Meet The Expert

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Duncan Lochhead
Sustainability Manager
Dulux / AkzoNobel Decorative Coatings UK

Duncan is an expert in driving sustainability within the decorative coatings industry. With over 30 years of experience in specification, colour and sustainability, he is convinced that coatings can positively impact aesthetics, substrate lifecycles and the wellbeing of building users through a modern approach to coatings technology. He is a graduate of the Cambridge Institute for Sustainable Leadership.

In addition to chairing the British Coatings Federation Sustainability Committee, he advises building owners and managers on achieving decorative transformation in more sustainable ways.

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Sustainable Paint Specification & Net Zero Alignment

Continuing Professional Development Seminar

“Coatings and colours are often what building users see first and remember longest.”

Aim of this seminar…

1.
Understand the carbon drivers in paints & coatings

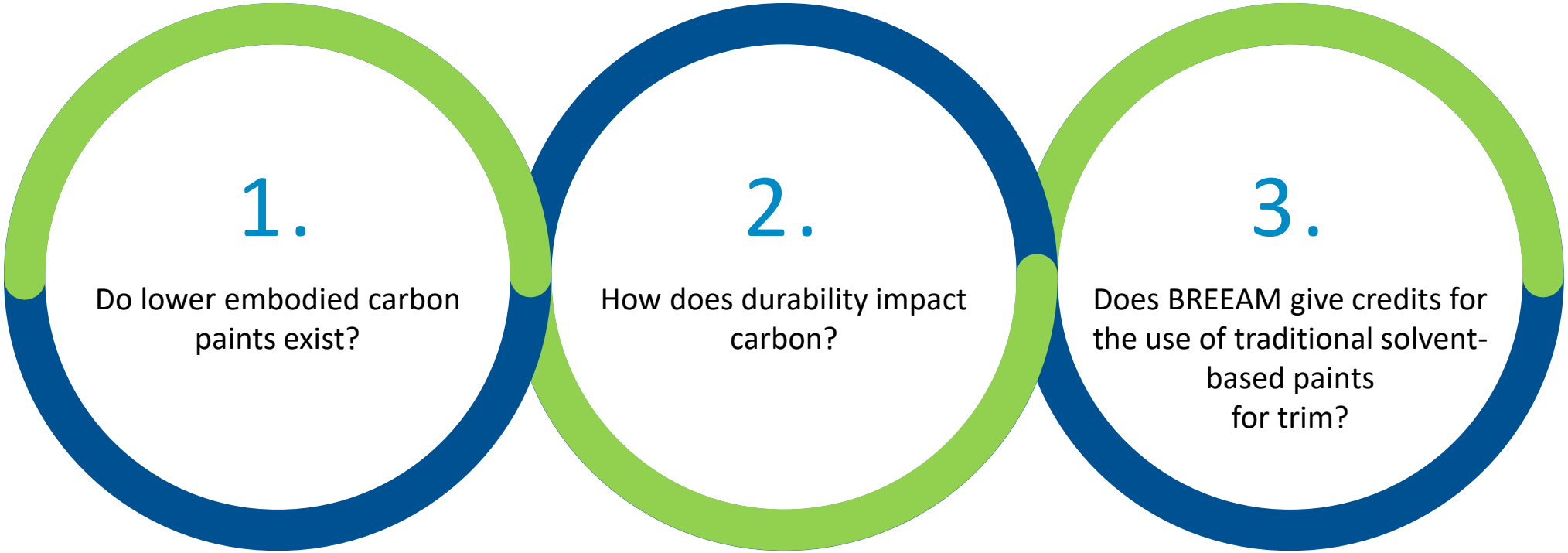
2.
Build confidence in creating lower carbon paint specifications

3.
Learn about the support available to help you

Today's Overview

1. Introduction & Seminar Objectives
2. Backdrop
3. Embodied Carbon v Operational Carbon
4. **Where is the Carbon in Paint?**
5. **Walls & Ceilings Paint** – Reducing Carbon
   - Durability & Lifecycle Carbon
6. **Trim Paint** - Reducing Carbon
7. **Green Building Standards**
8. AkzoNobel Support
9. Summary and Specification Recommendations
10. Questions

Questions to ponder



Some of our brands

AkzoNobel
REVENUE BY DESTINATION

You'll find us everywhere

12%
North America

48%
EMEA

16%
North Asia

12%
Latin America

12%
South Asia Pacific

North Asia
16%

South Asia Pacific
12%

* Alternative Performance Measures (APMs). AkzoNobel uses APM adjustments to the IFRS measures to provide supplementary information on the reporting of the underlying developments of the business. APMs include, but are not limited to, adjusted operating income, (adjusted) EBITDA, adjusted earnings per share, ROS and ROI. A reconciliation of the Alternative Performance Measures to the most directly comparable IFRS measures can be found in Note 3 of the Consolidated financial statements.

