**APPLICATION**

Foam uses various extinguishing effects:

- Cooling, suppressing, separating, covering, insulating and displacing – each effect alone effectively protected by this method.

**EFFECTS**

- **Cooling effect**
  - The dense foam cover smothers the fire by preventing the oxygen supply to the burnt material.
- **Smothering effect**
  - The foam concentrate criteria are fixed for every event of fire. Protectors' foam concentrates are supplied to the users depending on their requirements.
- **Covering effect**
  - Modern foam expansion is especially advised for fighting of ground burns, for example, in underground car parks or in subterranean halls.
- **Separating effect**
  -Due to the foam expansion the heat dissipation is considerably increased and the existing combustibles are passivated considerably.
- **Displacement effect**
  - Due to the use of high expansion foam concentrates, various fire extinguishing phenomena are created: insulation, displacement and cooling – such effect alone or in combination with the other extinguishing phenomena.
- **Insulating effect**
  - Fire-extinguishing foam is a highly effective extinguishing medium for fires of all classes A, B, C and D. It is produced by foaming a water-foam mixture, protein foam concentrate, synthetic foam concentrate and low expansion foam. These phenomena are produced by the foam concentrate effect.
- **Film forming effect**
  - Medium expansion foam is used 10 to 20 fold foamed. Medium high expansion foam is produced by foaming a pure water-foam mixture 20 to 100 fold foamed. In this case the water-foam mixture used. Example: If 1 litre of medium expansion foam is produced by foaming a water-foam mixture of 10 fold, then 100 litres of low expansion foam are produced. The foam expansion rates are listed in the valid standards. It describes the volume of the fire extinguishing media for fires of fire class A and B.

**Range of application**

- Extinguishing foam concentrate
  - Minimax offers the right foam concentrate for every event of fire. Protectors' foam concentrates are supplied to the users depending on their requirements.
  - Fire-extinguishing foam is produced by foaming a water-foam mixture, protein foam concentrate, synthetic foam concentrate and low expansion foam. These phenomena are produced by the foam concentrate effect.
  - The selection of the foam concentrate is based on the fire situation and the potential hazard levels at the location of the fire. It is decisive for extinguishing foam concentrate.
EFFECTS

A foam concentrate has several extinguishing effects, which individually or together offer a guaranteed quick and sustainable extinguishing success even when using the extinguishing foam.

Cooling effect
This effect specifically occurs in foam extinguishing. In the case of a fire, the effective cooling of the materials involved, the combustion products and the heat transfer to the surrounding area is a significant advantage. The cooling effect is especially noticeable in the case of high expansion foam, which is produced by a water-foam mixture with a high water content. The cooling effect prevents the materials and temperature levels already generated from increasing further and reduces the release of the heat effect.

Smothering effect
The high density of the foam is one of the extinguishing effects, since the foam is not able to be extinguished by it, as it is not reached against further oxygen supply.

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Low expansion foam
Is produced by foaming a water-foam mixture, protein foam concentrates, intumescent foam concentrate (APIF) and the foam. Normally, low expansion foam is used to 1:10 foam-in-water. The foam concentrates are supplied with the respective extinguishing media for fires of fire class A and B.

High expansion foam
Is created by foaming a mixture of water and polymer film (e.g. polymer AFFF), a very thin and especially slippery film forms. This rushes ahead of the combustible gases so that they are secured against further effects, oxygen supply.

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High expansion foam
Is created by foaming a mixture of water and polymer film (e.g. polymer AFFF), a very thin and especially slippery film forms. This rushes ahead of the combustible gases so that they are secured against further effects, oxygen supply.

The closed foam cover causes the fire zone to be displaced.

Displacement effect
The density and viscosity effects of the foam film separate. This rushes ahead of the existing combustible gases are simultaneously displaced and oxygen is removed from the fire zone, while combustible materials are secured against heat effects and ignition risk. Foam concentrate criteria
Foam concentrate rate
The foam concentrate rate is listed in the validity standards. It describes the volume of the fire extinguishing foam at a ratio to the volume of the extinguishing medium. Example: 1000 l of foam concentrate is used for 200 l of water. The foam concentrate rate is 10.
CHARACTERISTICS

### Sea water resistance

A special requirement for the use on ships, offshore area, in the chemical and petrochemical industry, on ships and airports.

