

Quality Assurance in a Pandemic: A Response to Rapid Face Shield Production

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SWG3 supporting Kelvinside Academy in PPE campaign

So far the school has helped produce over 5000 visors for our hospital heroes and it's hoped the fundraiser for £50,000 will allow them to keep up with demand.

Newton Mearns teenager creates hundreds of face shields for frontline health workers

Hospital technicians turn to producing face visors

[UK News](#) | Published: Mar 25, 2020 | Last Updated: Mar 25, 2020

Orthotic staff at the Royal Hospital for Children in Glasgow can produce more than 100 of the protective items per hour.

Glasgow University engineers producing a face mask every 26 seconds and up to 1,000 pieces of PPE every day

A team from the James Watt School of Engineering are making the safety visors.



Foster + Partners designs reusable open-source face shield

Regulations and Standards

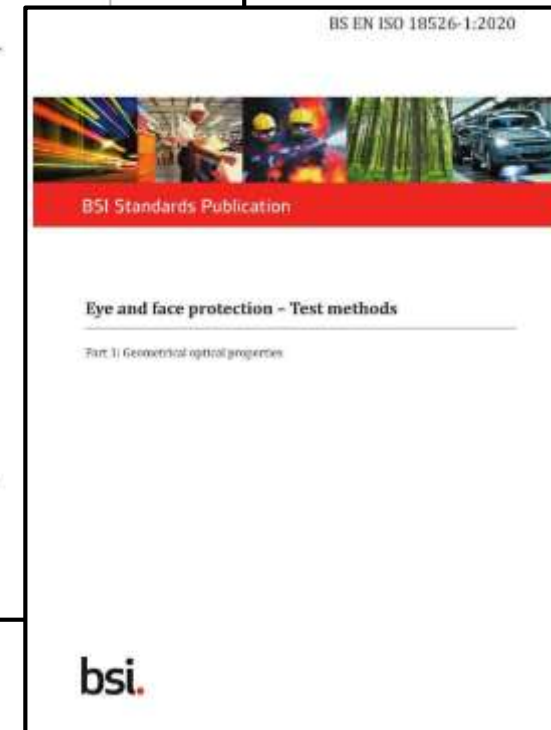
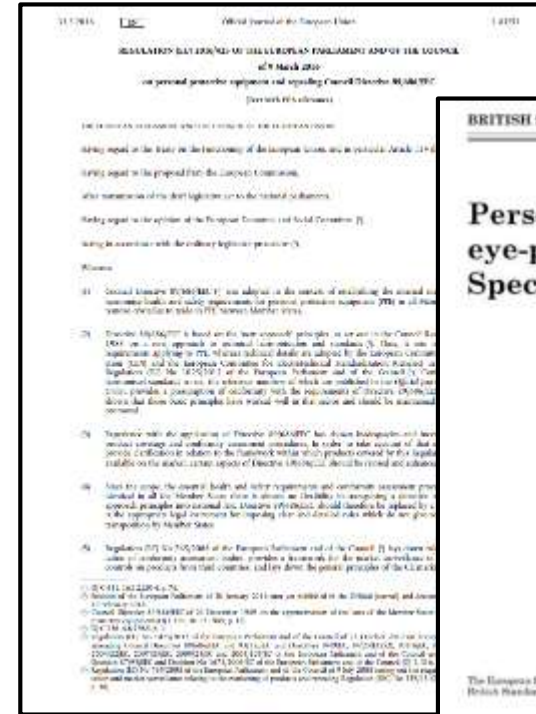
EU Regulation 2016/425

BS EN 166:2002

- Definitions
- Structural requirements
- Permissible use
- Design and manufacturing requirements
- Optical requirements
- Material property requirements
- Other

BS EN ISO 18526-1 & 2:2020, BS EN 168:2002

- Test methods

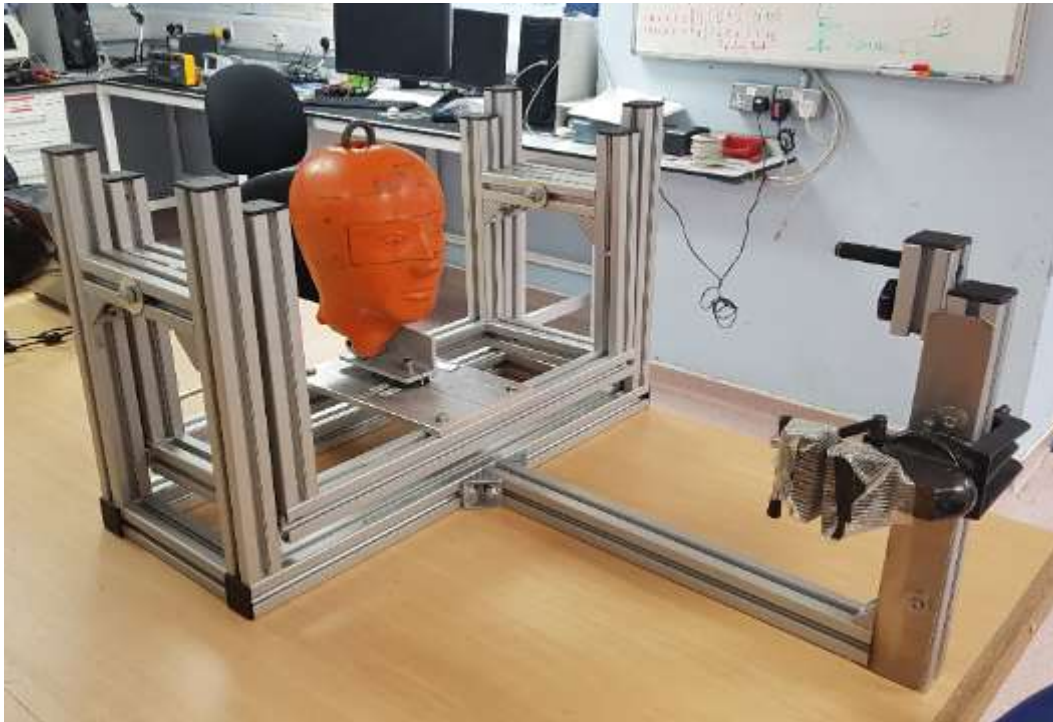


What is needed to make a face shield safe?

