

Scandinavian Business Seating is Scandinavia's leading manufacturer of office seating solutions



Milestones

- 2011: GRI report
- 2010: Nordic Swan – HÅG Capisco
- 2008: GHG Greenhouse Gass report
- 2006: GREENGUARD
- 2005: Green electricity certificates
- 2004: EPD, ISO 14025
- 1999: ISO 14001
- 1995: EMAS
- 1995: Introduced recycled materials
- 1993: Eco design Criteria
- 1990: First environmental manager

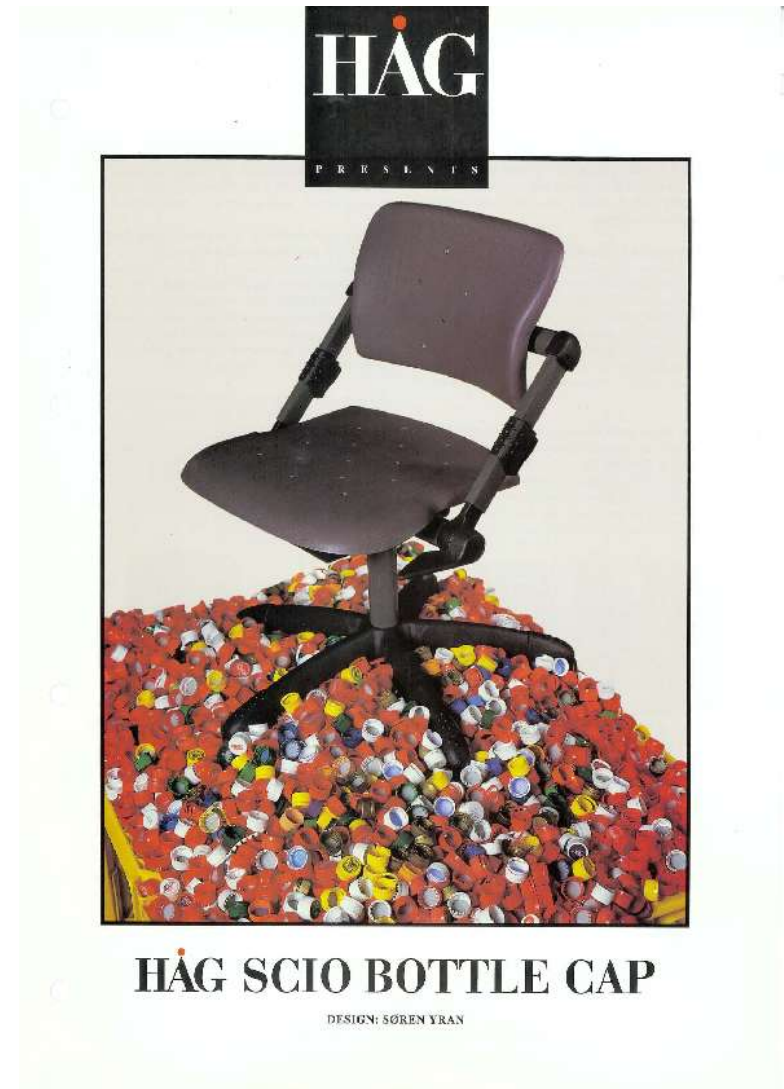


1993 HÅG Scio - the first visitor chair with seat and back made of PP

1995 Re-introduced with recycled PP from bottle caps

Lots of articles in newspapers and magazines

2 important customers:
Volvo, Coca Cola



Silence

But things have changed –
today 8 out of 10 customers have questions
related to our environmental performance