Dulux let's colour

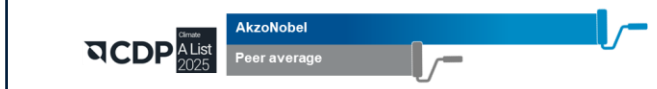
sikkens

International

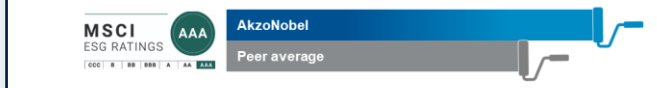
Interpon POWDER COATINGS

Sustainability Ratings

A-listed (top 4%) and **highest possible** ranking awarded by CDP in Climate



Multi-year ESG **leading** position in **MSCI**

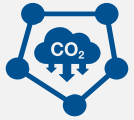


Top 3% of all companies assessed by **EcoVadis** and **gold medal** awarded

Sustainability targets and performance

We produce durable solutions in a more sustainable manner

50% less carbon emissions in our **own operations**



47% 2025 — **50%** 2030

100% circular use of materials in own operations driven by reduce, reuse, recycle

75% 2025 — **100%** 2030

We help our partners to become more sustainable

50% less carbon emissions across our **value chain**

19% 2025 — **50%** 2030

75% of suppliers meeting sustainability expectations*

73% 2025 — **75%** 2030

We empower our communities and employees

100,000+ members of local communities empowered with new skills

100,000+ Since 2024 — **100,000+** 2030

30% female executives

27% 2025 — **30%** 2030

*75% of the suppliers in our sustainability program - covering over 1,500 customers with 84% of our global spend and 97% of our upstream carbon emissions.

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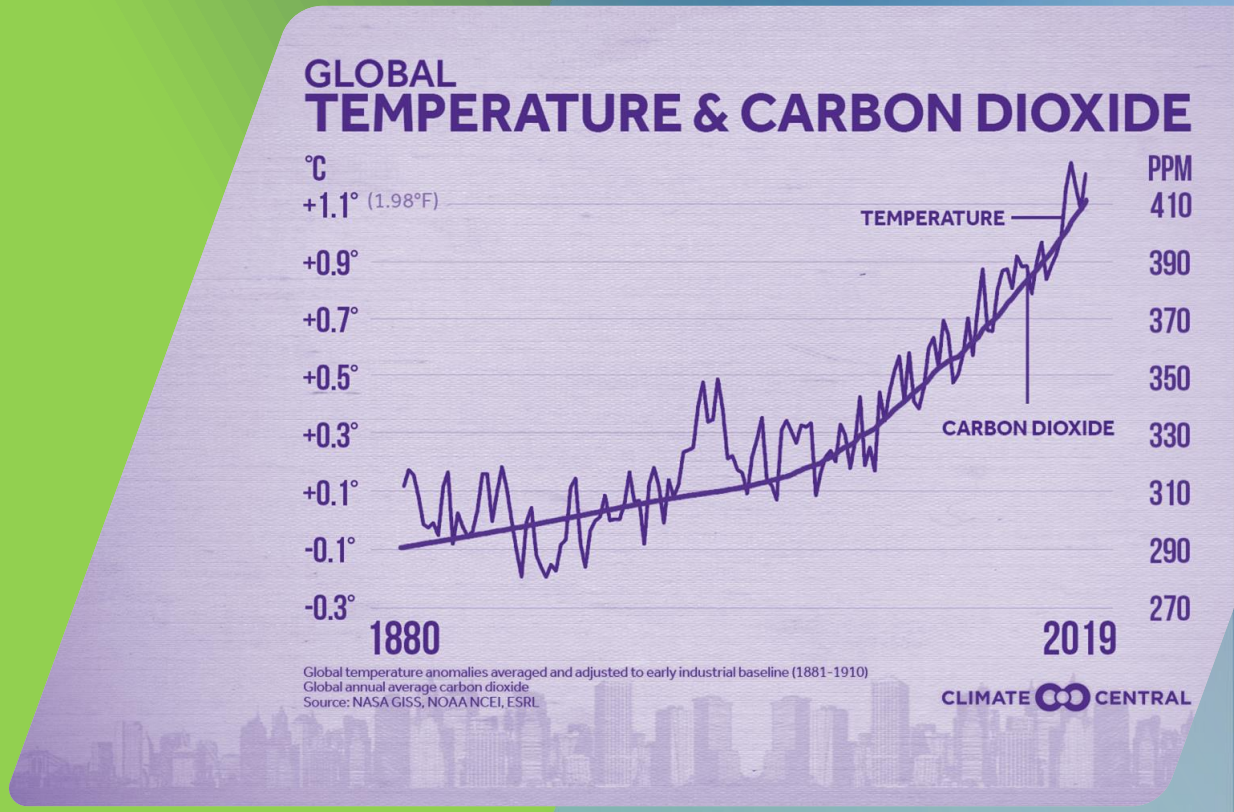
Backdrop

Climate change is linked to carbon

- Global temperature increase **mirrors rising carbon** levels in the atmosphere
- Climate change is linked to carbon emissions



Source: National and Global Emissions Sources (2020) | Climate Central

Government legislates and organisations respond

- In response UK Government signs '**Net Zero by 2050**' into law in 2019
- Private and public sector organisations, many managing large property portfolios, follow suit and **adopt their own Net Zero targets**
- Number of organisations with **SBTi targets is growing fast**

