PHOSave
Deliverable D5.3
Pilot Plant

Partner responsible:

<table>
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<tr>
<th>Part no.</th>
<th>Participant organization name</th>
<th>Short name</th>
<th>Country</th>
<th>Nature</th>
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<tr>
<td>1</td>
<td>ProPHOS Chemicals S.r.l</td>
<td>ProPHOS</td>
<td>Italy</td>
<td>SME</td>
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Introduction

The aim of the PHOSave project is the recovery of exhausted extinguishing powder (polyvalent powder) via an eco-innovative, chemical/physical, solubilization process. In particular, PHOSave aims at developing a system for the recovery of phosphate contained in exhausted extinguishing powder. This will help to develop new products to use in fields such as the agriculture and wood sector. The widespread use of PHOSave technology will maximize profits and environmental aspects. The following goals will be achieved: a solution to the problem of exhausted extinguishing powder (which is a special waste); the reduction of CO₂ in the industrial chain and the recovery of raw materials in an almost pure form.

The PHOSave specific objectives are:

1) Developing an innovative eco-compatible method for removing the powder oil component, that is nowadays an unsolved industrial and environmental problem.

2) Implementing a pilot plant for the treatment of the exhausted extinguishing powder and recovering the phosphate. ProPHOS could be able to recover¹ about:
   - 10,000 tons of powders per year on the Italian market (to reach 100% of Italian market – currently ProPHOS covers 20% of the Italian market);
   - 20,000 tons of powders per year on European market by 2021;
   - 50,000 tons (potential) of powders per year on European market after 2021.

3) Contributing to the implementation of new eco-sustainable waste management methods and the recovery of a high value, non-renewable, raw material (phosphate). In Europe, and in particular in Germany, a real industrial recovering process of the exhausted extinguishing powder is not in place. PHOSave intends to develop the first industrial level plant to be constructed in the world. The project will contribute to the waste management removal of heavy metals and other additives thus also improving the determination of the concentrations of key components in the final product.

4) Obtaining fundamental raw materials for the formulation of specialty fertilizers for agricultural use and achieving further environmental benefits in terms of reduced greenhouse gas emissions. In particular, eco-sustainable liquid and/or microgranulated fertilizers will be produced with higher surface area and higher homogeneity to increase substantially the productivity of the crops. Each ton of fertilizer produced through recycled material will allow a savings of about 500 kg of raw materials (in the consumption of primary resources) and saving the emission of about 480 kg CO₂ equivalent and the use of about 430 m³ of water.

The recovery of raw material will fit nicely into an already mature market of flame retardant chemicals and chipboard panel for furniture. The acid solution obtained in PHOSave can be used as an acid catalyst for adhesives and the produced granular material can be added during the preparation of the panels. The presence of phosphate confers a positive degree of fire protection.

¹ Chamber of Commerce and Industry in Milan – 2014
Chemical and Biological Treatment Area
Industrial Chemical Treatment Pilot Plant
Laboratory Pilot Plant
PHOSave – Innovative solution for phosphate recovery from exhausted extinguishing powders
Mechanical and Biological Treatment Plant
Industrial Chemical Treatment Pilot Plant
PHOSave – Innovative solution for phosphate recovery from exhausted extinguishing powders