Statoil

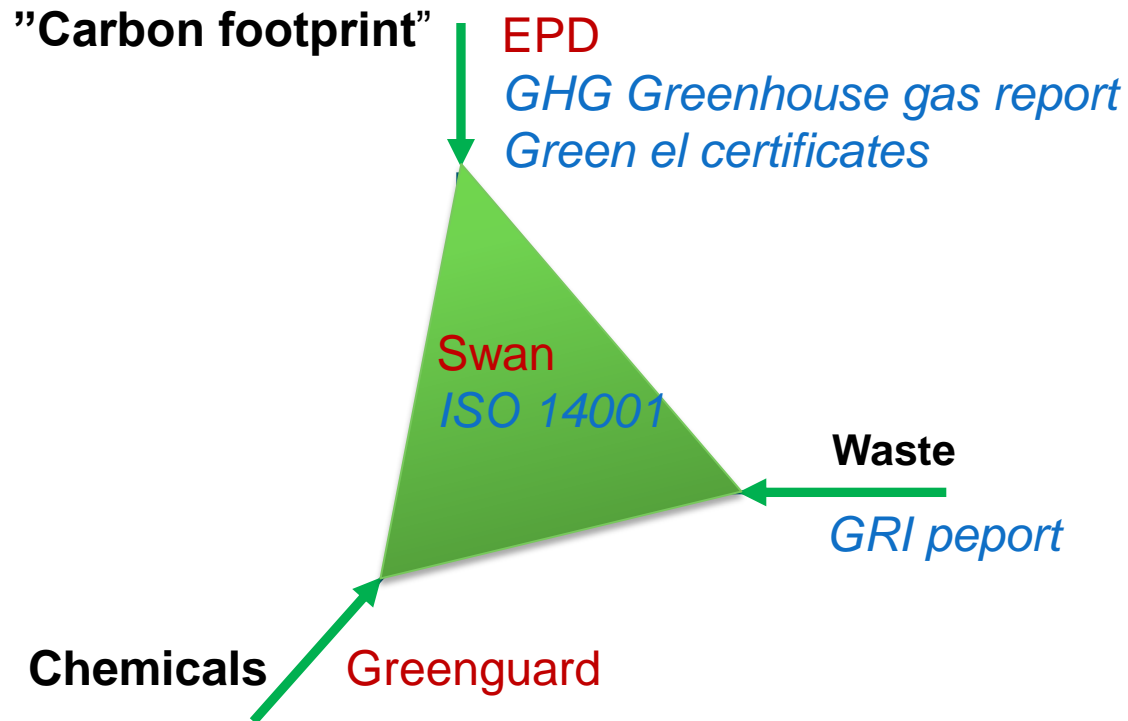


telenor



It's payback time!!!

Three focus areas for **GOOD** environmental performance:



HÅG Capisco 8106



Figure 1

Environmental Indicators. From raw material extraction to HÅG's factory gate:

Global warming:	36 kg CO ₂ equ.
Energy consumption:	747 MJ
Amount of recycled materials:	43 %
Guarantee period:	10 yr

Information about the product: Office Chair
Functional unit: Seating solution, produced and maintained for 15 years.
Scope of assessment: This environmental declaration covers the product's life cycle from raw material extraction until the finished seating solution, incl. use & maintenance. The user phase is represented by a use scenario in Southern Germany. A scenario for disposal is presented.
Year of study: 2007
Data: Specific data: 2006, Specific database data: Late 1990s to 2006. (See Figure 5)
Expected market area: Europe & U.S.A.
Company contact: Carl P. Aaser, Tel: + 47 22 59 59 10, e-mail: carl@hag.no

NEPD no.: 038E

Approved according to ISO14025, S8.1.4

Bjørn Søren

Valid until: 14.05.2011

Verification of data:

Independent verification of data and other environmental information has been carried out by Senior Research Scientist Mie Vold in accordance with ISO14025, S8.1.3.

Declaration compiled by:

MSc. Guro Nereng



PCR:

Product Category Rules for seating solution (Seating, 2005). PCR approved by the Norwegian EPD Foundation's verification committee.

About EPD:

EPDs from other program operators than the Norwegian EPD Foundation may not be comparable.

Information about the producer:

HÅG asa
 Fridtjof Nansens vei 12
 Postboks 5055, Majorstuen
 N-0301 OSLO, Norway
 Org.no.: NO-928902749
 ISO 14001 certified by Dovre Sertifisering (NO-S-0000016).
 HÅG's Environmental Management System includes procedures for collection of LCA data and EPD development.

