

IRONic Liquido Antichizzante

Novacolor Srl gives priority to environmental protection and safety in the workplace. For this reason Novacolor constantly seeks to improve the quality of its products and their production cycles in order to reduce the overall impact on the environment and ensure quality and safety for customers.

This environmental data sheet shows the environmental information of IRONic Liquido Antichizzante: LCA, LEED and other information.

IRONic is a water-based system consisting of a base coat (IRONic Fondo) and an oxidative finish (IRONic Liquido Antichizzante).

The application of IRONic Liquido Antichizzante on IRONic Fondo produces an oxidative effect exactly alike the effect of an iron surface exposed to atmospheric agents' natural corrosion.

LIFE CYCLE ASSESSMENT

Life Cycle Assessment (LCA) is a tool to quantify the environmental impact of a product or service throughout its entire life cycle. The LCA methodology, as defined by ISO 14040/44 [1-2], consists of four phases:

- goal and scope definition
- inventory analysis
- impact assessment
- interpretation

Goal and scope

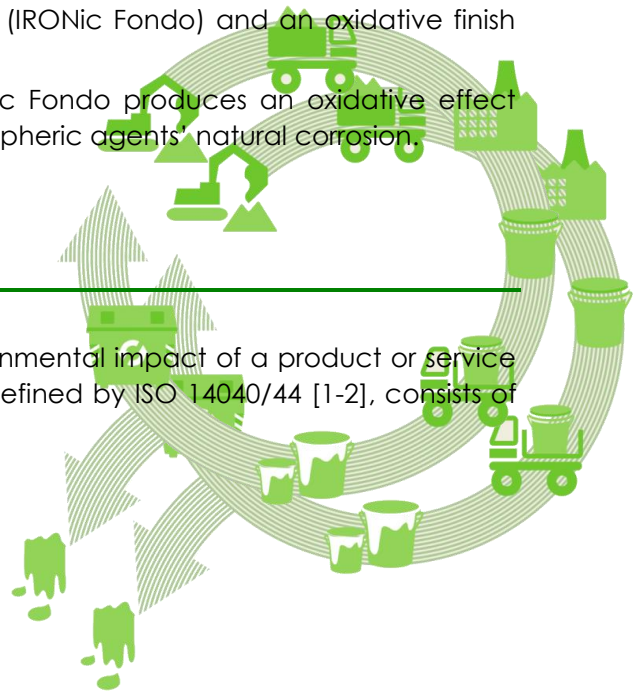
The **goal** of this LCA [3] is to provide transparency about the environmental performance of IRONic Liquido Antichizzante), to create improvement options and support environmental communication. The functional unit is 1 kg of paint including packaging, with a spreading rate of 0,104 kg/sqm (average). The **system boundaries** include raw materials, their transportation, processing, packaging, distribution, use and packaging disposal. During the use phase the paint is hand-applied and the associated emissions are insignificant.

Inventory analysis

Primary data are used for the most significant processes, like the paint recipe, packaging and factory consumptions and emissions. Data refer to 2012 and are collected at the Novacolor's factory located in Forlì (FC). Secondary data originate from the ecoinvent v3 database [4]. The LCA calculations are performed with the LCA software SimaPro 8.0.3 [5].

Impact assessment

Life cycle impact assessment has been done with the method **PCR product group: UN CPC 3511 2014:5 on paint [6]**, as indicated in the EPD programme of the International EPD Consortium. This method consists of different environmental indicators including the Carbon Footprint, human toxicity, ecotoxicity, air emissions, water consumption and waste. Table 1 shows the LCA results.



For further information: Novacolor Srl, Tel.: +39 0543 401840, e-mail: export@novacolor.biz ,www. novacolor.it

IRONic Liquido Antichizzante

Life cycle assessment verification

The used LCA calculation system is verified by a third party in conformity with UNI EN ISO 11044:2006 and UNI EN ISO 11040:2006 [7]

Table 1: LCA results.

| | | Unit | Total | Upstream | Core | Downstream |
|-------------------|---------------------------------|-------------------------------------|--------|----------|-------|------------|
| Impact categories | Global Warming (100 yr) | kg CO ₂ eq | 0,885 | 0,447 | 0,126 | 0,312 |
| | Ozone layer depletion (ODPr) | mg CFC-11 eq | 0,046 | 0,022 | 0,011 | 0,012 |
| | Photochemical oxidation | g C ₂ H ₄ eq | 0,153 | 0,125 | 0,019 | 0,008 |
| | Acidification | g SO ₂ eq | 3,16 | 2,04 | 0,49 | 0,62 |
| | Eutrophication | g PO ₄ ⁻⁻⁻ eq | 1,033 | 0,654 | 0,129 | 0,248 |
| | Human toxicity, non-cancer | CTUh * 10 ⁻⁹ | 0,077 | 0,059 | 0,008 | 0,008 |
| | Human toxicity, cancer | CTUh * 10 ⁻⁹ | 0,039 | 0,042 | 0,003 | -0,006 |
| | Ecotoxicity | CTUe * 10 ⁻³ | 16,757 | 25,135 | 1,179 | -9,557 |
| Waste | Hazardous waste | kg | 3,711 | 2,181 | 0,269 | 1,261 |
| | Non hazardous waste | kg | 0,099 | 0,013 | 0,028 | 0,057 |
| Air Emissions | VOC | g | 0,098 | 0,081 | 0,01 | 0,005 |
| | NMVOG | g | 0,864 | 0,574 | 0,11 | 0,179 |
| | SO ₂ | g | 1,606 | 1,243 | 0,223 | 0,14 |
| | CO ₂ (fossil) | kg | 0,814 | 0,392 | 0,117 | 0,303 |
| | Methane (fossil) | g | 2,453 | 1,972 | 0,25 | 0,23 |
| | methane (biogenic) | g | 0,051 | 0,029 | 0,003 | 0,018 |
| | NO _x | g | 2,297 | 0,955 | 0,443 | 0,899 |
| Other | Material subjected to recycling | g | 46,33 | 3,26 | 6,56 | 36,51 |
| | Blue virtual water | kg | 5,3 | 3,94 | 0,97 | 0,38 |

