

DF 46 : End-of-life and
waste management in
life cycle assessment

„EU Control of
Chemicals Applied
To E-Mobility“

Environmental Protection in
the Automotive Industry

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Life Cycle Assessment Approaches


Company	Management System Standards, RRR Standard	Published LCA; LCA Standards	Cited Source
Daimler	EMAS III, ISO 14001; ISO 22628 "Road vehicles - Recyclability and Recoverability - Calculation Method"	- made via DfE Software based on the LCA data base GaBi4 (PE International); ISO 14062 "Design for Environment", ISO 14040 "LCA Principles and framework", ISO 14044 "LCA Requirements and guidelines"	Life Cycle - Environmental Certificate for the GLK Class - available also for all major classes
Ford	ISO 14001, EMAS III (Saarlouis); ISO 22628	„Product Sustainability Index“ (PSI) based on ISO 14040	www.ford.com/go/sustainability
Hyundai/Kia	ISO 14001; ISO 22628	ISO 14040, ISO 14062	Sustainab. Rep. 2011/Kia PR
Toyota	ISO 14001; ISO 22628	Eco-VAS „based on the concept of LCA“	http://www.toyota-global.com/sustainability/
Volkswagen	ISO 14001, EMAS III; ISO 22628	ISO 14040, ISO 14044, ISO/TR 14062	Nachhaltigkeitsbericht 2010

Assumptions and Proofs for LCA

- ✦ What kind of Environmental Management System: EMAS III (stricter legal base) or ISO 14001 (private industry standard)? Is the control of chemicals embedded in the development of products, too, as an application of the new ISO 14006:2011?
- ✦ Does a car/electronics maker have a published LCA Report?
- ✦ Does the company actively participate in one of the following industry expert groups, or similar ones?:
 - ✦ REACH Task Force: materials declaration, control of chemicals, to implement a ban of illegal substances
 - ✦ IMDS or MACSI User Group: sound materials declaration
 - ✦ IDIS2 End of Life Vehicles Dismantling Data: safety reasons

Summary: E-Mobility and Design for Environment

incl. control of chemicals even beyond ELV (cars)/ELA (charging points)

- ✦ **Design for Recycling:** e.g. implementation of future substance bans
see VDI Guideline 2243 „Recyclingorientierte Produktentwicklung“ (first issued in 1991)
LCA: Under REACH/ELV/RRR, recyclers must still be able to sell recyclates in 15 years' time
- ✦ **Design for Recovery:** a proof of your materials recovery policy
attributes materials in ELV Data Bases (Criteria 2a/b) to a commonly recognised technology (ISO 22628), LCA software e.g. SimaPro, GaBi, Umberto, iPoint to generate ISO data sheets
- ✦ **ELV:** End of Life Vehicles - 2 data bases in Europe for EU and EEA
Car Industry to declare materials compositions of vehicles and parts, see Criteria 2a, 2b
Industry use IMDS and MACSI to trace contents of materials, see Criteria 2a, 2b
- ✦ **ELA:** End of Life Appliances - no joint industry data base yet 
Under REACH/RoHS/WEEE, recyclers must still be able to sell recyclates in 15 years' time

Criterion 1: REACH (Reg. [EC] No 1907/2006) Task Force Member?

- **ACEA, European Automobile Manufacturers Association:**

BMW Group, DAF Trucks, Daimler, FIAT Group, Ford of Europe, GM/General Motors Europe, Jaguar Land Rover (Tata India), MAN Nutzfahrzeuge, Porsche, PSA Peugeot Citroën, Renault Group, Scania (VW), Toyota Motor Europe, Volkswagen Group, Volvo Cars (Geely PR China), Volvo Group

public source: [www.acea.be/images/uploads/files/Annex_L7 - Positionpaper REACH Art33 and Spare Parts.pdf](http://www.acea.be/images/uploads/files/Annex_L7_-_Positionpaper_REACH_Art33_and_Spare_Parts.pdf)

Excursion 1 into UN, EEA, European Economic Area, and EU Laws



REACH	Registration, Evaluation, and Authorisation of Chemicals “No data - no market”	Regulation [EC] No 1907/2006 as directly applicable law - in the EEA: decision of Standing Committee of The EFTA States Working Group On Technical Barriers To Trade, Ref. 1076658 as of 13 April 2007
UN GHS, EU CLP	United Nations Globally Harmonised Standard, EU Regulation on Classification and Labelling of Chemicals and Mixtures	UN Framework as converted into EEA and EU Laws via CLP Regulation (EC) No 1272/2008, amending REACH Reg. [EC] No 1907/2006, reforming the EU Dangerous Substance Laws