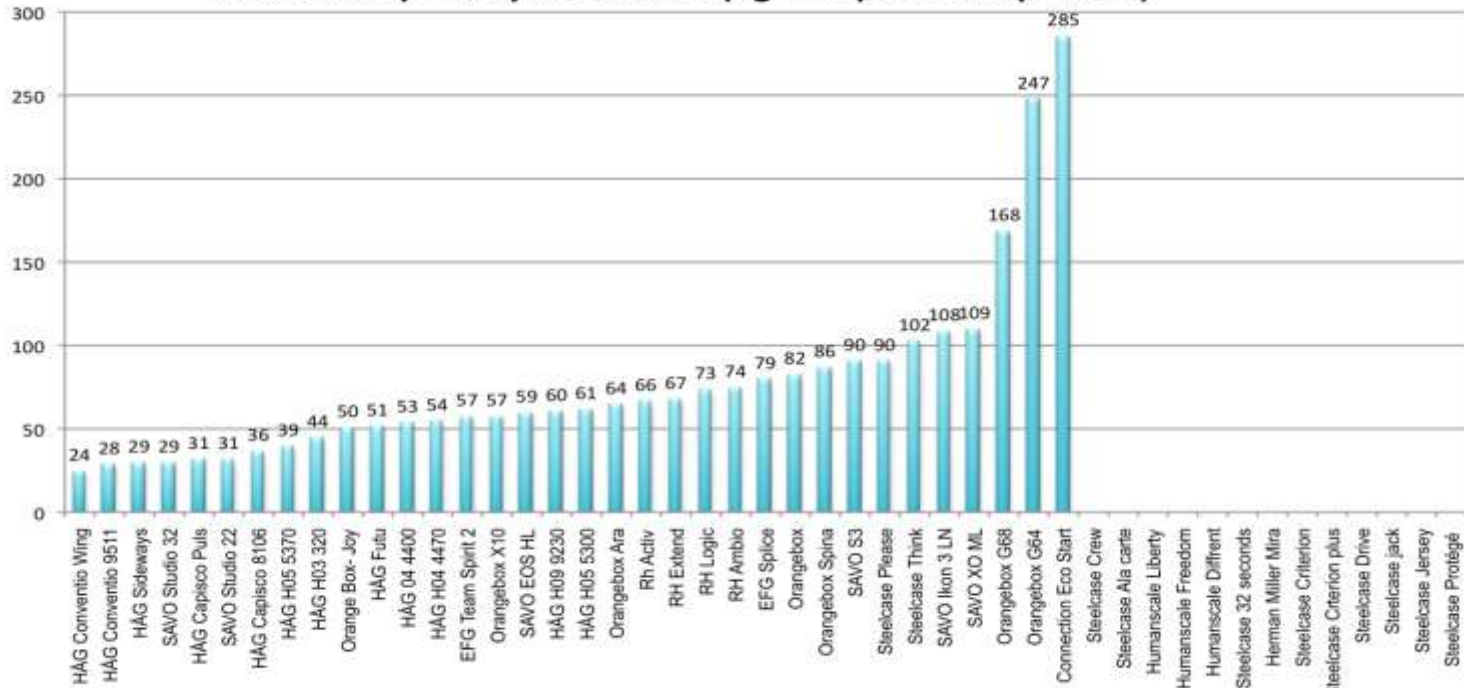
Product Specification

Table 1

	Mass kg/seating solution	Share %	% included in the analysis	% from suppliers with a certified Environmental Management System*	% of components with EPD*	System boundaries (see the last page for more information)	Hazardous content
Steel	4,11	26 %				A-G	The sitting solution meets the following minimum emissions requirements in the Greenguards certification: Formaldehyde: < 0.025 ppm (< 0.03 mg/m ³) (Greenguard certificate). It has not been possible to obtain data on the content of brominated flame retardants & heavy metals. These chemicals have not been detected in HÅG's production.
Aluminium	2,84	18 %				A-G	
Other metals	0	0 %				A-G	
PUF	1,35	8,5 %				A-G	
Plastic	4,02	25 %				A-G	
Wood	0	0 %				A-G	
Textiles	0,48	3,0 %				A-G	
Cardboard	1,74	11 %				A-G	
Various	1,50	9,4 %				A-G	
Total	16,0	100 %	98,6 %	58,3 %	0,03 %		

* In % of analysed mass, input to the assembly department at HÅG

Carbon footprint by seat model (Kg CO2 produced pr chair)





Certificate of Compliance

Certification Details:

Certificate No: 973-1

Status: Certified

Period: 04/2006 - 05/2011

Restrictions: NONE

HÅG Capisco

HAG

This product has been certified according to the GREENGUARD Indoor Air Quality (IAQ) Certification Program for Low Emitting Products

Reference Standard: GGPS-001 GREENGUARD IAQ Standard for Building Materials, Finishes, and Furnishings

Product Type: Furniture Components/Materials, Seating, and Free Standing Furniture and Furnishing Units

Criteria	Allowable Limits
TVOC ¹	≤ 0.25 mg/m ³
Formaldehyde	≤ 0.025 ppm
Total Aldehydes ²	≤ 0.05 ppm
Individual VOCs ³	≤ 0.1 TLV
4-phenylcyclohexene	≤ 0.0033 mg/m ³

Listing of measured carcinogens and reproductive toxins as identified by California Proposition 65, the U.S. National Toxicology Program (NTP), and the International Agency on Research on Cancer (IARC) must be provided.