NET ZERO British Land

Sainsbury's

NET ZERO BY 2040

BRISTOL
NET ZERO BY 2030
A MODAL SHARE FOR A SUSTAINABLE TRANSPORT SYSTEM

Helping Greater Manchester reach its net zero target by 2038

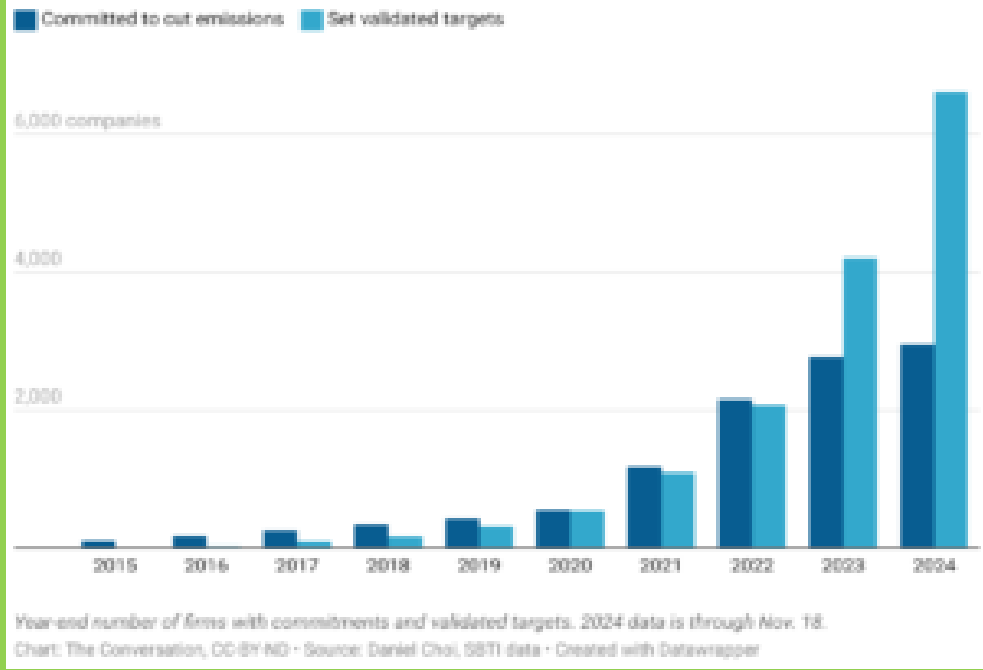
NEWS

Willmott Dixon targets net zero by 2030

Willmott Dixon is targeting that all new build and refurbishment projects delivered from 2030 will be n zero carbon in operation under its new 2030 sustainable development strategy, 'Now or Never; our deci decade.'

Companies with emissions commitments and targets

The number of companies committing to cut greenhouse gas emissions and following through by setting targets validated by the Science Based Targets initiative, SBTi, has grown each year.



Year-end number of firms with commitments and validated targets. 2024 data is through Nov. 18.
Chart: The Conversation, CC-BY-ND · Source: Daniel Choi, SBTi data · Created with Datawrapper

Net Zero construction being built into standards - Net Zero projects are becoming a reality

UK Net Zero Carbon Buildings Standard

RIBA Intelligence Decarbonisation
Making net zero building the reality

UK GBC

A net zero carbon building, as defined by UKGBC, is one that achieves a **balance** between the **carbon emissions** associated with its **construction and operation** and the **carbon savings** it delivers, by prioritising **energy efficiency**, reducing **embodied** and **operational emissions**, and **offsetting** any remaining carbon through verified schemes.

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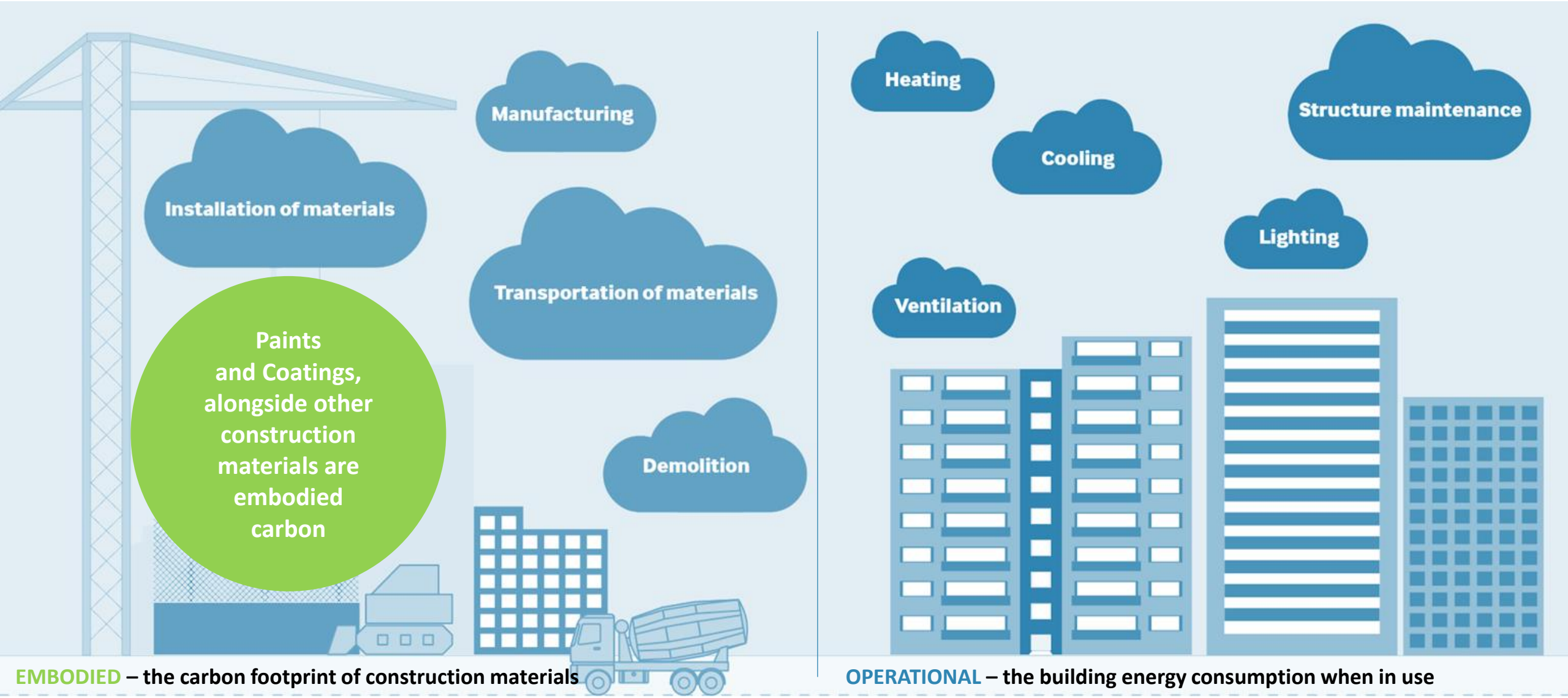
Embodied carbon vs Operational carbon



