
A unique solution for fighting forest fires around the world

Finnish companies PPO-Elektroniikka Oy and Kiilto Oy have combined their expertise and developed an environmentally friendly, fluorine-free firefighting chemical for extinguishing forest fires and wildfires.

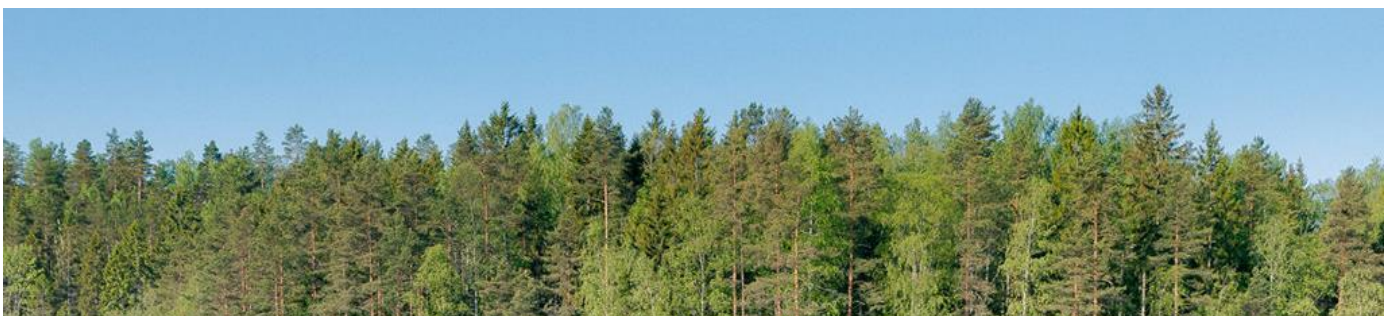


PPO® ForExt (patent pending) is a liquid forest fire extinguishing agent. It is mixed with water and applied to the outer edges of the fire area. This unique solution has a flame-retardant effect: it puts out the fire and prevents it from spreading.

Kiilto's 103-year expertise in the chemical industry and PPO-Elektroniikka's more than 30 years of experience in fire extinguishing technology made it possible to develop this unique solution. [Kiilto Oy](#) is responsible for manufacturing the product and [PPO-Elektroniikka](#) for its marketing and developing the spreading technique.

PPO® ForExt (patent pending) stops the fire and prevents it from spreading. The substance is mixed with water at a mixing ratio of 1:100 and first applied to the outer edges of the forest fire – the treated zone prevents the fire from spreading further both on the surface of the ground and inside the ground. After this, ForExt can be used for the actual extinguishing. ForExt was tested in real action during the post-extinguishing of the Kalajoki forest fire in 2021, where it proved its functionality – the treated areas did not ignite again.

The ForExt/water mixture can be spread from any firefighting equipment, such as helicopters, aeroplanes, fire trucks or special equipment designed for forest fires.



In the tests of the Rescue Service of South Savo in the summer of 2021, it was found that the application of the mixture works excellently in water cannons, shower pipes, pumps and other devices in use without clogging them.

PPO® ForExt is environmentally friendly and fluorine-free and does not cause damage to people, nature, aquatic ecosystems, animals or firefighting equipment.

PPO® ForExt effectively prevents the spread of fire

Extinguishing forest/wildfires is a very demanding task. The area can be challenging to access and dangerous; it requires a lot of equipment and firefighters 24/7 to control and extinguish the fire. Fires can last for several weeks.

PPO® ForExt is easy to spread, and it brings help to the fire area quickly. The ForExt agent is mixed with water (Ratio 1:100).



Picture: Hay fire extinguishing test. The fire stopped entirely at the edges of the treated area.

Watch the Hay fire test video on Twitter: <https://twitter.com/PPOFin>

Tests in Niinisalo, Finland

10 July 2023

We tested the functionality of the PPO® ForExt in the Niinisalo garrison, Finland. Thanks to the teams of the Rescue Services of Satakunta and Pori Brigade.

Half of the area was treated with pure water and half with ForExt/water mixture 1:100. The weather was dry and hot; it hadn't rained in a few weeks. We waited half an hour before lighting the fire. The water had evaporated, so the fire advanced at full speed in the water-treated area. When the fire reached the area treated with the ForExt/water mixture, the fire was put out immediately.



Tests in Vekarajärvi, Karelia Brigade, Finland

31 May 2022

[The South Savo Rescue Department](#) and the [Karelian Brigade/The Finnish Defence Forces](#) organised a **test day for PPO® ForExt in Vekarajärvi**. During the day, the substance was tested in different ways; with smaller hand sprayers and heavier equipment, such as fire equipment developed in cooperation between the Rescue service and the forest machine company Ponsse Oy (Called [Mörkö](#) in Finnish).