Any pollutant regulated as a primary or secondary outdoor air pollutant must meet a concentration that will not generate an air concentration greater than that promulgated by the National Ambient Air Quality Standard (U.S. EPA, code of Federal Regulations, Title 40, Part 50).

See referenced standard for a complete technical explanation.

¹ Defined to be the total response of measured VOCs falling within the C₁-C₁₀ range, with responses calibrated to a toluene surrogate.

² Defined to be the total response of a target list of aldehydes (2-butenal, acetaldehyde, benzaldehyde, 2, 5-dimethylbenzaldehyde, 2-methylbenzaldehyde, 3-and/or 4-methylbenzaldehyde, butanal, 3-methylbutanal, formaldehyde, hexanal, pentanal, propanal), with each individually calibrated to a compound specific standard.

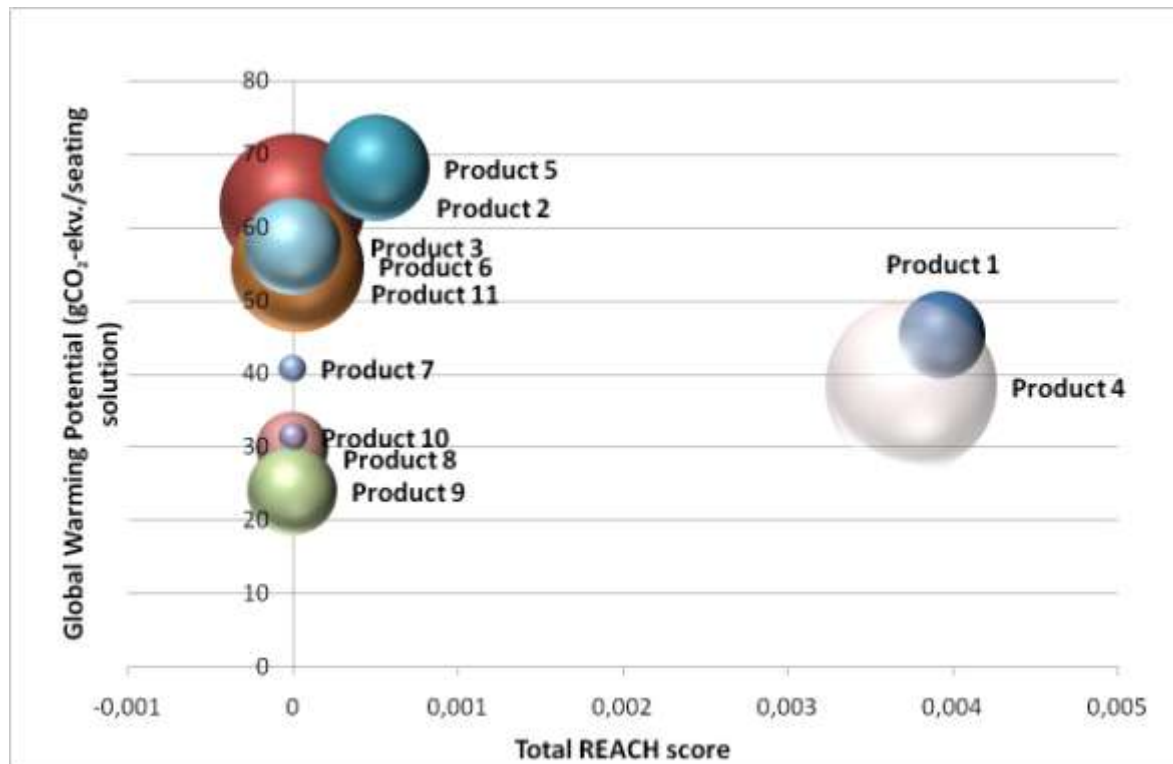
³ Any pollutant not listed must produce an air concentration level no greater than 1/10 the Threshold Limit Value (TLV) industrial work place standard (Reference: American Conference of Government Industrial Hygienists, 6500 Glenway, Building D-7, Cincinnati, Ohio 45211-4438).

Complies with ANSI/BIFMA X7.1-2007, ANSI/BIFMA M7.1-2007, and BIFMA e3-2008 Credit 7.6.1 for Furniture.

GREENGUARD Certification affirms that products meet the criteria of the referenced standard and the requirements of the specific certification program. Certification testing is conducted according to a consistent, defined protocol. The testing does not evaluate emissions under usage conditions other than those defined in the protocol and does not address potential environmental impact other than chemical and particle emissions.