EMBODIED – the carbon footprint of construction materials

OPERATIONAL – the building energy consumption when in use

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Decorating has good impacts… It colours our world, protects substrates and extends their life

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What is paint

and what does it do?

Paint chemistry - the basics…

Pigments

Binder or Resin

Carrier or Solvent

Paints and coatings have a footprint

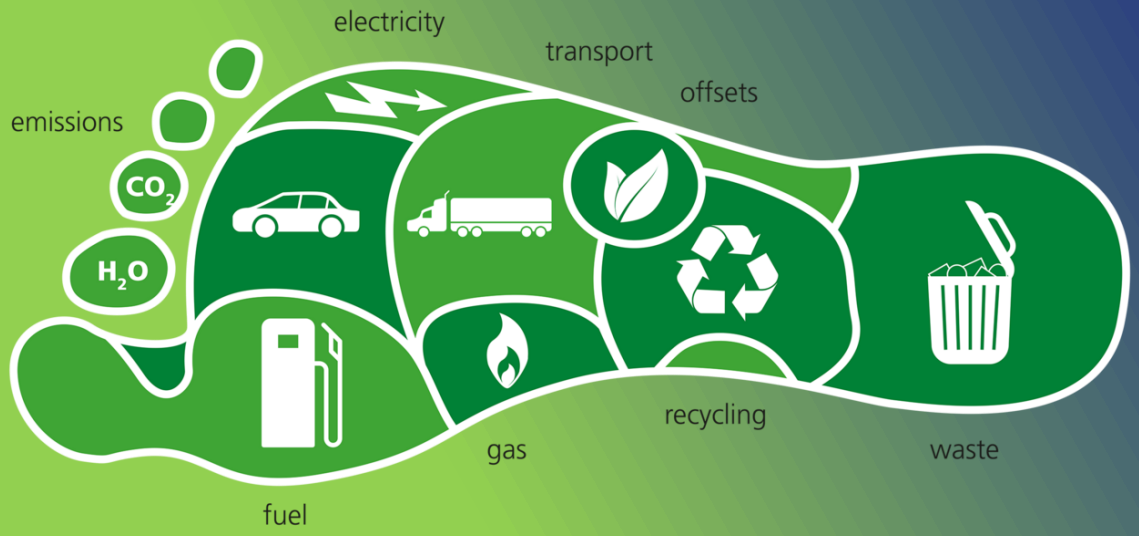
1. Paints have traditionally used solvents / VOCs in the manufacture of paint (**solvents / VOCs are high carbon**)

2. Mining pigments out of the ground is **carbon intensive** (e.g. Titanium Dioxide – the white pigment used in many products)

3. High temperature (**high carbon**) processes are usually used in the manufacturing of **resins / binders**

4. The packaging has a **carbon footprint** (plastic / metal). Note: Over 100 million empty paint cans go to waste in the UK every year

5. 10% of paint made never makes it on to the wall (unused waste paint has a footprint)



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Decorative paints split into two categories

