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TotalEnergies

December 2021

Independent assurance report on the award of the “Drilling fluids range EDC (EDC 95-11, EDC 99-DW, EDC 170 SE, EDC 200 SE)” products

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Further to your request, we have performed a review in order to obtain reasonable assurance that the "Drilling fluids range EDC (EDC 95-11, EDC 99-DW, EDC 170 SE, EDC 200 SE)" products, a description of which can be found on the web site www.totalenergies.com[1] and in the external datasheet dated November 24th, 2021, have obtained the "Ecosolutions by TotalEnergies" label in accordance with the version 7 of the "Ecosolutions by TotalEnergies Guidelines" dated January 11, 2021 (hereafter referred to as the "Guidelines"); the Guidelines, which can be downloaded from the web site www.totalenergies.com[1], have been established on the basis of the ISO 14020 and ISO 14021 standards and were the subject of a preliminary external review which gave rise to the issue of an independent report on their design, this report also being accessible on www.totalenergies.com[1].

We conducted our review in accordance with international standard ISAE 3000 (International Standard on Assurance Engagements) defined by IFAC (International Federation of Accountants). It is the responsibility of TotalEnergies to regularly update the Guidelines, to ensure that they are made available to internal users and third parties, and to apply the Guidelines. It is our responsibility to express, on the basis of our review, a conclusion on the award of the "Ecosolutions by TotalEnergies" label to the "Drilling fluids range EDC (EDC 95-11, EDC 99-DW, EDC 170 SE, EDC 200 SE)" products.

Nature and scope of our review

To express our conclusion, we performed the following review:

- We have assessed the reliability, accuracy, understandability, neutrality, completeness and relevance of the Guidelines and the constituents of the "Ecosolutions by TotalEnergies" label request file for products and services.

- We have conducted interviews with the persons in charge of preparing the label request file, and analyzed the documentation available (aiming at justifying the methods of evaluation of the product's overall environmental impact and of the comparative performance evaluation with the reference product). We have also reviewed the meeting minutes and documents used during the validation process by the "Ecosolutions by TotalEnergies" Labelling Committee and the Ecosolutions by TotalEnergies Management Committee, in order to identify any risks of deviation in relation to the label award process defined in the Guidelines. However, the scope of our work did not include the verification of data used as sources for the calculation.

[1] Exact address: www.ecosolutions.totalenergies.com

To conduct the aforementioned procedures, we called on members of our teams specialized in environment and sustainable development.

Information or explanations

- The Guidelines aim to define the rules for the award of the "Ecosolutions by TotalEnergies" label, the organization and responsibilities, the methods for assessing the level of environmental performance and verifying the compliance with the Guidelines, the internal and external communication procedures as well as the rules for document management, in accordance with the requirements of the ISO 14020 and ISO 14021 standards.

- The "Drilling fluids range EDC (EDC 95-11, EDC 99-DW, EDC 170 SE, EDC 200 SE)" is a range of drilling fluids with a content of aromatics lower than the other products with similar use. Drilling fluids are used as oil to prepare drilling mud. During drilling operations, drilling mud enables to lubricate and cool the drilling bit; it also helps to pull up soil to the surface and to stabilize the drilling well.

- The environmental and health performance of the products "Drilling fluids range EDC (EDC 95-11, EDC 99-DW, EDC 170 SE, EDC 200 SE)" is assessed by comparison, for an equivalent service, with:

    - for the environmental analysis, a hypothetical product reflecting the respective market shares of diesel fuel (70%) and "clean oils" (30%) for this type of use. This 70/30 distribution is based on a market study adjusted by TotalEnergies experts.

    - For the eco-toxicological analysis, the performance of the EDC range is compared to diesel and clean oil type products.

- The comparative environmental performance assessment for the "Drilling fluids range EDC (EDC 95-11, EDC 99-DW, EDC 170 SE, EDC 200 SE)" products was carried out on the basis of an eco-toxicological analysis using the generic exposure scenarios defined by the European Chemicals Agency[2] and a toxicological analysis using the PROC (Process Category) scenarios defined at European level for oil rig workers. Greenhouse gas emissions were assessed based on a life cycle analysis.

- The de-aromatisation step necessary to reduce the PAH content leads to an increase in energy consumption and greenhouse gas emissions during the production phase of about 9% compared to the reference product. This transfer of impact is considered non-significant compared to the health benefit.

[2] The scenario used is: ESVOC 11 (SU3): "Oil field well drilling and production operations (including drilling muds and well cleaning) including material transfers, on-site formulation, well head operations, shaker room activities and related maintenance".

- The functional unit considered is “develop a “standard” offshore field, corresponding to an average of fifteen wells[3], thus using 10,000 tons of oil”.

- The benefit considered significant and validated by the “Ecosolutions by TotalEnergies” Management Committee is a reduction in ecosystem impacts by a factor of about 18,000 between a diesel and the EDC range of products, a reduction of a factor 100 between the standard “clean oils” and the EDC range of products, as well as a reduction of the toxicological risk by a factor of about 46,000 between a diesel and the EDC range of products and a factor 54 between the standard “clean oils” and the EDC range of products. The calculations of these average values are available in Annexes 1 and 2.

[3] The "standard" well therefore corresponds on average to the operation of 15 wells, although this number can reach several hundred depending on the complexity of the geological formation. The "standard" offshore field is equivalent to an average daily production of 30,000 barrels for a 20-year operating life.

Conclusion

In our opinion, the “Drilling fluids range EDC (EDC 95-11, EDC 99-DW, EDC 170 SE, EDC 200 SE)” products have been awarded the “Ecosolutions by TotalEnergies” label, in all their significant aspects, in accordance with the Guidelines.

Paris-La Défense, December 20th, 2021

EY & Associés

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Sustainability Services

Annex

Annex 1. Main results of the ecotoxicological assessment: the average of the normalised values for the concentration of Diesel differs from EDC's by a factor of around 18,000.

		Average concentration of toxicity markers* (mg/kg)			Normalization of the Clean oil or Diesel concentration value to EDC (Clean oil or Diesel oil concentration/ EDC concentration)	
		EDC	Clean oil	Diesel oil	Clean oil	Diesel oil
Environmental category	Freshwater	0.063645	0.927633	74.793407	86	17 911
	Seawater	0.01997	0.103960	7.53451	44	17 219
	Fresh sediments	0.070283	0.568807	497.809627	142	18 054
	Seawater sediments	0.022757	0.144727	50.2584	44	17 708
	Terrestrial environment	0.081385	2.255636	126.822	158	18 781

* The average was calculated from the values for the following markers: benzene, toluene, ethylbenzene, m+p xylene and o-xylene, naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(e)pyrene (BeP).

Annex 2. Results of measurements of toxicity marker concentrations: the average of the normalised values for the concentration of Diesel differs from EDC's by a factor of around 46,000.

		Concentration of substances (mg/kg)			Normalization of the Clean oil or Diesel concentration value to EDC (Clean oil or Diesel oil concentration/ EDC concentration)	
		EDC	Clean oil	Diesel oil	Clean oil	Diesel oil
Toxicity markers	B[a]P eq.	0.00019294	0.04260699	0.01624487	221	84
	Benzene	0.00466265	0.09698795	19	21	4 075
	Toluene	0.03012048	0.31566265	210	10	6 972

	Ethylbenzene	0.03012048	0.13975904	2200	5	73 040
	Xylene	0.06024096	0.83734940	8900	14	147 740