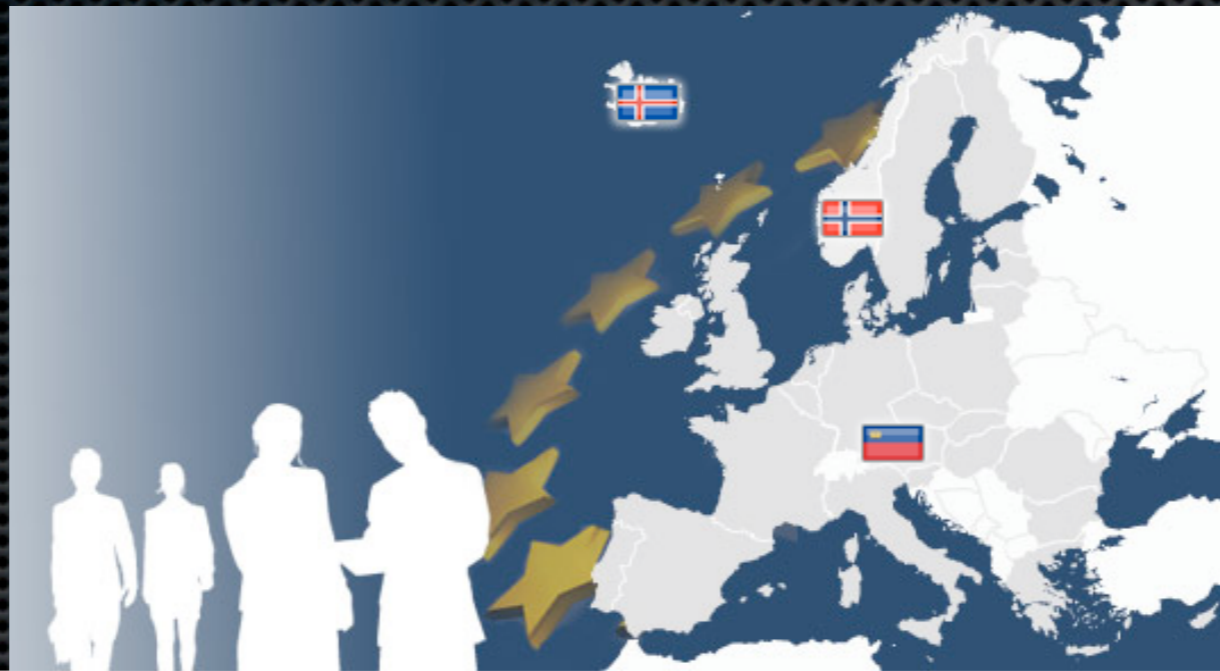
old



new

Picture Sources: EFTA, UN ECE

Excursion 2 into EEA, European Economic Area, and EU Laws



Picture Source: EFTA

RRR	motor vehicles' type-approval with regard to their reusability, recyclability and recoverability	RRR Directive (2005/64/EC), as converted into EU and EEA Member States Laws, requesting theoretical quota for recycling, reuse, recovery from Car Makers
ELV	End of Life Vehicles	ELV Directive (2000/53/EC) as converted into EU and EEA Member States Laws
ELA	End of Life Appliances: Restriction of Hazardous Substances (RoHS), Waste Electrical and Electronic Equipment (WEEE)	RoHS Directive (2002/95/EC, recast: 2011/65/EU), WEEE Directive (2002/96/EC), as converted into EU and EEA Member States Laws

Criterion 1: REACH (Reg. [EC] No 1907/2006) Task Force Member?

- **JAMA, Japan Automobile Manufacturers Association:** Daihatsu Motor, Fuji Heavy Industries Ltd. (Subaru), Hino Motors, Honda Motor, Isuzu Motors, Kawasaki Heavy Industries, Mazda Motor Corporation, Mitsubishi Motors Corporation, Mitsubishi Fuso Truck and Bus Corporation (Daimler AG), Nissan Motor Co., Suzuki Motor Corporation, Toyota Motor Corporation, UD Trucks Corporation (Volvo Group), Yamaha Motor Co. Ltd., *formerly also GM Japan*

public sources: <http://www.jama-english.jp/about/member.html>, also see ACEA

Criterion 1: REACH (Reg. [EC] No 1907/2006) Task Force Member?