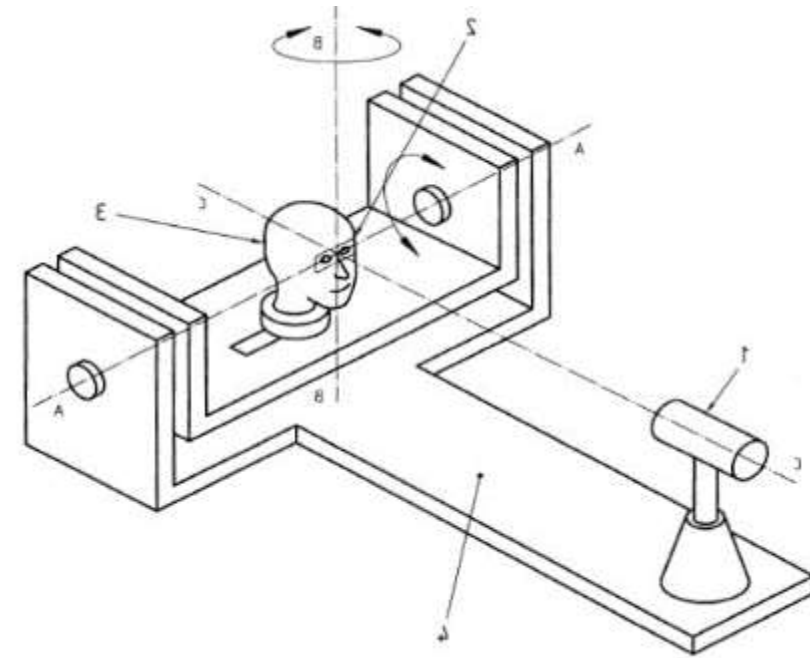
Required Features		
Test	Description	Relevant Standard
Splash protection	Does the device protect the user from splashes of liquid?	BS EN 166, section 7.2.4 (10.2.2.2 of BS EN 168)
Sharp edges	Does the device have any sharp edges?	BS EN 166, section 6.1
Wipe clean	Can the entire front surface of the device be wiped clean?	Deemed to be a clinical requirement
Viewing depth	Is the length of the visor at least 150mm?	BS EN 166, section 7.2.4

Desirable Features		
Test	Description	Relevant Standard
Adjustable fit	Does the device have sufficient adjustability?	BS EN 166 6.3
Robustness	How durable is the device?	BS EN 166 7.1.4.2 (3.1 of BS EN 168)
Headband width	Is the headband at least 10mm wide?	BS EN 166 6.3
Glasses clearance	Does the visor contact glasses when worn?	EU Regulation 2016/425

Testing – Splash Protection

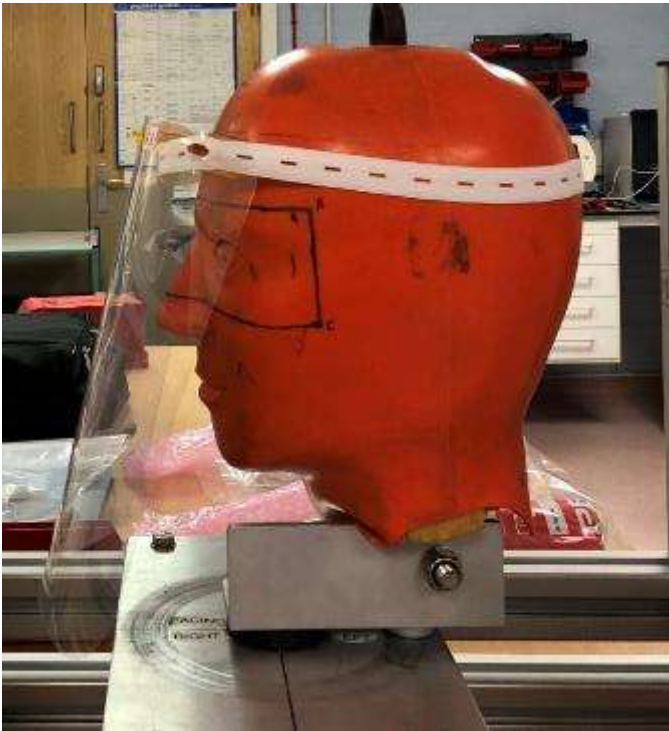


1. The splash test rig constructed by the MDU



2. The method for performing the splash test as set out in BS EN 168 Clause 10.2.2.2

Pass vs Fail



1. Fails splash protection



2. Passes splash protection
(Fails on clarity!)



3. Passes splash protection

A Centre for Quality Assurance

Team: Robin Sayer, Sarah Francis, Bruce Hudson, Aimi Philips

Tested over 70 different face shields!

Requests from clinical staff:

- Our test report helped determine safe use

From manufacturers:

- E.g. Airbus and Foster & Partners
- Recommendations for improvements
- Helped some through multiple design iterations
- Indication only of regulatory approval