Paints for Wood & Metal **(Trim Paints):**

Paints for walls and ceilings **(Emulsion Paints):**

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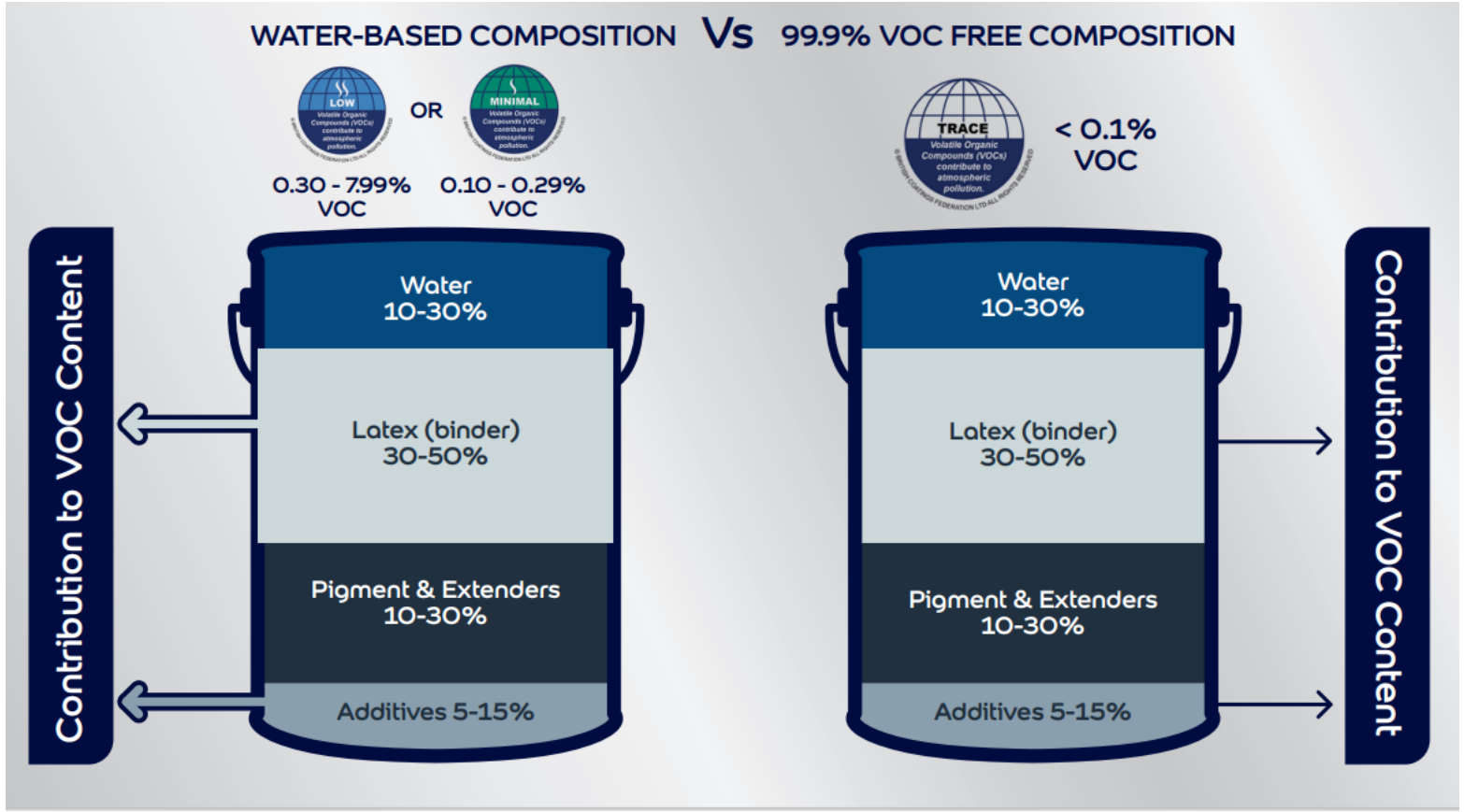
Specifying Lower Carbon Paints for Walls and Ceilings

Paints for walls and ceilings



Lowering embodied lifecycle carbon from paints for walls and ceilings can be achieved in two ways:

1. Specifying Low VOC paints
2. Specifying long-lasting highly durable paints

Ideally both!

VOC content is related to carbon as VOCs (aka. Solvents) are generally **by-products of the petro-chemical industry** and therefore **high carbon**

Reducing VOCs generally results in reducing embodied carbon whilst also reducing negative impacts on indoor air quality

1 Tonne of VOC equates to **5 Tonnes** of CO2e

CO_2
High Carbon Footprint

Ultra low VOC paints for walls and ceilings are now available

99.9% VOC free paints for walls and ceilings

Increasing durability, carbon and cost

Contract Matt
(newbuilds / plaster still drying out)

Example

- Coverage **18m2 / litre**
- Scrub Class 4
- PCF*: **1,033 gCO2e** per litre**
- **Expected Life: 2 years**
- Cost: Low

Vinyl Matt
(low wear environments)

Example

- Coverage **17m2 / litre**
- Scrub Class 2
- PCF: **1,082 gCO2e** per litre
- **Expected Life: 4 years**
- Cost: Medium

Durable Matt
(high wear environments)

Example

- Coverage **16m2 / litre**
- Scrub Class 1
- PCF: **1,558 gCO2e** per litre
- **Expected Life: 6 years**
- Cost: High

* *PCF = Product Carbon Footprint*
** *Cradle to Grave & Worst case scenario sku in product class*

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Durability vs embodied carbon

Low initial carbon does not always mean lower lifecycle carbon

The problem

- UK building models typically assume a **single lifecycle**, yet most clients own and maintain buildings for **30+ years**.
- Paint is often specified based on **initial carbon footprint**, ignoring **maintenance cycles** and **long-term impact**.

The Data: Lifecycle Carbon Footprint per m² (30-Year Model)

Product	Repaint Frequency	Embodied Carbon	Total Emissions
Diamond Matt	Every 6 years	1.56 kg CO_2e per litre	7.80 kg CO_2e per litre
Supermatt	Every 2 years	1.03 kg CO_2e per litre	15.45 kg CO_2e per litre

Diamond Matt is 50% lower in total emissions over 30 years despite a higher initial footprint.

Durable coatings reduce repainting, labour, waste, downtime, project management costs and emissions

Make the appropriate choice for your project / lifecycle - Is durability an important requirement for your space?
If yes – specify a low VOC durable paint

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Additional tip: Don’t over-specify

Unnecessary resource use

But don’t underspecify either!

High Durability Emulsion on Ceilings – is it necessary? Ceilings don’t get any wear and tear.

Refreshing a white ceiling – are two coats necessary?

Specify durable coatings for high traffic areas.

