Legislation and Standards

Eye and Face Protection for Welding

Classification of eye- and face protection is made according to EN 166 (visors), EN 169 (shade/transmittance of filter in scale numbers), EN 175 (welding shields) and EN 379 (auto-darkening welding filters).

Classification of mechanical strength (resistant to increased robustness and high speed particles) is coded with letters in the standards EN 166 and EN175: no symbol for minimum robustness, ‘S’ for increased robustness (drop ball test 5.1 m/s), ‘F’ for low energy impact (45 m/s) or ‘B’ for medium energy impact (120 m/s). The letter ‘T’ (EN 166) indicates that the test for energy impact is made at extremes of temperature (-5°C and +55°C).

<table>
<thead>
<tr>
<th>Classification of mechanical strength</th>
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<tbody>
<tr>
<td>Class S</td>
</tr>
<tr>
<td>Class F</td>
</tr>
<tr>
<td>Class B</td>
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<tr>
<td>Class T</td>
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</tbody>
</table>

Note: Products classified in class B are not made to give total protection under all possible circumstances, e.g. when using grinding wheels/grinding machines.

In addition to the letters for mechanical strength classification field of use is coded with figures: “9” is resistance against splashes of molten metals and penetration of hot solids, “3” is resistance against liquids (droplets or splashes) and “8” is resistance of electric arc due to a short circuit in electrical equipment (EN 166).

For the standards EN 166 and EN 379 optical tests are made to avoid problems such as non-conformity in the light transmission across the welding filter or light scattering from the filter layers. From the result of the optical tests the optical quality of the welding filter or face shield are classified from 1 to 3, where 1 is the best. For conventional welding filters and visors there is only one classification of optical class. For autodarkening welding filters there are four parts of the classification: optical class/diffusion of light/transmittance and as option angel dependences.
<table>
<thead>
<tr>
<th>European standard</th>
<th>3M Product</th>
<th>Classification *)</th>
</tr>
</thead>
</table>
| EN 166 | Personal eye protection - Specifications. | ClearVisor (polycarbonate) protective visor  
Speedglas FlexView protective visor  
ClearVisor (acetate) protective visor  
Visor (shade 5) protective visor | 1.B.3.9  
1.BT  
1.F.3  
1.F.3 |
| EN 175 | Personal protection - Equipment for eye and face protection during welding and allied process. | Speedglas 9100 welding shield  
Speedglas SL welding shield  
Speedglas 9000 welding shield**  
Speedglas FlexView welding shield**  
Speedglas ProTop welding shield**  
Speedglas Utility welding shield | B  
B  
B  
B  
B  
B |
| EN 379 | Personal eye protection -Automatic welding filters. | Speedglas 9100XX welding filter  
Speedglas 9100X welding filter  
Speedglas 9100V welding filter  
Speedglas SL welding filter  
Speedglas 9002X welding filter  
Speedglas 9002V welding filter  
Speedglas 9002D welding filter  
Speedglas Utility welding filters | 1 / 1 / 1 / 2  
1 / 1 / 1 / 2  
1 / 1 / 1 / 2  
1 / 1 / 2  
1 / 1 / 1  
1 / 2 / 2  
1 / 2 / 2 |
| EN 397 | Industrial safety helmet | Speedglas 9000 welding shield with safety helmet***  
Speedglas FlexView welding shield with safety helmet***  
Speedglas ProTop welding shield | N/A  
N/A  
N/A |

*) Personal eye protection is classified of optical clarity and mechanical strength.  
**) The welding shields with SideWindows option are approved EN 175 level F.  
***) Safety helmet option for respiratory systems.