### Foam film formation

A very thin, quick flowing film develops on the burning surface when using aqueous film forming foam concentrates. The resulting regulations must be observed by an authorized company under certain conditions. According to the local law.

<table>
<thead>
<tr>
<th>Equipment and options</th>
<th>Foam expansion rate</th>
<th>Proprietary marking</th>
<th>Water pressure</th>
<th>Specific weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Powder-compatible, alcohol-resistant, prevents re-ignition</td>
<td>3% –30 °C</td>
<td>1% Low expansion foam</td>
<td>0.5%</td>
<td>1.16 ± 0.02</td>
</tr>
<tr>
<td>Fluid, stable and gasproof, flame- and heat-resistant, oil-deflecting, powder-compatible, prevents re-ignition</td>
<td>6 to 8 times</td>
<td>6% –30 °C</td>
<td>1.15 ± 0.02</td>
<td>–15 °C</td>
</tr>
<tr>
<td>Quick flowing, well adhering, stable and gasproof, flame- and heat-resistant, oil-deflecting, powder-compatible, prevents re-ignition</td>
<td>1 to 10 times</td>
<td>1% Low expansion foam up to 7 times</td>
<td>0.5%</td>
<td>1.15 ± 0.02</td>
</tr>
<tr>
<td>Quick flowing, well adhering, stable and gasproof, flame- and heat-resistant, oil-deflecting, powder-compatible, prevents re-ignition</td>
<td>1 to 10 times</td>
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<td>1.16 ± 0.02</td>
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<tr>
<td>Quick flowing, well adhering, stable and gasproof, flame- and heat-resistant, oil-deflecting, powder-compatible, prevents re-ignition</td>
<td>More than 200 times</td>
<td>3% Low expansion foam</td>
<td>0.5%</td>
<td>1.15 ± 0.02</td>
</tr>
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<td>Quick flowing, well adhering, stable and gasproof, flame- and heat-resistant, oil-deflecting, powder-compatible, prevents re-ignition</td>
<td>1 to 10 times</td>
<td>1% Medium expansion foam</td>
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### Compatibility

Aqueous film forming foam concentrates cannot be mixed together. The mixing of foam concentrates may never be mixed together.

### Flowability and adhesive power

Foam concentrates can be stored for many years in suitable containers. Foam concentrates can be stored for many years in suitable containers. Foam concentrates can be stored for many years in suitable containers. Foam concentrates can be stored for many years in suitable containers. Foam concentrates can be stored for many years in suitable containers.

### Storage

Re-ignition and therefore also protects the fire extinguisher against re-ignition and prevents it from being extinguished again when using aqueous film forming foam concentrates. The resulting regulations must be observed by an authorized company under certain conditions. According to the local law.

### Foam branch pipes

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EFFECTS

The various extinguishing effects, which individually or together with others guarantee a quick and suitable extinguishing success must be considered when selecting extinguishing foam.

Cooling effect
This effect specifically comes to fruition in foam extinguishing. Due to the lower temperature of the foam as compared to the ambient temperature of the burning surface, the heat flowing from outside against any further oxygen supply is reduced, whereby gas breakthroughs and re-ignitions are prevented. The risk of fire spread is minimized.

Spreading effect
When using aqueous film forming foam concentrates (AFFF), a very thin and especially slippery surface is formed by the tensides in the film. This rush ahead of the foam and separates existing combustible gases from the fire zone, while oxygen is removed from the fire zone, and the fire zone is covered.

Displacement effect
Due to the use of medium and high expansion foam concentrate, the fire is completely covered. Further oxygen supply is prevented, preventing further reactions at the location of the fire. It is decisive for the extinguishing success that the fire is covered constantly and with a sufficiently high and closed foam layer so that the extinguishing effects of the foam concentrate reach the fire directly. This generates a very thin and especially slippery film.

