Data for:

T. J. Cox , G. Dodgson, L. Harris, E. Perugia, M. A. Stone, M. Walsh, Improving the measurement and acoustic performance of transparent face masks and shields, Journal of the Acoustical Society of America, 2022

Please see paper for in-depth description of the masks and test methods

# Description of files

## Measurements\_from\_march\_2021.zip

Measurements on mannikin. Each .MAT file contains a structure that includes the measured impulse response on the mannikin. The table rows with “mask1” in the name are for the mask on condition and “mask0” for mask off condition. Each .MAT file contains six impulse response measurements because each mask was refitted and measured six times.

|  |  |  |  |
| --- | --- | --- | --- |
| Descriptor | Manufacture | Code in filename | Mask number, see Table I in paper |
| Cloth v1 | Opaque Brilliant Mask.[[1]](#footnote-1) | PCB01-06  Measurements on six different masks of the same model. | 1 |
| Surgical mask | standard disposable surgical mask | BLSM01 | 9 |
| Cloth v1 with acetate insert | Salford maker space | ACET01 | 10 |
| Cloth v1 with clear PVC insert | PVC01 | 11 |
| Cloth v1 with clear FEP plastic insert | FEP01 | 12 |
| Cloth v1 with clingfilm insert | FILM01 | 13 |
| Cloth v1 with clingfilm insert and honeycomb scaffold | FILM02 | 14 |
| Cloth v1 with sandwich bag plastic insert | SBAG01 | 15 |

## repeated\_reading\_rainbow\_passage.zip

Recordings of 6 readings of the rainbow passage by one talker with and without mask, for three different masks:

* Cloth v1 with acetate insert mask off.wav
* Cloth v1 with acetate insert mask on.wav
* PrintedClothMaskOff.wav
* PrintedClothMaskOn.wav
* SurgicalMaskOff.wav
* SurgicalMaskOn.wav

## human\_tests\_on\_masks.zip

Recordings make on two microphones, one at 1m and one taped to the cheek of the talker.

Example filename: A\_mask-off\_P01\_trim.wav

* First letter indicates the mask tested (see table).

|  |  |  |
| --- | --- | --- |
|  |  | Mask number, see Table I in paper |
| A | Cloth v2 + TPU film + honeycomb scaffold and extra neck material | 7 |
| B | Cloth v2+ TPU film | 4 |
| C | Cloth v2 + TPU film + scaffold around edge | 5 |
| D | Cloth v2 + TPU film + honeycomb scaffold | 6 |
| E | Cloth v2 | 3 |

* mask-on/mask-off indicates facemask state
* P0N, N signifies the talker number from 1 to 4.
* Channel 1 of the wav file is the microphone taped to the cheek of the talker (wasn’t used in the paper analysis)
* Channel 1 of the wav file is the microphone at 1m.

## Measurements\_from\_june\_2021.zip

Measurements on mannikin.

Six .MAT files contain a table that includes the measured impulse response on the mannikin with the mask on. The table rows with “far” in the name are for a microphone at 1m. “near” is for a microphone taped to the mannikin cheek. Each .MAT file contains six impulse response measurements because each mask was refitted and measured six times.

|  |  |  |
| --- | --- | --- |
| First letter of filename | Descriptor | Mask number, see Table I in paper |
| E | Cloth v2 | 3 |
| B | Cloth v2+ TPU film | 4 |
| C | Cloth v2 + TPU film + scaffold around edge | 5 |
| D | Cloth v2 + TPU film + honeycomb scaffold | 6 |
| A | Cloth v2 + TPU film + honeycomb scaffold and extra neck material | 7 |

The measurements without a mask were taken once. One MAT file for near mic, one for far mic.

* no-mask\_far-mic\_ir\_data.mat
* no-mask\_near-mic\_ir\_data.mat

## Measurements\_from\_august\_2021.zip

|  |  |
| --- | --- |
| Filename | Mask number, see Table I in paper |
| measured\_ir\_data\_full\_visor.mat | 16 |
| measured\_ir\_data\_cloth\_v2\_with\_clingfilm\_insert.mat | 8 |
| measured\_ir\_data\_visor\_clingfilm\_insert.mat | Data not in paper |
| measured\_ir\_data\_visor\_TPU\_insert.mat | 17 |

Measurements on mannikin. Each mask or visor (shield) has a separate .MAT file containing one measurement without the mask/visor, and 6 with the mask/visor (refitted between measurements).

## Laser Doppler vibrometer.zip

|  |  |
| --- | --- |
| Filename | Mask number in Table I of paper |
| Cloth v1 with acetate LDV.zip | 10 |
| visor\_full\_LDV.zip (shield) | 16 |
| visor\_tuftane\_insert\_LDV.zip (shield) | 17 |

* .avi files are animations of the surface velocity across the mask. On this computer, the avi files only play in Windows Media Player.
* coherence.txt: Coherence function vs frequency for noise to vibration transfer function.
* spectrum.txt: Transfer function between noise created by LDV (which drives the mouth simulator) and the surface vibration measured by laser.

1. <https://brilliantmasks.co.uk/> accessed 01/09/21 [↑](#footnote-ref-1)