The GREENGUARD Environmental Institute (GEI) is an industry independent, third-party certification organization that qualifies products for low chemical emissions. GREENGUARD Certification programs use defined product standards, test methodologies, product sample collection and handling procedures, program application processes and on-going verification procedures. GREENGUARD standards, methods, and procedures are available at www.GREENGUARD.org.

Specific environmental impact of HÅG products



ECO Design Tools based on EPDs and Carbon Footprint

1 Material List:

Approved/non-approved materials

2 Material Carbon Footprint:

Carbon Footprint pr kg raw material

3 Product Module Carbon Footprint:

Carbon Footprint for most common product modules

EPD: Environmental Product Declaration

- HÅG and Østfoldforskning have made EPDs for 11 HÅG chairs, representing main ranges of chairs.
- Data on raw material, energy consumption and transports have been collected from 39 suppliers
- Process data from a database have been used to simulate activities further upstream

HÅG EPDs contain:

- Product specification (% materials)
- Resource consumption
- Emissions and environmental impacts
- Treatment of waste from product

Environmental Declaration ISO 14025

The Norwegian EPD Foundation

HÅG Sideways 9732

Figure 1

NEPD nr: DxxxE
Agreement according to ISO14025, SR 3.4
Valid until:

Verification of data:
Independent verification of data and other environmental information has been carried out by Senior Research Scientist Mar Vold in accordance with ISO14025, SR 3.3.

Declaration compiled by:
Mrs. Guro Møring

PCR:
Product Category Rules for seating solution (Seating, 2006) PCR approved by the Norwegian EPD Foundation's verification committee. See also "Methodological Decisions".

About EPD:
EPDs from other program operators than the Norwegian EPD Foundation may not be comparable.

Information about the producer:
HÅG asa
Fridtjof Hansens vei 12
Postboks 3050, Hagan
N-0803 ØSLO, Norway
Org.no: NO-028902788
ISO 9001 certified by DNV Certifying (DNV-0-0000016)
HÅG's Environmental Management System includes procedures for collection of LCA data and EPD development.

Environmental indicators. From raw material extraction to HÅG's factory gate:

Global warming:	29 kg CO ₂ eq
Energy consumption:	558 Mj
Amount of recycled materials:	32 %
Guarantee period:	10 yr

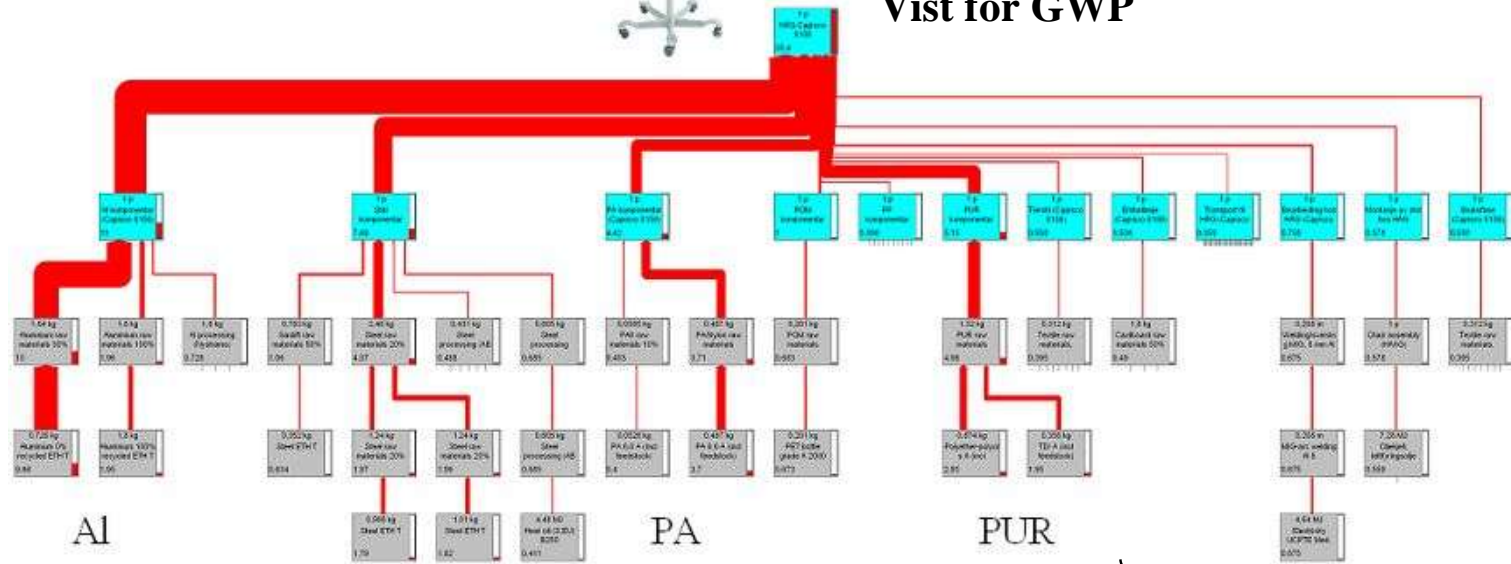
Information about the product: Conference/Victor Chair
Functional unit: Sitting solution, produced and maintained for 15 years.
Scope of assessment: This environmental declaration covers the product's life cycle from raw material extraction until the finished seating solution, incl. use & maintenance. The user phase is represented by a use scenario in Southern Germany. A scenario for disposal is presented.
Year of study: 2006
Date: Specific data 2006, Specific database data: Late 1990s to 2006 (See Figure 5)
Expected market area: Europe & U.S.A.
Company contact: Carl P. Aaser, Tel. + 47 22 58 99 10, e-mail: carl@hag.no