The test sessions were part of the Ministry of the Interior's Rescue Department's project "Development of an operating model for a special resource for wildfire firefighting operations". The tests will also be used in international cooperation (The Finn Rescue Arctic Ground Forest Firefighting Using Vehicles ([FI GFFF-V FI GFFF-V](#)) project aims to develop the extinguishing performance of wildfires locally, regionally, nationally as well as internationally.

Preliminary findings in Vekarajärvi

According to all the experts on-site, the user experience was excellent.

The mixture was easy to apply, not clogging even the tiny nozzles. The South Savo Rescue Department ordered ForExt to the emergency storage. Likewise, the Finnish Defense Forces are testing ForExt; they have needs in many different situations when it is necessary to prepare for the spread of fire in-field training, shooting training, etc.

Here you can see an example with pictures.

PPO ForExt was applied mixed with water to a limited area. The firefighters lighted a fire in a large pile of twigs. The fire subsided quickly and did not spread from the treated area.



The mixture was applied to a confined area with a hand sprayer and heavier equipment.



The fire was lit in a dry, giant pile of twigs.



The fire did not spread from the treated area – it quickly subsided.

Firefighter experts on Twitter after the test day

https://twitter.com/mika_siitonen

Mika Siitonen, Fire Chief, Etelä-Savo Rescue Department, Mäntyharju fire station #GFFF-V.



In English: Rainy weather slightly disturbed @karjalanPR and @escue firefighting Test with a forest fire extinguisher # forest fire. It seems very promising, but we will develop tactics with fire equipment (Mörkö). # GFFF-V



In English:

One firefighter presented the extinguishing effect of a fire-extinguishing backpack with the same substance. Gives time for hose pulling.

PPO® ForExt was tested in the Kalajoki forest fire

29-30 July 2021

PPO® ForExt was tested for the first time in an actual situation during the post-extinguishing phase of the massive forest fire in Kalajoki in July 2021.

Rescue Director called and asked for help extinguishing a challenging forest fire. The PPO team loaded its van with PPO ForExt extinguishing agent and headed toward Kalajoki. The biggest problem was the peat-based land, which repeatedly caught fire.

The fire brigade had already pumped 100,000 litres of water into the hectare area, but the fire always broke out again.

The PPO team treated an area of three hectares with a ForExt/water mixture (10,000 litres of water / 100 litres of ForExt). The treated area never caught fire again.

Forext kept the treated area non-flammable for a long time. The experiences were so good that ForExt would be used to stop and extinguish forest fires in the future in Finland.

The water delivered to the site could be sprayed at full pressure approx. 50 meters away on both sides of the machine, resulting in a fire break covering approx. 100 meters at a time. The first experiences of ForExt's functionality in an actual situation were excellent.

The Kalajoki forest fire was Finland's largest in more than 50 years. The burned forest area was about 227 hectares in total.



The picture shows the application of PPO® ForExt/water mixture during post-extinguishing forest fires in Kalajoki.

Tests in South Savo, Finland

9 June 2021

We tested the spreadability of the substance in tests organised by the Etelä-Savo rescue service in Mikkeli. The test was part of the Ministry of the Interior's rescue department's

project "Development of the operational model of the special resource for land fire extinguishing".

Tests showed that PPO® ForExt mixed with water could be used with all existing equipment. The application of the mixture works excellently in cannons, shower pipes, pumps and other devices in use without clogging them.



Picture: The test day in Mikkeli, Finland

The most effective combination was achieved with "Mörkö". This type of equipment reaches the most challenging terrain that fire engines cannot reach.

Contact info/ User experiences: Rescue manager Tuomo Halmeslahti, Rescue and security services, Rescue operations services, tuomo.halmeslahti@etelasavonha.fi, tel. +358 44 794 3850.

ForExt is mentioned in the report of the Ministry of the Interior:

Mänttäri Joni. [Formation of the concept of ground extinguishing operations for wildfires in the rescue operation.Southern Karelia Rescue Department](#). Publications of the Ministry of the Interior 2022:17. Page 34 3.9.4 Flame retardants.

Countering a global threat

Climate change is a real global threat as the climate warms. One of the biggest reasons for this is forest fires. The more the global average temperature rises, the more wildfires intensify and vice versa. Forest fires and wildfires cause hundreds of billions of dollars in damage worldwide. In 2019, carbon dioxide emissions from forest fires were approximately 7.8 billion tons.

We developed PPO® ForExt, an environmentally friendly solution for managing forests and wildfires. Our unique solution does not harm people, animals or the environment.

More info:

**PPO-Elektroniikka Oy, tel. +358 9 566 0920, ppo@ppo-elektroniikka.fi
www.ppo-elektroniikka.fi, www.ppoforesxt.com**

The PPO® ForExt Firewall stops the fire



[PPO® ForExt Video 2:27 sec](#)
(Youtube)

