


## CARTRIDGE WAD

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### INFORMATION ON THE ECO-INNOVATIVE SOLUTION PROVIDER

This eco-innovative solution is the output of the project titled “Cartridge-Wad” co-funded by the European Commission within the framework of the Competitive and Innovation Program. This solution has been developed by a team coordinated by Plásticos Hidrosolubles, Spain in partnership with Alfred Feistel Waffen und Munition AFWM (D), Asociación de Investigación de a Industria del Juguete (ES) and Comercial de Armas y Municiones (ES).

### SHORT DESCRIPTION OF THE ECO-INNOVATIVE SOLUTION

A hydro-soluble and biodegradable wad is used as a component for cartridges, replacing conventional plastic. This wad is made of polyvinyl alcohol (PVA), is soluble in water, biodegradable and non-toxic. The production of wads is performed in moulding machinery. The main advantage is that the cartridge 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 that are difficult to manage for decades. Cartridges are already available on the market in different sizes. This material is unique and not offered by any other manufacturer.

### INDUSTRIAL SECTOR – MARKET SEGMENT AND ACTUAL APPLICATION IN INDUSTRY

20-39 Manufacturing

### INDUSTRIAL CLASSIFICATION - NACE CODE;

09 Fishing, Hunting and Trapping

## 1. DESCRIPTION OF ECO-INNOVATIVE SOLUTION

### Technical aspects of the eco-innovative solution

The manufacturing of PVA wads for shotgun cartridges will be carried out by injection moulding in state of the art equipment. The know-how consists of the raw material mix, adjustments in the mould and how the mould is manufactured. The basic material (wads) will be provided by the technology owner, as this is the core of the new technology. The mechanical properties of the cartridges that include the innovative PVA wad are better than standard cartridges. The Spanish authorities certified that the cartridges comply with Spanish regulations.

### Economic and environmental benefits of the eco-innovative solution

The cost of the final product, a box of cartridges (22 shots) in the EU is 1€ more expensive than a conventional product. The main environmental advantage of the shotgun cartridges is the fact that the cartridges will dissolve and leave no footprint under the normal atmospheric and environmental conditions in the fields: in water (river, lake or sea) or on soil, disappearing with no environmental impact in 2-3 hours or 2-3 months, respectively. The overall environmental performance of the PVA wads is better than the PE wads.

	PVA wad	PVA wad residue
TOTAL	6,90E-04	3,49E-03
P01- Prod Mat+mix	0,00E+00	0,00E+00
P02 - Extrusion	5,60E-06	3,92E-06
P03 - Injection	6,85E-04	6,85E-04
P04 - End of Life	0,00E00	2,80E-03

Chart 1: Non hazardous waste (kg)

## 2. AVAILABILITY OF THE ECO-INNOVATIVE SOLUTION AND BUSINESS PARTNERSHIP

### Market readiness, Trade mark, existing market coverage, commercialization strategy

The solution is available on the market in EU countries. Eco-cartridges have been used in different parts of the world. The product is distributed by: [www.greenshootcartridges.com](http://www.greenshootcartridges.com)  
Trade mark – Green Shoot

### Requirements to adapt the solution to the local market and potential applications/market size

There are no specific requirements made by local industrial manufacturers in the Southern Mediterranean countries for applying the solution and adapting it to the local market. Temperature range and humidity requirements for the storage of the cartridge wads need to be controlled within set point values, 20 °C and 25°C with relative moisture between 40% and 60%.

### On-site after-sales services support and the technical assistance requirements

Technical support will be provided from the technology owner in Spain.

### Targeted local business partners

- Cartridge manufactures are the main target group for business partnerships
- Plastic manufacturers of PET WAD
- Cartridge distributors for hunters, sporting shooters, shooting academies and hunting grounds

### Type of local business partnership sought

Different types of business partnership possible, including:

- Local cartridge manufacturers, willing to incorporate the Eco Wad in their ammunition
- Large scale manufacturers of polyetilene wads willing to incorporate Eco Wads in their catalogs either as manufacturers or as distributors
- Collaborate with partner in injection moulding industry and transfer technology
- Distribution agreement (samples will be provided)