

RENAULT TRUCKS E-TECH T 6X2 Environmental product information



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### **Renault Trucks**

Renault Trucks is committed to improving sustainable goods mobility and is striving to reduce the effects its products have on the environment. Renault Trucks vehicles are designed to comply with legislation limiting atmospheric pollution and also to continue lowering fuel consumption which results in reducing carbon dioxide emissions.

Together with ever more fuel efficient transport solutions, Renault Trucks offers a full range of vehicles powered by alternatives to diesel fuel to enable operation in any environment: 100% electric; compressed natural gas; biofuels.

Renault Trucks implements an environmental policy based on specific commitments and a stringent management system that covers its dealer network, suppliers and partners. Its vehicles are manufactured in ISO 14001 certified production plants. It is geared to limiting its consumption of energy, water and raw materials but also to reducing waste production. Its products are designed to allow maximum reuse of the materials that have gone into their production.



# Environmental product information

Environmental product information is drawn from life cycle analyses (LCAs) carried out on our vehicles. These cover all phases in a truck's life, from the production of raw materials right through to final dismantling and recycling. It provides data concerning the environmental impact of each one of these phases. In some cases, the LCA, which is far-reaching and complex, includes approximations. The results reveal the most important environmental parameters in the product life cycle.

#### THE THEMES

The environmental product information studies the impact of:

- materials: extraction and processing of raw materials used to produce the vehicle.
- production: manufacturing processes used by the plants, component production at suppliers and on site transport of parts.
- **use phase:** production and consumption of electric energy. Homologation trials carried out for each type of engine as well as on-road tests make it possible to ascertain the effects of energy consumption. Depending on the conditions of use, a truck's actual energy consumption can differ from the published results.
- **maintenance:** consumables and materials used in preventive maintenance and the production of parts (impact calculated on the basis of average values).
- end of life management: dismantling of products, management of waste and recycling the truck's materials.

#### THE RESULTS

The results shown include:

- · the vehicle's bill of materials
- the rates of recyclability and recoverability as defined by the ISO 22628 standard
- the inventory results which show the data for the resources used and the emissions produced (pollution and waste).
- · the assessment of the potential contribution to global warming. al.

#### **BENCHMARK VALUES**

Life cycle analysis results vary considerably depending on the data used for the calculations, the most important being country and energy source, energy consumption an mileage. The results shown here are based on the benchmark values for a **Renault Trucks E-Tech T**, **a 6x2 rigid** designed for regional distribution, throughout its entire life cycle.

### **Environmental product information**

#### METHOD



### DATA USED FOR THE CALCULATION

Vehicle model	Power	Number of batteries	Vehicle type	Distance (km)	Date
Renault Trucks E-Tech T	330 kW	6x90 kWh	rigid 6x2	650 000	2022

#### **BILL OF MATERIALS**

Bill of materials used in the vehicle and taken into account for calculating the life cycle analyses.

Materials	kg
Iron/Steel	6691
Aluminum	810
Polymers	302
PCB	17
Copper	252
Elastomers	526
Fluids/Chemicals	76
Other materials	223
*Batteries	3000
TOTAL	11897

\* Li-ion NCA



# Environmental product information

#### RATE OF RECYCLABILITY AND RECOVERABILITY

The vehicles are designed to ensure that the maximum amount of materials used in their construction can be reused.

Rate of recyclability* 95,4%
Rate of recoverability* 98,3%

\* Calculations according to the ISO 22628 standard: The rate of recoverability is the percentage of the vehicle's mass potentially able to be reused, recycled or recovered as energy (incineration with energy recovery); it is therefore always higher than the rate of recyclability.

#### **INVENTORY RESULTS**

	Unit	Materials	Production	Use phase	Maintenance	End of life	Total
Electricity - renewable*	MWh	15,85	6,73		6,51	-1,3	1201
Electricity - non-renewable*	MWh	-0,24	3,79		2,497	-0,23	7
Other renewable energy*	MWh	0,003	0		0	0,0038	0
Other non-renewable energy*	MWh	108,9	202		26,8	-25,9	11631
Materials	kg	8898	0		1460	-7814	2544
CO*	kg	103,2	20,6		2,8	-55,7	82
CO <sub>2</sub> *	kg	26232	672	According to	4608	-7926	29451
HC/VOC*	kg	66,5	7,4	country and primary energy	13,8	-20,9	70
NOx*	kg	58,1	4,3	source	10,8	-15,75	61
SO <sub>2</sub> *	kg	65,1	2,6		7,4	-17,1	61
Particulates*	kg	18,16	0,86		1,99	-6,87	17
Biological oxygen demand*	kg	0,79	0,13		0,26	0,01	1
Chemical oxygen demand*	kg	13,86	3,25		2,48	-0,2	21
CO <sub>2</sub> -eq*	kg	29104	5450		5962	-17792	28673
CO <sub>2</sub> -eq	kg	60360	5450		5962	-8312	63460
Use of water (excluding cooling)	m3		8,66				
Use of water for cooling	m3		2,17				
Non-hazardous waste treated	kg		339,16				
Non-hazardous waste to landfill	kg		10,21				
Hazardous waste treated	kg		193,54				
Hazardous waste to landfill	kg		4,7				

