face shield without the batteries and via the power bank, it lasts much less time than expected?** The useable energy within the power bank is thought by experts to be two thirds of what is claimed on the sales packaging. Power banks are usually made of 3.7V rechargeable lithium ion batteries. The output of the power bank is typically 5V, so to increase the voltage from 3.7, a significant amount of energy is lost. Since the face shield circuit runs at 3.7V, the current from the power bank coming into the face shield at 5V needs to be decreased to 3.7V. This conversion results in more lost energy. Our calculations indicate that the face shield uses at least 100mA, so in theory a 2,600mAh power bank should last  $2,600/100 = 26$  hours. In reality, it will power the device for about 8 hours.

## LEDs

1. **How bright are the two LED lights?** The two Cree LED bulbs have a luminous intensity of 64,000 mcd (millicandela) and a beam angle of 15 degrees. They produce the equivalent of 7 lumens=7 candles burning bright...so very bright! This is the equivalent of 64 lux (illuminance) at 1m distance.
2. **Can I change the LED?** No, these are not user serviceable parts and should last at least 50,000 hours.
3. **Can I pull out the LEDs and bend them?** Yes, but only pull them out gently until you feel resistance and stop before the marked red line. They should come out by 20mm. The LEDs can be bent for focusing but do not rotate them or they will snap.

## FAN

1. **Why is there a fan?** It is there to move air in the confined area between the users face and visor. This will provide cooling and prevent condensation.
2. **How powerful is the fan?** The fan produces air flow at 0.09m<sup>2</sup>/min at 5V. Our device runs at about 3.7V, so the air flow is probably about 0.06m<sup>2</sup>/min. This flow rate is enough to cool your face and reduce condensation inside the visor.
3. **Can I change the fan?** No, this is not a user serviceable part and should last at least 10,000 hours.
4. **Can I clean the fan housing?** Yes, but be very careful and use cotton earbuds dipped in soapy water or alcohol. Please ensure the fan is off and disconnect any charging cables.

*Decibel Level Comparison Chart*

<b>Environmental Noise</b>	<b>dBA</b>
Jet engine at 100'	140
<b>Pain Begins</b>	<i>125</i>
Pneumatic chipper at ear	120
Chain saw at 3'	110
Power mower	107
Subway train at 200'	95
Walkman on 5/10	94
<i>Level at which sustained exposure may result in hearing loss</i>	<i>80-90</i>
City Traffic	85
Telephone dial tone	80
Chamber music, in a small auditorium	75-85
Vacuum cleaner	75
Normal conversation	60-70
Business Office	60-65
Household refrigerator	55
Suburban area at night	40
Whisper	25
Quiet natural area with no wind	20
Threshold of hearing	0

5. **Why is there fan noise?** This is a very low noise brushless fan with a noise level of 13 dB; this compares favourably to normal low noise fans that give 20 dB of noise or higher. If the fan noise is noticeably louder, the battery power will probably be decreasing. Check using the battery level indicator and recharge if necessary.

## LOUPE HEADLIGHT (Option for Versions 1B & 2 only)

1. **Can I use my loupe headlight?** Yes, please attach your headlight to the attachment provided in version 1B. You will have to power it with your own power supply. Version 2 of this face shield has an integral headlight that will be powered by the internal batteries.

**2. Why is the loupe headlight getting hot?** The bulb in the integral headlight in Version 2 is powerful and will get hot. If it is too hot to touch or you are concerned, please use the switch to cut off power to it and contact us.

## **OTHER**

**1. Can I give your company feedback?** We welcome any comments from our customers and will continuously strive to improve our products.

**2. How long is the warranty?** Twelve months- see attached warranty summary.

**3. How can I clean the face shield?** We recommend mild soap and water on a disposable cloth. Alcohol based cleaners may be used but may not be as effective as soap and water. Harsh detergents and chemical sprays may damage the surface.

**3. Can I get a refund?** If you are not happy with the device, please let us know. If we cannot resolve your issue, we will offer you a full refund within 60 days of purchase.

**4. Is this device unique?** Yes, this device was designed by a dentist. The headband and visor are sourced from other companies. There are no similar designs that we know of that have been patented.

**5. Is this design patented?** The intellectual property associated with this design is protected by international patent law.

**6. Can I purchase more visors, filter rings and filter caps?** Yes, please contact us at [admin@orangedot.com.au](mailto:admin@orangedot.com.au)

**7. Is the shield approved by the TGA?** No, but it is something that we are considering if it becomes popular. The shield has been designed by a dentist and has many safety features that “approved” devices do not have such as cooling fan, LED lights and filter.

**8. Further questions?** Contact us at [admin@orangedot.com.au](mailto:admin@orangedot.com.au)