

„The lense makes the difference....“

Face shields and hoods against the thermal hazards of an electric arc.



**ErgoS
Basis_{plus}**

10.0 cal/cm²



ErgoS_{plus}

10.7 cal/cm²
Class 2



ErgoS 2_{plus}

12.0 cal/cm²
Class 2



ErgoS 2_{power}

26.0 cal/cm²

(only in combination with balaclava)

The company BSD produces face shields and protective hoods of the latest generation for electricians against electric arc faults.

Through the use of advanced materials and manufacturing technologies, we achieve excellent product features:

- High protective properties against electric arc
- Clear view
- Accurate color rendering
- Large fields of vision
- See through chin protection
- Low weight and optimal weight distribution
- Stable brackets and different mounting options
- Long service life

BSD face shields and hoods are certified according to European and American standards:

- DGUV GS-ET-29 (Box-Test)
- EN 166
- EN 170
- ASTM F2178 (Arcman-Test)
- ANSI/ISEA Z87.1.1

The production and quality control is monitored in accordance with the COUNCIL DIRECTIVE 89/686/EEC. All products carry **CE** - marking.

All face shields and hoods made in Germany.



Hood_{plus} 385 kJ

14.0 cal/cm²
Class 2



Hood_{plus} 630 kJ

25.0 cal/cm²
Class 2



Hood_{power}

40.0 cal/cm²

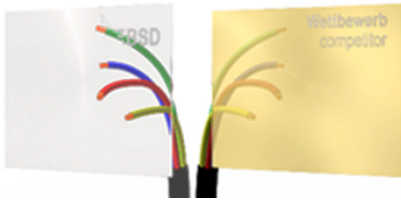


Balaclava

34.0 cal/cm²

The lense makes the difference

The special coating technology of the polycarbonate carrier used by BSD delivers unique optical properties and reflects thermal radiation. It enables the production of clear, non-colored visors. Thereby we have a realistic color reproduction, the color rendering index is > 95%. The case of colored visors (green or yellow) the rendering index is significantly reduced.



A second advantage of the visor of BSD is the long service life, time is not a limitation.

Ageing caused by radiation from direct sun and ambient light

Pure plastic materials are known for their different ageing behaviour when exposed to the radiation from direct sun and ambient light. Plastic materials used outdoors will normally be protected by different additives or by special coatings that are applied to the surface of the material. The current technology used to protect ordinary transparent polycarbonate material is to apply a coating to the optical surface of the material. In the case of arc flash protection face shields, two types of technologies are used for the protection against the thermal radiation caused by an electric arc flash, viz.:

- Absorption technology
- Reflection technology (BSD technology)

For face shields using absorption technology, easily recognisable by the green or yellow tinted visors, almost all the harmful radiation is absorbed by the visor and not transmitted through the visor. It is this absorption of radiation that will protect users during an electric arc flash event. However, the visor will also absorb radiation from the daily exposure to sun and ambient light, which will

accelerate the ageing and change the optical characteristics of the visor. This ageing process will require periodic inspection and replacement of the face shields.

For face shields using reflection technology (BSD ErgoS Face Shield family and BSD Arc Protection Hoods), only a small part of the harmful radiation will be absorbed and the majority of the radiation will be reflected (Fig. 1).

This reflection technology will not only protect the user during an arc flash but will also protect the visor from the radiation that it's exposed to during daily use. The lifespan of the polycarbonate visor is therefore extended well beyond the estimated lifespan of the face shield.

Mechanical damage

Face shields should be inspected for mechanical damage before they are used. If the visor is cracked or mechanical damage is visible, the face shield should not be used. The most common defects are normally caused by small scratches to the visor. The radiation technology used by the BSD face shield will remain effective, and the protection level will not be influenced, even if small scratches are visible on the visor surface.

This was proven during tests performed in accordance with the requirements of DGUV GS-ET-29, Class 2, where the scratched visor had no influence on the protection level provided by the face shield.

General

The ageing of products depends on the different characteristics of the materials used and the stresses that the products will be exposed to during their lifetime. PPE products, like face shields, are mainly made of plastic materials. The most important part of the face shield is the visor, which is manufactured from Polycarbonate material that provides thermal protection during an electric arc accident.

The following environmental stress factors have an impact on the lifespan of the entire face shield, including the visor:

- mechanical stress during use
- mechanical stress during transport and storage
- duration of exposure to direct sunlight
- temperature

Based on the current requirement for manufacturing and testing, in accordance with the latest standards for arc flash face protection products, and the results obtained during development tests, examinations and product experience, the company BSD can substantiate the following statement:

All products of the **BSD ErgoS Face Shield family** and **BSD Arc Protection Hoods** have **no restriction on lifetime and durability** when used in accordance with the usage instructions.

Figure 1: Absorption coefficient for Absorption technology face shields and BSD ErgoS face shields

