

steel poles are sustainable!

The government takes touchable steps towards a sustainable society and takes a leading position: *sustainable procurement*. Quite regularly the following question is asked: *does a steel pole fit into the policy of sustainable procurement?* The answer to this question is: *a steel pole is extremely sustainable and fits completely into the cradle-to-cradle concept*. This means that condemned steel poles contribute to the chain of raw materials for a new generation of steel poles after being recycled.



our steel poles are sustainable due to the following reasons:

1. initial production of steel is characterized by favorable energy usage
2. steel poles are 100% recyclable (cradle-to-cradle)
3. a hot dip galvanized pole has a maintenance free life span of 40 years
4. steel poles have very favorable characteristics towards fatiguing
5. a well preserved steel pole has an almost infinite life span
6. zinc is not (!) harmful to people and environment
7. PMF produces its steel poles in a climate neutral way

On the following pages aforesaid characteristics are deepened. On the last page some extra interesting information concerning the characteristics of steel are mentioned.



initial production of steel is characterized by favorable energy usage

Since the iron-age, iron is used for the production of tools and construction purposes. It is a common used material in our daily life. Iron-ore changes by heating and adding carbon to iron. After several operations, iron changes to steel, which is usable for manufacturing steel poles. The energy usage is more or less attractive. We have to inform you that the carbon emission of a wooden pole is much better than a steel pole, but the availability of good and maintenance free wood is inadequate.

steel poles are 100% recyclable (cradle-to-cradle)

A steel pole can be fully recycled. After your old poles are removed as scrap, the metals are melted into new raw materials. With hot dip galvanized poles the layer of zinc gets separated from the steel. After this process both materials are recycled separately.

a hot dip galvanized pole has a maintenance free life span of 40 years

This life span till 40 years is mentioned in AgentschapNL (State Institute for Sustainability and Innovation) criteria for sustainable procurement of public lighting. These criteria are established for the Ministry of Housing, Spatial Planning and the Environment (VROM). The life span of a hot dip galvanized steel pole which has been powder coated is still longer. Nevertheless AgentschapNL remarks correctly that practical experience is lacking. A hot dip galvanized pole is maintenance free.



A coated pole needs to be cleaned periodically from dust and dirt as indicated in the standard guarantee provisions.

steel poles have very favorable characteristics towards fatiguing

A steel pole is insensitive towards fatiguing. If the material stress will not exceed the yield stress, fatiguing will not affect to the pole. This is an advantage, because fatigue breakage will damage the construction and reduce the life time of this pole.

a well preserved steel pole has an almost infinite life span

The life span of a wide range of steel poles has been proved by means of life span calculations. These calculations are made by PMF for a standard pole package for the Municipality of Amsterdam due to questions of durability.



zinc is not (!) harmful to people and environment

A hot dip galvanized pole loses zinc due to the fact that raindrops take a minimum amount of zinc into the underlying ground. The poles lose 2 micrometer of the applied zinc (original >80 micrometer) every year. In the past it was assumed that zinc emission was harmful. The State Institute for Health and Environment (Dutch RIVM report 711701078) recently conducted research on zinc emission of hot dip galvanized barriers. The outcome of this research shows that an acting zinc emission is not harmful to people and environment. A fairly small amount of zinc emission (less than 10%) comes from construction metals like zinc gutters, barriers, lighting poles, steel constructions etcetera. Zinc is recyclable for over 90 % without losing its characteristics. Hot dip galvanizing is and remains a good and reliable protection against corrosion.



Former Minister Cramer (Ministry of Housing, Spatial Planning and the Environment; VROM) has had recently a meeting with Michael Braungar, the inventor of the cradle-to-cradle concept. Michael Braungar has changed the perspective towards zinc. He feels that zinc can be recycled very well without harming the environment. Even more: zinc is an essential element for humankind, plants and animals. A shortage of zinc can be harmful to human health. Michael Braungar feels that the positive aspects of zinc are forgotten.

producing climate neutral

PMF produces climate neutral and has closed an agreement with the Climate Neutral Group. The emission that is caused during its business gets compensated on a yearly base. In addition PMF leads an active policy to reduce its energy usage.

A steel pole stays a beautiful, but most of all, very sustainable product. A steel pole fits completely into the cradle-to-cradle concept.

Besides the many positive durability aspects of steel, our steel poles also have other interesting characteristics like:

steel poles are less vulnerable

A steel pole experiences almost no hinder due to vandalism such as bending, tearing or breaking. Moreover, a steel pole is less vulnerable when it comes to a mild collision. The dent sensitivity of a steel pole is low.

steel poles are not sensitive to galvanic corrosion

A steel pole is **not** sensitive to galvanic corrosion. Galvanic corrosion is an electrochemical process in which one metal corrodes preferentially when in electrical contact with a different type of metal and both metals are immersed in an electrolyte. Galvanic corrosion results in vulnerable parts, which can disappear or completely dissolve fairly fast.

steel poles are easy to place

A steel pole can be easily placed in a street, due to the fact that one does not have to take into account the risks that can lead to galvanic corrosion.

steel poles have no limitations

Almost every steel pole used in the international road network has been made out of one piece. The length of a zinc bath [for hot dip galvanising] is mostly the critical path for the the maximum length of a lighting pole. The Dutch Galvanisers are focused on long products: steel hot dipped galvanised poles with lengths of 22 or 25 meter are possible. Steel poles are available in the most diverse lengths, diameters, wall thicknesses, shapes, etcetera.

steel poles are often better priced

A steel pole has often the best price. Also when things like life span and residual value are taken into account.

Do you have further questions or would you like more information? We are pleased to inform you about our steel poles



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