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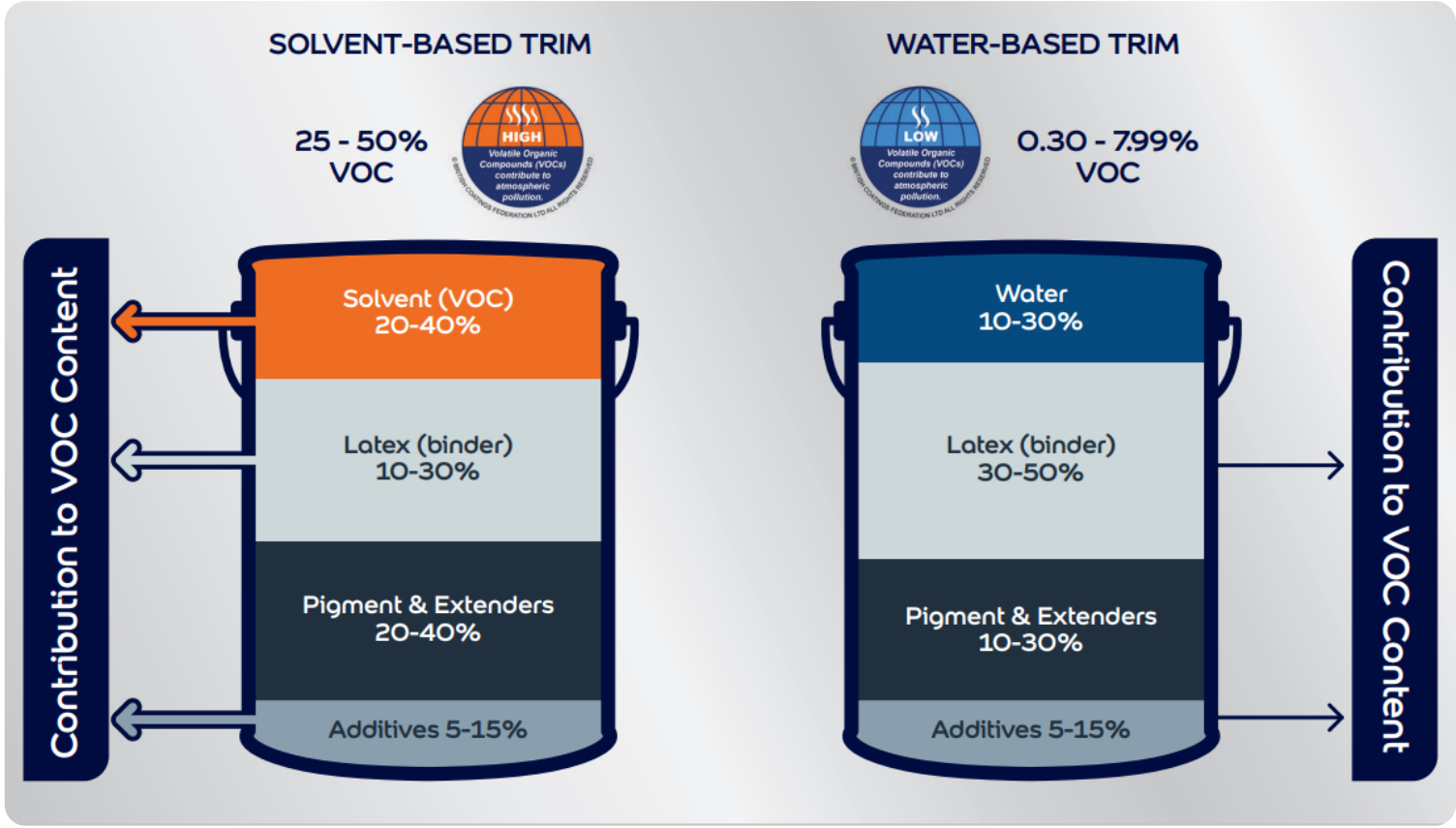
Specifying Lower Carbon Paints for Trim Surfaces

Paints for trim surfaces

Lowering embodied lifecycle carbon from paints for trim can be achieved in one major way:

1. Specifying Low VOC water-based trim paints… and **avoid solvent-based trim paints**

Water based alternatives exist now for all finishes (gloss, satin, eggshell)



1 Tonne of VOC equates to **5** Tonnes of CO_2e

How to Identify Water-Based Trim Paints:

Generally they will have ‘Quick Dry’ or ‘Water-Based’ or ‘Aqua’ in the product name

Comparing solvent and water-based trim paints

SOLVENT-BASED UNDERCOAT & GLOSS

Example 

Example 

System (x1 Uct + x1 Gloss):
- Coverage (average): 17.5m2 / litre
- **Combined PCF*: 6,677 gCO2e per litre****
- **Combined Drying Time: 31 hours**

Advantages:
More forgiving of poor workmanship
Higher coverage

Disadvantages:
Slow recoat / spaces out of action for longer
High carbon
Higher impact on air quality / lingering odour
White yellows and goes brittle with age
Clean tools in white spirit (high carbon)

WATER-BASED UNDERCOAT & GLOSS

Example 

Example 

System (x1 QD Uct + x1 QD Gloss):
- Coverage (average): 11m2 / litre
- **Combined PCF*: 4,519 gCO2e per litre****
- **Combined Drying Time: 10 hours**

Advantages:
Faster recoats / spaces back in use quicker
Low carbon (system is 32% lower)
Lower impact on air quality / low odour
System remains flexible with limited yellowing
Clean tools with water

Disadvantages:
Less forgiving of poor workmanship
Lower coverage

System Carbon Footprint is **32%** Lower

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Did you know there are water based low carbon options for exterior trim?