Interpretation

The LCA results indicate that the largest contributions come from upstream processes (i.e. raw materials). The Carbon Footprint of IRONic Liquido Antichizzante is 0.885 kg CO₂ eq.

The negative values are caused by the pallet reuse.

LEED

LEED means Leadership in Energy and Environmental Design. It is a voluntary program that provides third-party verification of green buildings. It provides building owners and operators a tool to understand their building's environmental performance and to create healthy indoor spaces.

For further information: Novacolor Srl, Tel.: +39 0543 401840, e-mail: export@novacolor.biz ,www. novacolor.it

IRONic Liquido Antichizzante

In order to obtain LEED certification, projects must satisfy prerequisites and earn points (there is a threshold). The number of points the project earns determines its level of LEED certification.

LEED is a certification system that deals with the environmental performance of buildings based on overall characteristics of the project. Although LEED does not certify products and services of individual companies, products and services do play a role and can help projects with credit achievement.

The table below shows IRONic Liquido Antichizzante potential contribution to the different **LEED credits** of the LEED 2009 and LEED v4 (Leadership in Energy and Environmental Design) [8]. Table 2 shows the possible contribution of the paint to potential credits, if used properly.

Table 2: Potential LEED credits.

| LEED 2009 Credits | | Description | Possible points |
|-------------------|---|-------------|-----------------|
| MR credit 5 | Regional Materials | | 1-2 points |
| IEQ credit 3.2 | Construction Indoor air quality management plan | | 1 point |
| IEQ credit 4.2 | Low-Emitting Materials Paints and Coatings | | 1 point |
| LEED V4 Credits | | Description | Possible points |
| MR credit | Building Life-Cycle Impact Reduction | | 1-5 points |
| MR credit | Building product disclosure and optimization — Environmental Product Declarations | | 1-2 points |
| IEQ credit | Low-Emitting Materials | | 1–3 points) |

More information are available on request

Novacolor does not guarantee that credits will be obtained by projects pursuing LEED certification. The designer or engineer will need to evaluate and verify if the project complies with the LEED requirements.

OTHER INFORMATION

Label VOC Dir. EU 2004/42/EU [9]

Limit value EU (Dir. 2004/42/EC)

Cat. L: Decorative effect coatings (water-base): 200 g/l (2010)

IRONic Liquido Antichizzante Contains max: 200 g/l VOC

VOC Dir. 2004/42/EC : Content [9]

The actual content of VOC substances is less than 1 g/l

For further information: Novacolor Srl, Tel.: +39 0543 401840, e-mail: export@novacolor.biz ,www. novacolor.it

IRONic Liquido Antichizzante

ECODESIGN INDEX

Counter of ecodesign activities affecting the coating, accomplished by the company.

| N° | Activity item | Date |
|----|---------------|----------|
| 1 | first issue | aug 2014 |

References

- [1] ISO 14040, 2006: Environmental management, Life cycle assessment, Principles and framework. CEN, EN ISO 14040:2006 (www.iso.org).
- [2] ISO 14044, 2006: Environmental management, Life cycle assessment, Requirements and guidelines. CEN, EN ISO 14044:2006 (www.iso.org).
- [3] Colorificio San Marco, LCA project, "Environmental Data Sheet" 2014.
- [4] Ecoinvent, 2013: Database ecoinvent v3. Swiss Centre for Life Cycle Assessment, (www.ecoinvent.ch).
- [5] PRé, 2014: LCA software SimaPro 8.0.3. PRé Consultants, the Netherlands (www.pre-sustainability.com).
- [6] PCR 2014:5. Paints and varnishes and related products. Product Category Rules (PCR) for preparing an environmental product declaration (EPD) for paints and varnishes and related products, the Swedish Environmental Management Council (www.environdec.com).
- [7] Verify n. 37585 30 april 2014 – CSQA Certificazioni Srl – Thiene (VI) Italy
- [8] USGBC, LEED 2009 and LEED v4: Rating System for New Construction and Major Renovations (new.usgbc.org/leed)
- [9] Directive 2004/42/CE of the European Parliament and of the Council on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain paints and varnishes and vehicle refinishing products and amending Directive 1999/13/EC (21 april 2004)

For further information: Novacolor Srl, Tel.: +39 0543 401840, e-mail: export@novacolor.biz ,www.novacolor.it