## Project Information Sheet

**Biodegradable and environmental friendly component (wad) based on PVA for a cartridge (CARTRIDGE WAD)**

<table>
<thead>
<tr>
<th>Programme area:</th>
<th>CIP Eco-innovation 2010</th>
</tr>
</thead>
</table>
| Coordinator:   | Plásticos Hidrosolubles, S.L.  
Spain  
E-mail: elena.moreno@hidrosoluble.com, calidad@hidrosoluble.com  
Tel: +34 96 141 24 61 |
| Partners:      | Alfred Feistel Waffen und Munition AFWM. Mebstetten-Heistetten.  
Germany  
Asociación de Investigación de a Industria del Juguete, conexas y afines, AIJU. Alicante, Spain.  
Comercial de Armas y Municiones, S.A. CARMUSA, Gordexola, Vizcaya, Spain. |
| Website:       | www.cartridge-wad.eu |

### Benefits

A biodegradable, compostable and water-soluble wad for a cartridge will provide an environmentally friendly solution that will eliminate waste and plastic residues from shooting ranges and wild hunting areas.

**Keywords:** Biodegradable, cartridge, wad

**Sector:** Green Business

**Type of solution**

Product and technology

**Duration:** 01/09/2011-01/09/2013

**Budget:** 1.219.106 € (EU contribution: 609.553 €, 50 % of the estimated eligible costs)

**Contract number:** ECO/10/277370/SI2.599581

### Summary

The project consists in the design, manufacturing and launch into the market of an innovative hydro soluble and biodegradable wad that could be used as a component for a cartridge replacing conventional plastic. This wad will be made of polyvinyl alcohol (PVA), is soluble in water, biodegradable and non-toxic.

After being shot the wad itself, containing the ammunition, will dissolve in hours when placed in humid conditions and biodegrade in weeks leaving no toxic residues and/or harmful particles, contrary to a conventional cartridge wad which leaves plastic residues difficult to manage for decades.

Cartridge manufactures, hunters and sporting shooters would benefit from this alternative product to the existing conventional plastic.

The coordinating company Plásticos Hidrosolubles assembled a partnership consisting of the manufacturer of the biodegradable plastic material; Carmusa, eco-cartridge producer; Aiju, a technological institute with a vast experience in non conventional plastic materials; and finally a marketing organization, Alfred Feystel, supplying cartridges to a wide number of customers. The first three are based in Spain while the later one is in Germany.

The job ahead for the partnership will be manufacturing and testing of the polyvinyl alcohol formulation, the design of the geometry of the wad, the manufacturing of the injection mould, the assembling of the cartridge and the marketing and commercialisation of the finished product. All these activities will be done with the proper timing and sequence between September 2011 and September 2013.
Expected and/or achieved results

- The fine tuning of the PVA formulation to meet the technical, ballistic and functional requirements of the hunting industry for an ecologic cartridge. All the official test has been done and the certificates are available for the both references of steel T28 gr and T32 gr. This Green Shoot products are ready for use.

- The manufacturing of PVA wads for shotgun cartridges by means of injection moulding, that will dissolve and biodegrade leaving no footprint under the normal atmospheric and environmental conditions found in the fields across Europe: in water (river, lake or sea) or on soil, disappearing with no environmental impact in 2-3 hour hours or 2-3 months, respectively. Even the mechanical properties of the cartridges that include the Green Shoot wad have been much more better than the standard cartridges. Different clients have tested in real conditions the different references of cartridges available and the feedback is spectacularly good.

- Dissemination of the results, promotion of the product at European level (starting in Germany) and launching into the European market. Next events are the show in the IWA exhibition next March 2013 and the Cantoblanco Event in which the participants will try the product in Madrid.

- The first wads biodegradable, non toxic and water soluble for the industrial line is expected to be obtained by mid 2012 and will approximately produce 1.5 million of pieces the first year. By end 2013 it is expected to reach a market share of 10% of ecological cartridges and a portion of those used in wetlands and rainy environments. At this stage we have assemble around 20,000 units of each reference and all of this cartridges has been used in different parts of the world. Next deliveries will be to Estonia and U.K where we are finishing the conversations to close contract for distribution of the product.

- The potential market for uptake is 700-1.200 millions cartridges. Each cartridge would represent 3,5 -4 grams of the new material. A successful development will minimize drastically the environmental impact of hunting and sport shooting activities. For that reason during the last weeks the SEPRONA (Protection Service for the Nature organization in Spain) has been asking for some samples. If they see that this product fulfil with all the expectative they will promote the use of them in all shooting range in Spain. We will have to know something positive in the next coming months.

The information sheet will be published in the Eco-Innovation website. The EACI reserves the right to edit the information sheet for content and length.