Solvent-based
Exterior Gloss

Example

- VOC Content 300 g/l
- Coverage: 18m2 / litre
- PCF: 5,378 gCO2e per litre
- Drying Time: 16-24 hours
- Up to 8 years protection

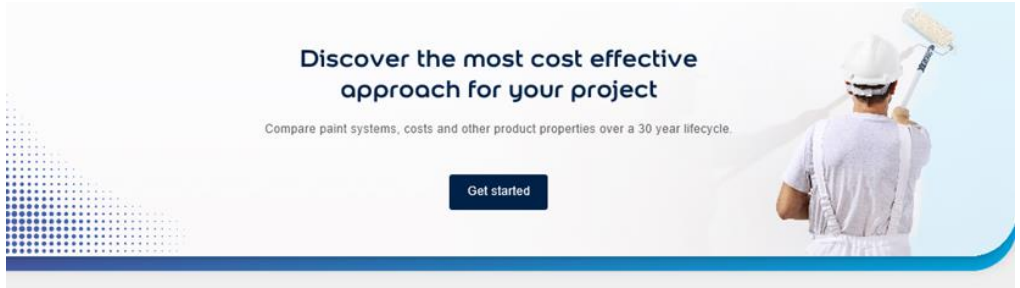
Water-based
Exterior Gloss

Example

- VOC Content 45 g/l
- Coverage: 13m2 / litre
- PCF: 2,459 gCO2e per litre
- Drying Time: 4-6 hours
- Up to 8 years protection

System carbon footprint is 54% lower and lasts just as long

Lifecycle carbon modelling



Lifecycle Modeller

- Lifecycle over **multiple redecs** (e.g. 30 yrs)
- Sector specific
- Input your buildings parameters
- Measures **cost impact** (labour & materials)
- Measures **carbon impact of different paint systems**
- Available through Technical Service Team

	Table 3 Manage Budgets OPTION 1	Table 2 Improve Efficiency and Manage Long Term Costs OPTION 2
Total walls 14696 m^2	Armstead Durable Eggshell	Dulux Trade Diamond Matt
Total ceiling 12915 m^2	Armstead Contract Matt	Dulux Trade Supermatt
Total trim 2268 m^2	Armstead Quick Drying Gloss	Dulux Trade Quick Drying Gloss
WALLS & CEILINGS Labour cost/m^2 £3.5 • TRIM Labour cost/m^2 £9.45 • Inflation rate 3%		
The Lifecycle Comparison Tool is intended for guidance purposes only. The Cost and CO_2e comparisons shown should not be used as an accurate representation of the future costs of decoration or maintenance of your actual building.		

Option 2
39% cost saving
29% less CO_2

Some manufacturers offer a lifecycle carbon modelling service

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Environmental building accreditation schemes

How to adapt to current requirements and changes coming

Trending changes:

- New BREEAM v7 and LEED v4.1 have ramped up emphasis on (and reward for) **whole life carbon** assessments
- UK Net Zero Carbon Building Standard (pilot version released) is a **unified methodology** for verifying that buildings are Net Zero Carbon aligned

Specification tips for projects aiming for BREEAM or similar:

- ✓ Specify **water-based paints for trim** (e.g., Quick Dry Gloss, Satinwood)
- ✓ Specify 'Trace' or **99.9% VOC-free paints** for walls and ceilings
- ✓ Specify paints with verified emissions testing – **exemplary pass secures extra points** (counts in Innovation sections too)
- ✓ Include paint waste / empty can recycling in site resource management plans
- ✓ Specify products with EPDs – this can contribute to credits and is central to some accreditations

BREEAM®

U.S. GREEN BUILDING COUNCIL LEED USGBC

UK Net Zero Carbon Buildings Standard

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Carbon data and reporting

Cradle to Grave carbon data is available from some paint manufacturers

Two sources:

1. EPDs

Third party verified data. Embodied lifecycle carbon data is found under the banner of 'Global Warming Potential' or GWP

2. In-house Manufacturer Data

Where EPD GWP data is not available

Carbon footprint is the total greenhouse gas emissions caused by a product, it's expressed as **"carbon dioxide equivalent" (CO2eq).** This unit signifies the global warming impact caused by same amount of CO2.

Unit of measure:
$KgCO_2e$ (per Kg or per Litre of product)

ENVIRONMENTAL IMPACT per functional or declared unit

	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
ADPE	[kg Sb-Eq.]	1.11 E-06	2.85 E-10	1.02 E-07	1.21E-06	5.59 E-10	4.08 E-09	0	0	0	0	0	0	0	0	7.69 E-11	0	3.90 E-08	INA
ADPF	[MJ]	8.01 E+00	5.79 E-02	2.30 E+00	1.04E+01	1.14 E-01	8.62 E-02	0	0	0	0	0	0	0	0	1.57 E-02	0	8.20 E-02	INA
GWP	[kg CO_2-Eq.]	4.14 E-01	4.21 E-03	8.42 E-02	5.02E-01	8.30 E-03	8.09 E-03	0	0	0	0	0	0	0	0	1.14 E-03	0	1.22 E-01	INA
ODP	[kg CFC11-Eq.]	4.54 E-08	1.13 E-11	1.10 E-08	5.64E-08	3.81 E-14	1.66 E-10	0	0	0	0	0	0	0	0	5.23 E-15	0	7.67 E-10	INA
POCP	[kg ethene-Eq.]	2.17 E-04	1.86 E-06	6.88 E-05	2.88E-04	3.43 E-06	2.93 E-03	0	0	0	0	0	0	0	0	4.71 E-07	0	4.06 E-06	INA
AP	[kg SO_2-Eq.]	2.30 E-03	2.20 E-05	3.07 E-04	2.63E-03	3.83 E-05	4.63 E-06	0	0	0	0	0	0	0	0	5.27 E-06	0	3.31 E-05	INA
EP	[kg $(PO_4)^{3-}$-Eq.]	7.79 E-04	5.00 E-06	1.33 E-04	9.18E-04	9.36 E-06	1.74 E-05	0	0	0	0	0	0	0	0	1.29 E-06	0	9.96 E-04	INA

ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources, GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; POCP = Formation potential of tropospheric ozone photochemical oxidants; AP = Acidification potential of land and water; EP = Eutrophication potential; HTP = Human Toxicity Potential; FAETP = Fresh-water Aquatic Ecotoxicity Potential; MAETP = Marine Aquatic Ecotoxicity Potential; TETP = Terrestrial Ecotoxicity Potential

Contractor Carbon Report

Lifecycle Carbon Report

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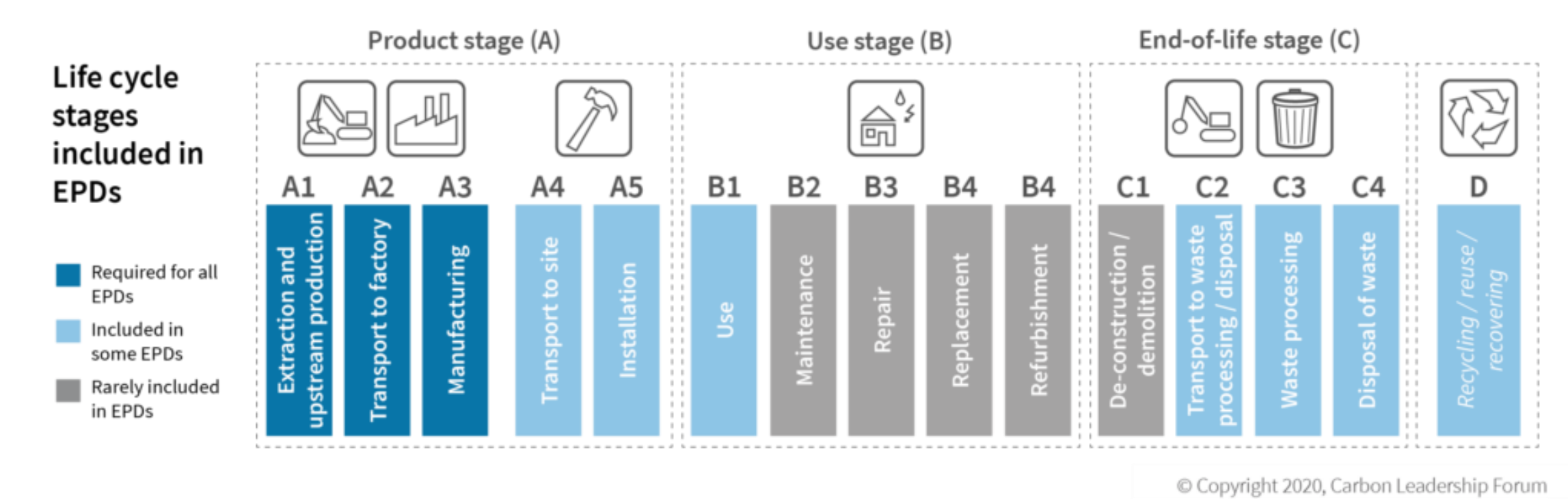
EPD Lifecycle Stages



A paint's Carbon Footprint can be found in the 'Environmental Impact' table of an EPD under Global Warming Potential (GWP)

The total carbon footprint is usually broken down into the individual stages of a product's lifecycle (as above)

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There is carbon embedded in waste

Incorporate waste reduction into project documents

Include a clause on can recycling

Example spec clause on can recycling:

‘Recycle all empty cans at one of the many decorators merchant outlets operating a can recycling service’

Community RePaint
Proudly sponsored by Dulux

Include a clause on left-over paint

Example clause for unused paint:

‘Ensure all left-over or unused paint does not enter the waste stream, and is instead donated to worthwhile organisations for re-use such as the Community Repaint scheme (www.communityrepaint.org.uk)’

We need to reduce carbon embedded in waste too through re-use / recycle (take back) schemes

Summary

Tips for reducing carbon embedded in paints and coatings
(and producing sustainable painting specifications)

➔ **Use water-based trim paints to reduce VOCs**

➔ **Use ultra-low VOC wall paints**

Specifying these paints will help reduce carbon and impact on indoor air quality

- Use extra durable products in high-traffic environments
- Don’t over specify – no need for durable paints on ceilings
- **Think about waste –** include a clause on can recycling and left over paint
- Look for paint **supply partner with good sustainability credentials**
- Where necessary think about compliance with BREEAM / LEED / WELL early on

Information and support

Major paint manufacturers should be able to supply:

- Compliance statements – LEED, BREEAM, Ska and WELL
- EPDs
- **Carbon Footprint data**
- BIM Objects
- Certificates – BES 6001 Responsible Sourcing, ISO 14001
- Environmental policies

BES 6001 Responsible Sourcing

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U.S. GREEN BUILDING COUNCIL LEED USGBC

ECO PLATFORM EPD EN 15804 VERIFIED

NBS BIM CERTIFIED

Useful resources

https://www.duluxtradepaintexpert.co.uk/en/products/sustainability

sustainable specifications | Dulux Decorator Centre

https://www.ukgbc.org/

https://communityrepaint.org.uk/

https://www.duluxdecoratorcentre.co.uk/can-recycling

Specification essentials

Technical and Safety Datasheets for all Dulux Trade and Armstead products can be found on our website: www.duluxtrade.co.uk

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Review learning aims of the seminar

1. Understand the carbon drivers in paints and coatings
2. Build confidence in creating lower carbon paint specifications
3. Learn about the support available to help you

Help is available!

Water-based paint for trim

99.9% VOC Free Paints for walls and ceilings

Durable products

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Any Questions?