

**STOP FOREST AND WILD FIRES
FROM SPREADING**



by *PPO*[®]

ForExt

Forest Fire Extinguishing Agent

Fluorine-free – Halogen-free – Water-saving



MADE IN FINLAND





PPO® ForExt

Finnish companies Kiilto Oy and PPO-Elektroniikka Oy have combined their expertise and developed a fluorine and halogen free fire-fighting chemical for stopping forest and wildfires.

According to chemical legislation, ForExt is not classified as dangerous for humans or the environment.

PPO



KiILTO



The world needs new methods for wildfire fighting – the old ones do not work.

The problem is...

- Spraying pure water in the burning forest is not enough.
- At +40 C, the water will disappear in 5 minutes.
- Airdrops are expensive and ineffective.
- When several fires co-occur, not enough airplanes or copters are available.



Our new extinguishing agent – An innovative, green, fluorine-free method

1. Stop the fire from going further by making a firestop area, wide enough, with PPO® ForExt. The treated area will not catch fire.
2. Direct the fire to a desired direction, away from the accommodation.
3. After extinguishing, focus on preventing reignition.



The PPO[®] ForExt Firewall stops the fire



*This area
handled with*



by PPO[®]
ForExt
Forest Fire Extinguishing Agent



*The area where
fire stops*

A growing forest fire



PPO® ForExt in a nutshell

- PPO® ForExt (patent pending) is a liquid extinguishing agent. It is mixed with water at a **mixing ratio of 1:100**.
- Stops the fire and prevents it from spreading.
- First applied to the outer edges of the forest fire – the treated zone prevents the fire from spreading further on the ground's surface and inside the ground. After this, ForExt can be used for the actual extinguishing.
- ForExt was tested in real action during the aftermath of the Kalajoki forest fire in 2021, where it proved its functionality – the treated areas did not catch fire again.
- The ForExt/water mixture can be spread from any firefighting equipment such as helicopters, airplanes, fire engines or special equipment designed for forest fires.
- In the tests of the Finnish rescue service of South-Savo, it was found that the application of the mixture works excellently in water cannons, shower pipes, pumps and other devices in use without blocking them – it works even with a backpack.



Advantages – PPO® ForExt

- Can be sprayed with all existing fire equipment.
- Stops the fire from spreading.
- Very efficient in the post-extinguishing.
- The fire staff and equipment are released to the next fire area.
- Firefighters' safety – fire releases poisonous gases >
When you spray the fire, cut the area 50-100 meters away from the fire,
you are not exposed to toxic gases.
- Fluorine-free and halogen-free solution.
- Efficient extinguishing – saves water.



PPO® ForExt with extinguishing wagons

Extinguishing wagons with PPO® ForExt are the most effective solution in challenging conditions.

We cooperate with Finnish forest machinery companies, [Kesla Oyj](#) and [Ponsse Oyj](#).



KESLA



PONSSE





PPO® ForExt mentioned in Finnish Ministry of Interior report

Translation from Finnish:

“Different fire retardants have been developed to extinguish wildfires effectively. Fire retardants can be used to enhance the extinguishing effect, or they can be used to create fire breaks to prevent the fire from spreading. In Finland, there are environmentally friendly fire extinguishing agents that do not cause damage to the terrain, people or animals, nor damage the extinguishing equipment.

Fire retardants can be used as an enhancement in traditional extinguishing tasks. They can be mixed with the water tanks of fire engines and spread with a water cannon or spray pipe on the fire area or its edges. Fire retardants can also be used with helicopters.

For example, in the Kalajoki forest fire, the ForExt chemical was used with the extinguishing wagon, which was able to make a fire break of about 100 meters at once. The area treated with fire retardant did not catch fire again. This extinguishing trailer was developed for forest machines in cooperation between the Rescue service and the Forest Machine Company Ponsse Oy.”

Source: *Sisäministeriö Helsinki 2022. LIITE 9a (Sisäministeriön julkaisuja 2022:17).Maastopalojen maasammutustoiminnan konseptin muodostaminen pelastustoimessa. Laaja raportti. Joni Mänttari, Etelä-Karjalan pelastuslaitos. (Source In English: The Ministry of the Interior Helsinki 2022. APPENDIX 9a (Publications of the Ministry of the Interior 2022:17). Formation of the concept of ground extinguishing operations for wildfires in the rescue operation. Extensive report. Joni Mänttari, South Karelia rescue service. Pages 34-35.)*



PPO® ForExt

- Extinguishing efficiency:
Tested in real forest fires
(Kalajoki forest fire, Finland, 7/2021).
- The biggest challenge was that the
Beat-based ground reignited again
and again, when they used only water.
- ForExt stopped the reignitions.



