

Environment and sustainability statement

Introduction

Nippon Carbide Industries (NCI) and Rennicks (UK) Ltd, are committed to reducing the environmental impact in the course of the manufacture and supply of sign face sheeting for road traffic signs. NCI operate manufacturing plants in Japan and China producing Nikkalite® sheetings, which are distributed in the UK by Rennicks (UK) Ltd.

Kyoto protocol, Japan's environment and sustainability laws

In addition to hosting the Kyoto protocol in 1998, Japan was one of the early signatories to this legally binding commitment for the reduction of 4 types of greenhouse gases including CO2 emissions.

NCI's key environmental aims include the reduction of CO2 emissions from its production activities, in addition to complying with Japanese environmental laws which include;

- **Law concerning the Rational Use of Energy**
- **Japanese Recycling Law.**



The *Law Concerning Rational Use of Energy* (known as the Energy Conservation Law) was passed in 1979, and is the foundation on which Japan has achieved the world's highest level of energy efficiency. Japan is also a model country in terms of recycling and their national efforts have surpassed many other countries.

NCI Environment and sustainability

In line with the Japanese rational use of energy law, NCI invested in the latest low energy technology for producing glass beads in their Hangzhou, China factory in 1996. This equipment significantly reduced emissions from what is often considered to be a high CO2 emission process.

The Hangzhou factory also operates ISO 9001; 2000 and ISO 14001; 2004.

NCI are further contributing to reduce CO2 generated during the transportation of raw materials by sourcing from local suppliers in China.

Furthermore, NCI's policy is to reutilize and recycle packaging materials in their production processes wherever possible in line with Japanese culture.



Sheeting manufacture CO2 comparisons

CO2 emissions created during the production of microprismatic sheeting are lower than those from the production of glass bead sheeting. However, this ignores the end of life disposal of a traffic sign and a Life Cycle Assessment (LCA) of signs should be considered.

The life cycle of a traffic sign normally ends with the sign substrate being disposed of for scrap and recycling by incineration. During incineration, microprismatic materials, which are made mainly from plastic, namely crude oil, emit far greater CO2 compared to glass beads materials. Therefore, in comparison the difference in CO2 emissions is minimal.

Supporting Technical Information

CO2 comparisons

The table below provides detailed estimates of CO2 emissions from NCI manufacture of glass bead and microprismatic sheetings;

Life Cycle Assessment of sheetings and sign substrate;

NCI Production	+	End of life disposal	=	Total
Glass bead ULS 4.88kg/sqm	+	0.68kg/sqm	=	5.56kg/sqm
Microprismatic CRG 3.91kg/sqm	+	1.28kg/sqm	=	5.19kg/sqm
Difference 0.97kg/sqm	+	- 0.60kg/sqm	=	0.37kg/sqm (+6.7%)

Notes;

NCI Production - CO2 emissions from transportation of raw materials to the NCI sheeting being completed.

End of life disposal - CO2 emissions from the sheetings & sign substrate when incinerated together.

Conclusion

Glass bead sheeting emits (approx. 20%) more CO2 during the production process, however, when the end of life sign substrate incineration is considered as part of a Life Cycle Assessment, less CO2 is emitted in this process. The difference is 0.37kg/sqm (approx. 6.7%) therefore the CO2 emissions are virtually the same.

Since NCI invested in the latest low energy technology for producing glass bead sheeting in the early 1990's, the total CO2 emissions from this process have reduced significantly.

NCI are continuously seeking to further reduce energy consumption and CO2 emissions in their manufacturing activities in line with their Green Policy Activities.