\*Batteries excluded

## **Environmental product information**

### **INVENTORY RESULTS**

By country	Unit	BE	СН	SP	FR	GB	IT	LU	NL	NO	SW	DE	EU28
Electricity - renewable	MWh	614	1029	1064	432	997	1230	1122	561	1251	969	1197	883
Electricity - non renewable	MWh	1162	880	679	1831	643	158	561	137	28	1022	371	718
Other renewable energy	MWh	0	0	0	0	0	0	0	0	0	0	0	0
Other non- renewable energy	MWh	731	469	1316	337	1165	1578	1229	1719	59	66	1464	1198
Materials	kg	0	0	0	0	0	0	0	0	0	0	0	0
CO	kg	139	115	256	72	359	286	256	165	19	188	300	296
CO <sub>2</sub>	kg	191001	168053	366385	92773	282010	391524	410941	462111	30032	38736	496551	362545
HC/VOC	kg	332	267	912	193	703	1309	634	910	23	54	751	722
NOx	kg	224	196	607	152	404	397	445	422	16	81	525	440
SO <sub>2</sub>	kg	59	90	453	86	191	175	194	110	7	41	231	344
Particulates	kg	17	21	53	15	28	33	48	48	5	18	59	48
Biological oxygen deman	kg	0	0	0	0	0	1	0	0	0	0	0	0
Chemical oxygen demand	kg	105	162	481	65	50	260	487	498	5	7	616	398
CO <sub>2</sub> eq.	kg	199875	175344	392597	97771	295813	423808	428269	487065	30666	40476	517273	381680

By primary energy source	Unit	Hard coal	Brown coal/ Lignite	Natural gas	Hydro power	Nuclear power	Wind power	PV solar cells	Solar thermal	Biomass
Electricity - renewable	MWh	12	22	6	1172	1	2444	5861	8703	2592
Electricity - non- renewable	MWh	8	13	2	0	2802	2	25	26	5
Other renewable energy	MWh	0	0	0	0	0	0	0	0	0
Other non-renewable energy	MWh	2660	2762	2191	6	23	29	177	137	94
Materials	kg	0	0	0	0	0	0	0	0	0
СО	kg	177	753	176	11	6	29	73	88	2772
CO <sub>2</sub>	kg	902187	1081566	434607	5864	4199	8275	51488	39806	22668
HC/VOC	kg	2261	504	876	3	14	15	182	81	233
NOx	kg	1245	880	309	4	18	11	89	75	828
SO <sub>2</sub>	kg	792	914	36	3	18	12	114	44	410
Particulates	kg	144	151	10	3	5	4	18	9	77
Biological oxygen demand	kg	0	0	1	0	0	0	0	0	0
Chemical oxygen demand	kg	1737	1651	9	1	1	4	37	22	533
CO <sub>2</sub> eq.	kg	968624	1101235	457973	5950	4517	8690	55383	43502	31167

# Assesment of the impact on the environment

Assessing a product's environmental impact throughout its lifetime makes it possible to determine which aspects must be studied to improve its overall environmental performance. This assessment may be qualitative but also quantitative by using appropriate methods and tools

#### **GLOBAL WARMING POTENTIAL**

Life cycle analysis makes it possible to determine a vehicle's global warming potential throughout its operational life. This potential consists of the various greenhouse gas emissions it produces that affect the climatic system. It is expressed as the equivalent quantity of Carbon Dioxide (kg equ.  $CO_2$ ).



#### LIFE CYCLE EMISSIONS - CO2EQ.

Global warming potential for the different life cycles of Renault Trucks E-Tech T 6x2 rigid.

# Assesment of the impact on the environment

**Use phase emissions from production of electricity - CO**<sub>2</sub>eq. National average and comparison with Diesel



#### Use phase emissions from production of electricity - $CO_2eq$ . Energy sources and comparison with Diesel



# Assesment of the impact on the environment

### COMMENTS

Over the entire life cycle of an electric truck, materials, including batteries, account for most of the greenhouse gases emissions, while the use phase, which is very predominant for a diesel vehicle, is less.

By switching to electric power, the reduction of the truck's climate impact during this use phase can be extremely important depending on the selection of the primary source of this energy and its production origin.

The analyses show that electricity produced from coal will have a high carbon impact, unlike electricity produced from nuclear or renewable energy sources. The results on the whole life cycle differ according to the national energy mixes within the European Union but show a gain in all countries that should increase as decarbonization progresses.

Powered by low-carbon electricity, of hydraulic origin at best, the **Renault Trucks E-Tech T 6x2** rigid shows a significant reduction in  $CO_2$  emissions equivalent of its life cycle of nearly 90%.

By developing its 100% E-Tech electric range of vehicles Renault Trucks is substantially reducing the CO<sub>2</sub> emissions from products over their entire life. Renault Trucks is continuing its efforts to reduce batteries environmental impact by securing materials supply and recycling and by using new technologies.

Renault Trucks is preparing battery management in line with the principles of the circular economy. After their first service life, batteries can be reconditioned and reused on trucks. When used, they will be converted to applications other than mobility, and then recycled at the end of their life, with the recovered materials being reinjected into the manufacture of new units.

Find out more about sustainability at Renault Trucks: <u>Sustainability | Renault Trucks Corporate (renault-trucks.com)</u>





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