

Cetol WF 955 'Cradle to Gate' Data

Akzo Nobel Specialist Coatings
 Meadow Lane, St Ives, Cambridgeshire PE27 4UY
 Tel: 01480 484235 Fax: 01480 496801
 Email: sikkens@sis.akzonobel.com
www.sikkens.co.uk

Prepared by:
Imperial College Life Cycle Assessment Group
Department of Biological Sciences
Sir Alexander Fleming Building
Imperial College London
London SW7 2AZ
United Kingdom

Akzo Nobel Decorative Coatings Ireland Ltd
 Malahide Road, Coolock, Dublin 17, Ireland
 Tel: 0868 504329 or 190724 Fax: +353 (0) 1 8478831

Akzo Nobel Specialist Coatings is a trading division
 of Akzo Nobel Decorative Coatings Limited.

Akzo Nobel Specialist Coatings has embarked on a process of
 assessing the environmental performance of several of its
 water-borne coating systems, using Life Cycle Assessments.
 This 'cradle to grave' assessment method is recognised to be
 the best tool available for assessing environmental
 performance, and our studies have been conducted according
 to the standards specified in the ISO 14000 series.

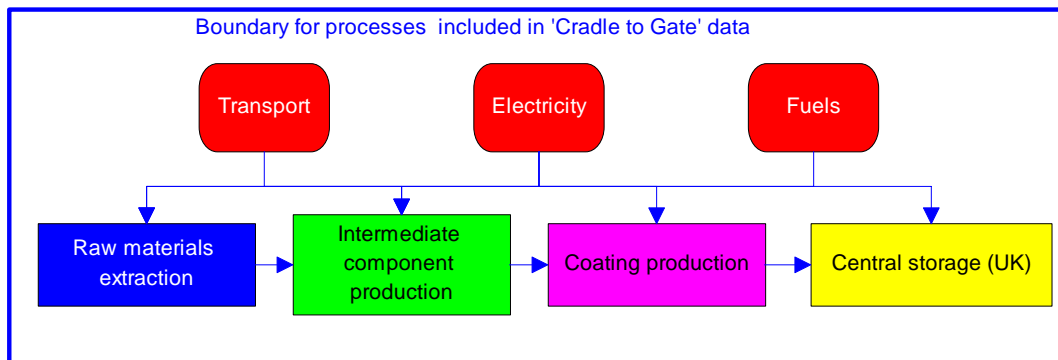
In order to make this information available to our customers
 in as useable a form as possible, we have developed these
 environmental product data sheets, which summarise the data
 generated by our LCA studies.

Cetol WF 955 is a high performance translucent water-
 borne, satin midcoat and finish. It is supplied in 20 or
 1000 litre containers, for factory application by air
 assisted airless spray.

It is an acrylic formulation dispersed in water, with
 a volume solids concentration of approximately 38%
 (depending upon colour).

The Functional unit

The data provided below are cradle to storage depot
 data (as illustrated in the figure below) for the
 production of **1000 kg of Cetol WF 955**



Labelling and declaration of contents

| Content | Symbol letters | Risk phrases |
|---------------------------------|----------------|--------------|
| Dipropylene glycol methyl ether | N/A | N/A |

This product is not classified as dangerous for supply according to the CHIP Regulations.

Environmental Data

The data presented here relate to current production, and were
 gathered during 2005. Contact Akzo Nobel Specialist Coatings for
 further details of the LCA studies upon which they are based, and
 for full technical and safety data for these products.

This data include the effects of all transport processes from the
 extraction of raw materials from the Earth, until the packaged
 product arrives at the storage depot in the UK.

For customers intending to make the Sikkens Translucent
 Coating System a part of their project, they are able to use
 these product-specific data as a direct addition to whole-
 project environmental assessments. By simply estimating the
 quantities of each coating required to produce and maintain
 the timber components within a project, the appropriate
 multiples of either the raw data or the impact data can be
 added to their whole-project data. Akzo Nobel Specialist
 Coatings technical support staff can assist with this.

