

What is Prefirex?

It is a **ready-to-use solution** that doesn't require any dilution or mixing. It can be stored safely in an IBC container in a garage and remains usable—without crystallizing—for at least two years, likely even longer.

Prefirex is based on the natural ability of magnesium sulfate (MgSO_4) to bind water. One molecule of MgSO_4 binds seven molecules of water, forming magnesium heptahydrate ($\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$). In nature, this compound is known as Epsom salt—an environmentally safe substance found in nature, commonly used in bath salts and as a magnesium supplement for constipation. This makes Prefirex fundamentally safe for both people and the environment.

Prefirex is a 30–45% water-based solution. It contains not only the crystalline "bound" water within magnesium sulfate, but also free water (H_2O), cellulose as a binding agent to keep it in place on the ground, and additional eco-safe additives that prevent crystallization and corrosion.

How Does It Work?

The mechanism is ingeniously simple:

1. Prefirex contains **55% water**, which evaporates quickly when exposed to heat.
2. The magnesium heptahydrate ($\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$) **releases bound water** when heated (~150–200 °C).
3. As fire approaches, the heat causes the water in the solution to vaporize.
4. The resulting steam **displaces oxygen** and **cools the surroundings**, which can:
 - Slow the spread of the fire
 - Extinguish an early-stage fire when the fuel load is still light

Integration into Defensible Space Zones

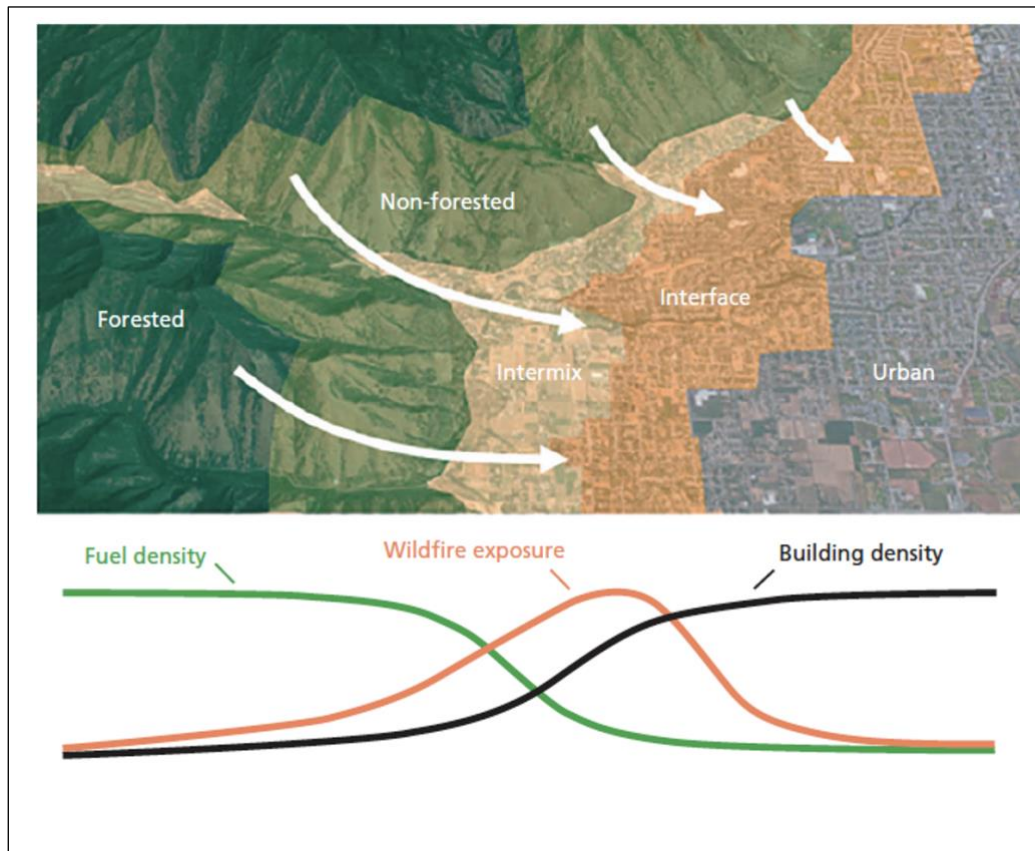
Defensible space zones are a critical part of fire safety strategies in WUI (Wildland-Urban-Interface). These zones are carefully managed areas around buildings meant to slow or stop fire spread:

1. **Zone 0 (0–1.5 m from structures):**
 - Keep this area entirely free of flammable materials.
 - No shrubs, tree trunks, or vegetation leaning on roofs or walls.
 - Use non-flammable materials such as gravel or stone tiles.
2. **Zone 1 (1.5–9 m):**
 - Cut grass short and remove dead vegetation.
 - Trim shrubs and lower tree branches.
 - Avoid resinous or oily plants like junipers.
3. **Zone 2 (9–30 m):**
 - Thin tree stands and remove flammable ground litter.
 - Create spacing between tree canopies.
 - Ensure driveways and escape routes remain clear.

Prefirex can be especially useful in these zones where fuel loads are already reduced to levels at which Prefirex is most effective.

Proven Effectiveness

Prefirex has been **tested and validated in Finland** by the Finnish Defence Forces (who originally requested its development for preventing wildfires caused by munitions) and the Emergency Services Academy of Finland.



It has also been tested successfully in Greece in autumn 2024 by the MAICH fire laboratory. Numerous test videos are available at www.xpyro.fi.

According to those tests performed (above) the Prefirex is optimal fire protection liquid at **Wildland-Urban Interface (WUI)** zones. According to Emergency Services Academy's testimonial, a firebreak was achieved using just **3 L/m² over a 1–2 meter width**, which remained effective for up to **5 days**. In MAICH fire laboratory in Greece just 1,5 liters sprayed 1-day before was enough to stop the fire. Please review the testimonials of ESAF and MAICH institute.

Ideal Use Cases

Prefirex is ideal for protecting structures that simply **must not catch fire**, such as private properties or critical infrastructure. It is **not an aerial fire retardant**, but rather a **ground-applied liquid** dispersed via sprayer from an IBC container or fire truck. After the fire it turn fertilizer into the soil.

Warm regards,

Harri Keskinen

CEO

Xpyro Oy

hari.keskinen@xpyro.fi

☎ +358 40 7315545