Product Specification Table 1

	Mass kg/working solution	Share %	Included in raw material	In their compliance with a certified Environmental Management System?	% of components with EPD?	Further description (see the full page for more information)	Recycling solution
Steel	0,24	2,3					Highly recycled steel
Aluminium	0,40	3,7					Highly recycled aluminium
Other metal	0	0					Highly recycled metal
Plastic	0,01	0,1					Highly recycled plastic
Wood	0,00	0,0					Highly recycled wood
Other	0	0					Highly recycled other
Textiles	0,01	0,1					Highly recycled textiles
Coated/impregnated material	0,01	0,1					Highly recycled coated/impregnated material
Other	0,01	0,1					Highly recycled other
Total	11,1	100 %					



Eksempel HÅG Capisco 8106 Vist for GWP



Al
1040g 30%
1800g 100%

Stål
4500g 20-100%

Tekstil
Emballasj
Transport
Montasje
Bruk

Material List

Includes the most relevant materials.

- **The good**

Priority 1: Renewable/recycled materials

Priority 2: Virgin materials with good recycling properties

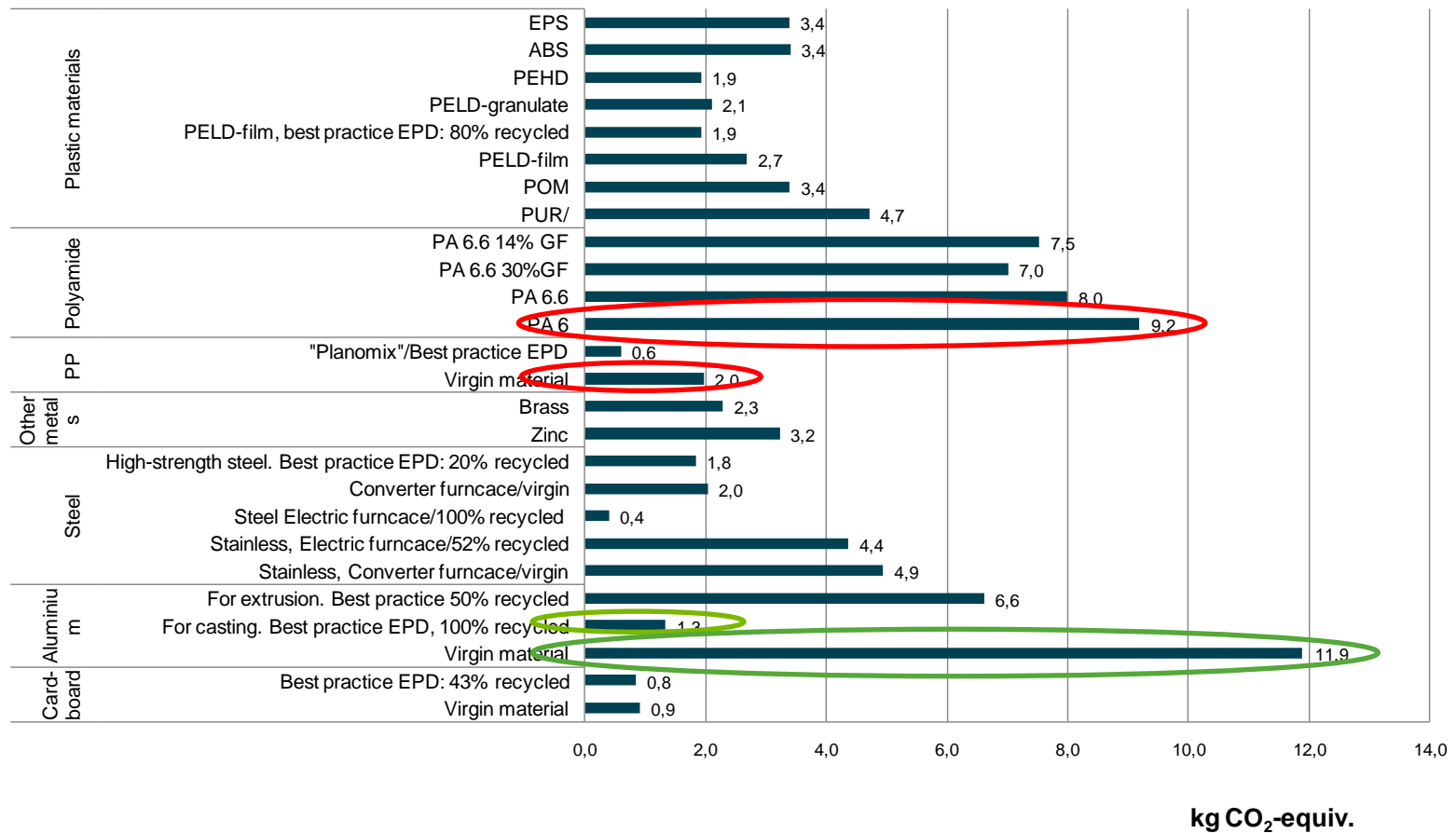
- **The bad**

Non-recommended materials and chemicals

- **The ugly**

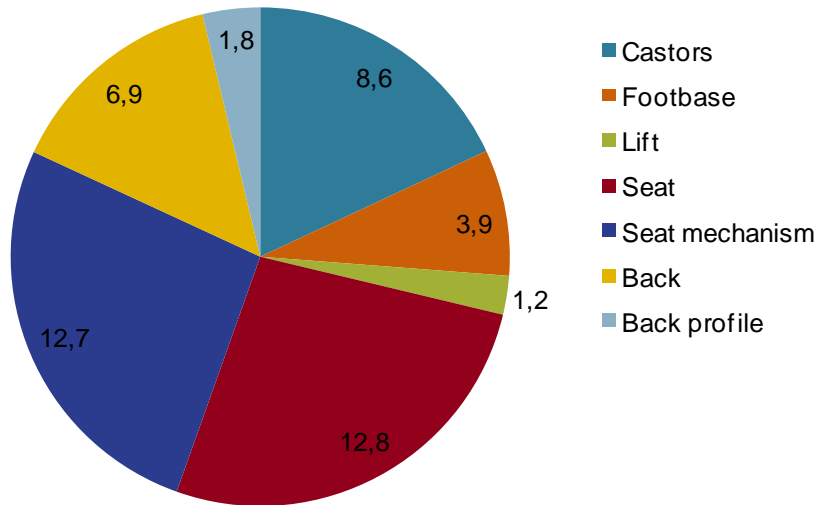
Banned materials and chemicals

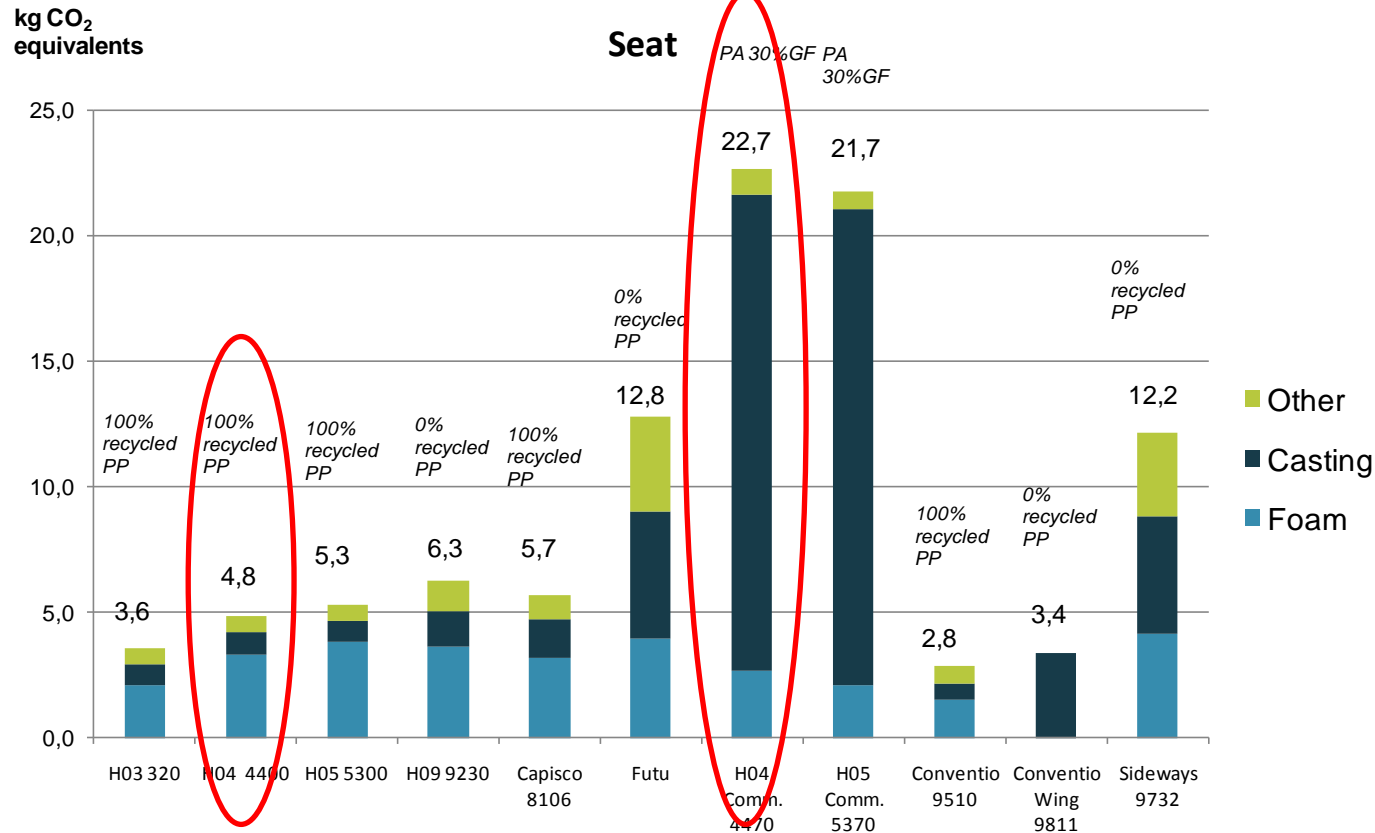
Climate gas emission per kg raw material



Futu

CO2 eqiv pr module