Cover effect
The closed foam cover causes the fire zone to be insulated and displaced. This effect is specific to medium and high expansion foam, in particular in fire sections, where the foam concentrates are used 6 to 10 fold foamed.

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The low heat conductivity of the foam insulates and displaces – each effect alone cannot extinguish the fire. Together with other extinguishing effects, such as cooling and spreading, they are essential for extinguishing a fire.

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APPLICATION

The various extinguishing effects, which individually or in tandem with others guarantee a quick and overall extinguishing success as well as fire suppression from a distance:

Cooling effect
This effect specifically occurs in foam, which is used to cool the fire. The heat of the fire is dissipated by the foam, reducing the temperature of the burning surface. Enabled by this effect, the fire extinguishes in the foam extinguishing very quickly, allowing the combustion energy to be removed from the burnt materials.

Spreading effect
When using aqueous film forming foam concentrates (AFFF), a very thin and especially slippery polymer film separates. This rushes ahead of the existing combustible gases so that they cannot react when using fire-extinguishing foam. The spreading effect is decisive for the location of the fire. It is decisive for the fire situation and special ambient conditions.

Displacement effect
Due to the use of air and wet foam expansion, the extinguishing foam is cooled in its entirety. The cooling of the foam concentrates is enabled by the flowing and extinguishing properties.

Extinguishing effect
The foam concentrates are stored in such a way that they cannot reach the fire for an extended period of time. The material is selected so that the fire cannot spread or react when using extinguishing foam. The extinguishing success is therefore a function of the extinguishing media for fires of fire class A and B.

Wet low expansion foam is produced by foaming a water-foam mixture 20 to 200 fold with air. Synthetic foam concentrate, produced foam concentrate, and protein foam concentrate are suitable for this. The foam expansion rate is approximately 8 to 20 fold for AFFF and 20 to 100 fold for AFS concentrates.

High expansion foam is produced by foaming a water-foam mixture 100 to 1000 fold with air. Synthetic foam concentrate, produced foam concentrate, and protein foam concentrate are suitable for this. The foam expansion rate is approximately 8 to 20 fold for AFFF and 20 to 100 fold for AFS concentrates.

Foam concentrate criteria
Foam concentrate rate
The foam extinguishing rate is determined by the flame. It describes the volume of the fire extinguishing foam that is required for extinguishing one fire.

Expansion rate
The foam extinguishing rate is determined by the foam concentration, the foam type, and the foam application. The foam extinguishing rate is therefore a function of the extinguishing media for fires of fire class A and B. The foam extinguishing rate is determined by the foam concentration, the foam type, and the foam application.

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Expansion rate 1:10

Extinguishing foam concentrate

The main application field of high expansion foam with a foam volume increased by up to 1000 times. The material used is the type of foam concentrate, the respective extinguishing system, and the foam extinguishing system.

High expansion foam generators can generate up to 1000 times the original volume. The material used is the foam extinguishing system, the foam extinguishing system, and the foam expansion rate.

Extinguishing foam concentrate

The low heat conductivity of the foam insulates the burning materials from the heat of the fire. The heat effect, the water proportion in the foam concentrate, and the foam application are secured against heat effects and ignition sources.

Extinguishing effects:
- Insulating effect
- Cooling effect
- Suppressing effect
- Separating effect
- Covering effect

In extinguishing foam concentrates with the addition of water to the fire extinguishing foam, the foam extinguishing system is divided into the following categories.

Film forming effect
The low heat conductivity of the foam insulates the burning materials from the heat. Air induction. More air content makes the foam extinguishing more effective. Insulating and displacing – each effect alone provides quick extinguishing success. Foam concentric extinguishing fire extinguishing systems with low expansion rate.

The foam extinguishing system is divided into the following categories.

High expansion foam
Foam with a foam volume increased by up to 1000 times. The material used is the foam extinguishing system.

High expansion foam concentrates with the addition of water to the fire extinguishing foam are divided into the following categories.

Foam extinguishing systems with low expansion rate.

High expansion foam generators can generate up to 1000 times the original volume. The material used is the foam extinguishing system, the foam extinguishing system, and the foam expansion rate.