Picture: Kalajoki, Finland 2021

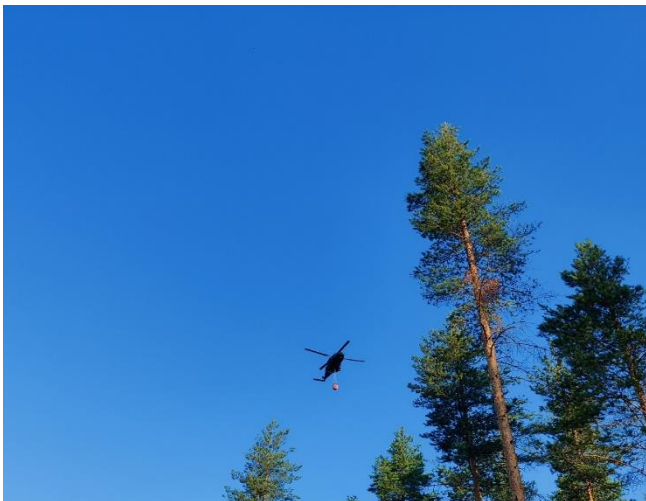




Application of the ForExt-water mixture



Tests with the South Savo Rescue Department in Mikkeli, Finland, June 2021.



PPO® ForExt sprayed from the helicopter and new firefighting equipment (installed in the load space of a forwader for extinguishing wildfires).



Testing - Extinguishing a forest fire



Applying the ForExt-water mixture to the test areas.



The fire is spreading quickly in the untreated area.



The spread of the fire stops at the edge of the area where the ForExt water mixture has been applied.





For various applications

- Industrial use – Hot work such as welding, grinding etc.
- Military use - Shooting exercises
The Finnish Defence Forces have found tens of applications where they will use it in the future; practice shootings, protecting temporary bullet storage etc. In cannon shooting, they treat the target area with the PPO[®] ForExt.
- Protecting residential areas - Properties, yards, gardens
- Camping - Extinguishing campfires
For example, 65% of wildfires in Canada have started from camping fires.

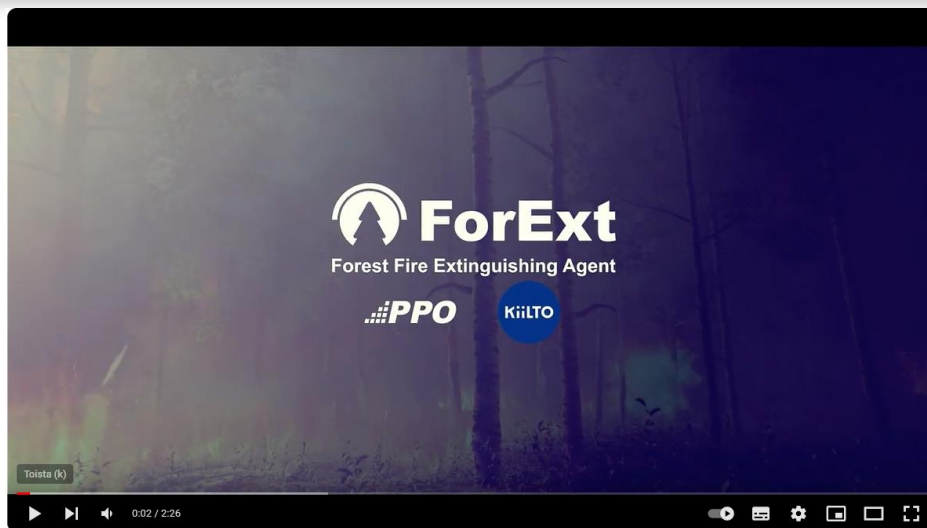


Why PPO® ForExt?

- Forest fires and wild fires are a serious global threat.
- Extinguishing forest and wildfires is a very demanding task. The area can be hard-to-reach and dangerous, constantly requiring a large team of fire professionals 24/7 to control and shut down the fire. The fire can last up to weeks, even months.
- That is why we developed an environmentally friendly extinguishing agent PPO® ForExt, that is easy to apply and brings help to the fire area immediately.



PPO® ForExt videos



PPO® ForExt - A unique, green, water-saving Forest Fire Extinguishing Agent made in Finland



PPO® ForExt Heinäpalotesti / Hay fire test



PPO® ForExt

PPO
Elektroniikka

KiILTO

**An innovative solution
for fighting wild and forest fires
around the world.**

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