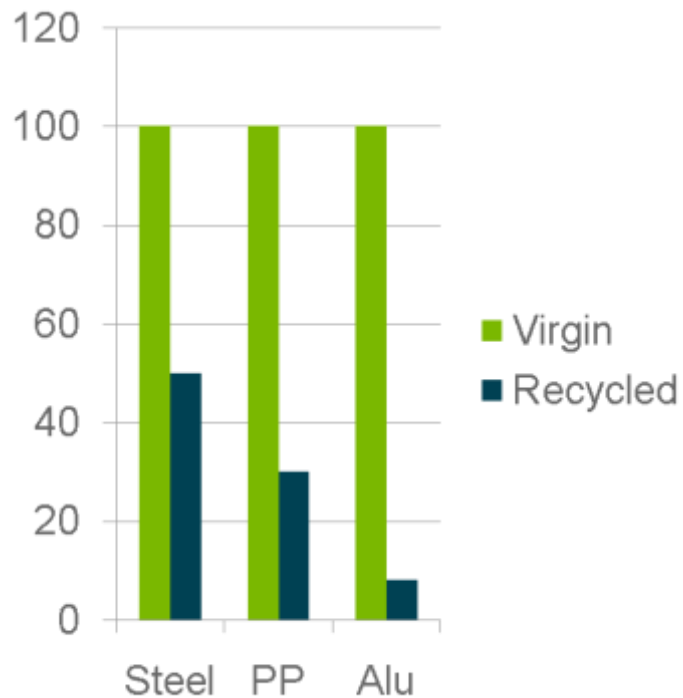




Comments

- Conventio Wing has no upholstery
- H03 has mat upholstered seat, others have fully upholstered seat
- H05comm&H04comm seat shell is in PAGF30% and includes back profile
- Futu seat includes "gaffeldeksel"

Recycled materials are very good for the climate, but what about toxicity?



Eco Design Tools based on LCAs

1 Material List:

Approved/non-approved materials

2 Material Carbon and Chemical Footprint: :

KPI's per kg raw material

3 Product Module Carbon and Chemical Footprint:

KPI's for most common product modules

4 CO₂ and Toxicity-calculator

Thank you for listening

Carl Peter Aaser
V.P. Environment

