

# Considerations on Ecological Writing Instruments

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Some criteria with major impact on  
environment, quality and social aspects

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For information on the addresses of the companies and to see their product range please visit the website [www.ewima.org](http://www.ewima.org) ➔ **Members**

## Introduction

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Manufacturers of writing instruments, organized in the European Writing Instrument Manufacturer's Association EWIMA, continuously strive for environmentally friendly products and production processes. The results are being explained in individual product descriptions and company reports.

In addition to their individual efforts manufacturers listed some common criteria to be considered when designing environmental friendly products combined with high writing performance and quality.

The big variety of writing instruments for different purposes and target groups alongside with numerous materials and substances makes it complex and costly to make carbon footprints or life cycle assessments for each different product. However, the comparison of different life cycle phases confirms, that the environmental impact of a product is mainly due to the raw material usage in its manufacturing. Consequently, phases like transport or production are usually not regarded to be of major importance for the environmental impact of writing instruments.

The considerations are specifically based on ball point pens. However, general criteria may also be used for further product categories as roller ball pens, gel pens, fineliners and markers.

Ecological soundness shall not be a sole, isolated attribute of writing instruments. Materials, substances, production process and working conditions have to fulfil internationally accepted standards. Ecologically products furthermore need to be of high usability and quality to serve the customer.

All materials and substances used in writing instruments have to comply with European Law.

## Production

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- **Social standards**

Production methods shall comply with international accepted standards of the International Labour Organisation (ILO) and shall at least be documented within the company or audited by independent certified bodies.

- **Latest technology**

The production process shall use the latest technology to save fossil energy and material and avoid waste.

- **Environmental management system (EMS)**

Production methods shall comply with international accepted environmental management systems as the European “Eco-Management and Audit Scheme” (EMAS) or the international standards series ISO 14000 “Environmental Management”. The compliance shall be documented within the company or audited by independent certified bodies.

## Product Design

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- **Quality**

To be accepted by customers ecological friendly writing instruments have to maintain high quality. Quality in general includes for example writing performance, mechanical stability and shelf life. For ball point pens some quality criteria are described in the international standards

- ISO 12757-1: Ball point pens and refills, Part 1 general use
- ISO 12757-2: Ball point pens and refills, Part 2 documentary use (DOC)

- **Chemical substances**

In general dangerous or harmful substances according to the European Dangerous Substances legislation (67/548/EEC, reg. (EC) No. 1272/2008) shall not be used in writing instruments. If dangerous substances are unavoidable for the intended product or application, they shall be used only in the lowest necessary quantity.

- **Writing length**

Writing instruments with long writing length can be used for a longer time and have to be replaced less frequently compared to products with lower writing length. This reduces the material consumption related to writing length.

- **Refillability**

Considering the writing length, the possible number of refills has to be regarded. Light but not refillable products may have a long writing length related to the mass of a product. On the other side long-lasting, refillable products may increase the overall writing length. Though, also heavy writing instruments can reduce their impact on environment, as plenty of refills can be used before the end of the product's life.

- **Weight of product**

According to calculations on life cycle assessments the material is the key to environmental protection. The more material is used for a product the bigger is the impact on the environment. When regarding the weight it is necessary to consider the possible maximum writing length including refills during the estimated lifetime.

- **Bioplastics and recycled material, sustainable materials**

The use of bioplastics and recycled material to a certain amount can replace virgin material based on fossils and thus contribute to a reduction of ecological impact. The same applies to products made of wood, preferable from sustainable forests.

- **Relation between mass, material, refillability and writing length**

For products as ballpoint pens, roller ball pens and fineliners an attempt to express the impact on environment of mass, material, refillability and writing length may be the following correlation:

$$C = \frac{(MV_o + 0,4 * MR_o + 0,4 * MB_o) + n * (MV_r + 0,4 * MR_r + 0,4 * MB_r)}{L_o + n * L_r}$$

C "Ecofactor" [ $\frac{g}{km}$ ] (smaller "C" means less impact on environment)

MV Mass of virgin material [g]

MR Mass of recycled material [g]

MB Mass of bioplastics and/or renewable material [g]

n Number of refills

o Original Product

r Refill

L Writing length [km]

0,4 Correction factor for bioplastics, renewable and recycled material

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