- ✦ **KAMA, Korea Automobile Manufacturers Association:** Hyundai, Kia, GM Daewoo, Ssangyong, RenaultSamsung
- ✦ **CLEPA, European Association of Automotive Suppliers:** 80 of the world's most prominent plus more than 3,000 others
- ✦ **Automotive Industry Action Group (USA):** Caterpillar, Chrysler Group, Ford Motor Company, General Motors Company, Honda of American Manufacturing, Navistar International, Nissan North American, Toyota Motor Engineering & Manufacturing North America

Criterion 2a: ELV *Material Composition Information* (MACSI) Member?

Eine Seite zurück
PSA PEUGEOT CITROËN

magazine

Code name: MACSI ✕ CLOSE



What is the exact quantity of plastic, foam and fabric in the seats of a 407 or C4? And how much metal is there in the door of a 206 CC? PSA Peugeot Citroën launched the MACSI collection and IT system in early 2004 to find the answers to these complex questions. The objective is to establish a list of all the data relative to the "weight and materials" make-up of supplier parts. And thus identify how much of the vehicle parts can be recovered and recycled. The MACSI system also complies with the EU directive's requirements regarding heavy metals. PSA Peugeot Citroën has already achieved promising results: its 850 biggest suppliers are all participating in the MACSI system via its [B2B Portal](#).

? ✉ SEND

public sources: http://www.psa-peugeot-citroen.com/en/magazine/ow_breve_c2.php?id=392,
http://www.ipoint.de/fileadmin/Download/Flyer/PSA_MACSI_RENAULT_ASIS.pdf

Criterion 2b: ELV *International Material Declaration System* (IMDS) Member?

- Aston Martin Lagonda, BMW, Chrysler, Daimler, FAW-VW Automobile (PR China), Fiat, Fisker Automotive, Ford, Fuji Heavy Industries (Subaru), GM/General Motors, GM India, GM Korea, HP/Hewlett Packard (systems provider), Honda, Hyundai and Kia (S. Korea), Isuzu, Jaguar Land Rover (Tata India), Komatsu (Construction Machines), Mazda, Mitsubishi, Nissan, Porsche, Renault, Renault Samsung Motors, Saab, SAIC (PR China), Scania (VW), Shanghai GM (PR China), Shanghai VW (PR China), Ssangyong Motor Company (S. Korea), Suzuki, Toyota, UD Trucks Corporation (Volvo Group), Volkswagen, Volvo Cars (Geely PR China), Volvo Group, Wuyang-Honda Motors (PR China), Honda Sundiro (PR China, Motorcycles), future: some Indian OEM

Criterion 3: *International Dismantling Information System* Member?

- Alfa Romeo, Aston Martin, Audi, Autobianchi, BMW, BMW Alpina, Bentley, Cadillac, Chevrolet, Chrysler, Citroën (PSA), Corvette, Dacia (Renault), Daihatsu (Toyota), Daimler (UK), Dodge, Fiat, Ford, GM Dae-woo, Honda, Hummer (GM), Hyundai, Iveco (Fiat), Infiniti (Nissan), Innocenti (Fiat), Isuzu, Jaguar (Tata India), Jeep, Kia, Lamborghini, Lancia, Land Rover (Tata India), Lexus (Toyota), Lotus (Proton Malaysia), MG (Shanghai Automotive Industry, PR China), Mazda, Mercedes-Benz, Mini (BMW), Mitsubishi, Mitsubishi Fuso Truck and Bus Corporation (Daimler), Nissan, Opel (GM), Peugeot (PSA), Porsche, Proton (Malaysia), Renault, Renault Samsung Motors, Renault Trucks, Rolls Royce, Rover (Tata), Saab, Seat, Skoda, Smart, Ssangyong, Subaru, Suzuki, Tata, Toyota, Vauxhall (GM), Volkswagen, Volvo

Criterion 3: *International Dismantling Information System* Member?



Public Source:
www.idis2.com

Proposal: Future LCA Merit Criteria

- Yes, a car/electronics maker successfully implements an Environmental Management System: EMAS III (preferred) or ISO 14001. The control of chemicals puts the system to the test.
- Yes, the company has published a LCA Report already.
- Yes, the company actively participates in one of the following or in similar industry expert groups (maximum scores for all three):
 - REACH Task Force: materials declaration, control of chemicals - to implement a ban of illegal substances
 - IMDS or MACSI User Group: sound materials declaration
 - IDIS2 Steering Committee: ELV Dismantling Data - safety