Consumption and emissions data per 1000 kg of Cetol WF 955.

Non Renewable Resources

| Without energy content | kg | With energy content | MJ |
|------------------------|-------|---------------------|--------|
| Bauxite | 0.455 | Coal | 4,147 |
| Calcium (Ca) | 0.034 | Gas | 16,864 |
| Iron (Fe) | 0.212 | Oil | 15,676 |
| Sand | 13.3 | | |
| Sulphur (S) | 3.06 | | |

Renewable Resources

| Without energy content | kg | With energy content | MJ |
|------------------------|----|---------------------|----|
| None listed | | None listed | |

Electricity Consumption

| Electricity production source | kWh |
|-------------------------------|-----|
| Gas fired | 27 |
| Oil fired | 9 |
| Coal fired | 140 |
| Nuclear | 90 |
| Hydro | 17 |

Waste Generated

| Material | kg |
|---------------|-----|
| Special waste | 8.8 |
| Bulk waste | 32 |

Emissions to Air

| Material | g |
|---------------------------------------|-----------|
| Ammonia | 2.433 |
| Aromatics (unspecified) | 10 |
| Arsenic | 0.00518 |
| Benzene | 0.0362 |
| Cadmium (II) ion | 0.00343 |
| Carbon dioxide | 1,564,442 |
| Carbon monoxide | 1,806 |
| Dinitrogen oxide | 0.036 |
| Dust (PM10) | 106 |
| Ethylene Oxide | 0.290 |
| Hydrocarbons (excl.) | 1.290 |
| Hydrogen chloride | 51 |
| Hydrogen fluoride | 3.143 |
| Lead (II) ion | 0.0922 |
| Mercury (II) ion | 0.00234 |
| Methane | 13,803 |
| Methyl chloride | 1.171 |
| Nickel | 0.00357 |
| Nitrogen dioxide | 0.0294 |
| Nitrogen oxides (as NO ₂) | 8,420 |
| PAH* | 0.331 |
| Propylene | 0.0547 |
| Propylene glycol | 31,100 |
| Propylene oxide | 0.225 |
| Soot | 603 |
| Sulphur dioxide | 7,373 |
| Sulphur hexafluoride | 0.00524 |
| Sulphur trioxide | 0.0127 |
| Toluene | 0.0159 |
| Non methane VOC | 3,410 |
| Zinc (II) ion | 0.167 |

* Polycyclic Aromatic Hydrocarbons

Emissions to Water

| Material to fresh water | g |
|------------------------------|-----------|
| Ammonia | 239 |
| Ammonium | 15 |
| Benzene | 0.00177 |
| Biological Oxygen Demand | 275 |
| Chemical Oxygen demand (COD) | 3,087 |
| Chlorine | 1,625 |
| Dust (PM10) | 1,395 |
| Hydrogen chloride | 29 |
| Hydrogen sulfide | 0.000501 |
| Mercury (II) ion | 3.01 E-06 |
| Nitrate | 0.0630 |
| Nitrogenous compounds | 0.169 |
| Phenol | 5.304 |
| Phosphate | 26 |
| Sulphates | 3,243 |
| Material to marine water | g |
| Dust (PM10) | 12 |
| Hydrogen chloride | 14 |
| Phenol | 0.213 |

Life Cycle Impact Assessment Scores

| Category | Units | Score |
|-------------------------|----------------------------|-----------|
| Global warming | kg CO ₂ eq. | 1,880 |
| Ozone layer depletion | kg CFC-11 eq. | 0.0000234 |
| Photochemical oxidation | kg ethylene eq. | 14.7 |
| Acidification | kg SO ₂ eq. | 13.1 |
| Eutrophication | kg PO ₄ --- eq. | 1.27 |

*The impact categories used, are explained in Datasheet 1 of this series