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Total

December 2016

Independent assurance report on the award of the “Total Ecosolutions” label to the « Drilling fluids range EDC (EDC 95-11, EDC 99-DW, EDC Diamond, EDC 170 SE, EDC 200 SE) » product

ERNST & YOUNG et Associés



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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 Diamond, EDC 170 SE, EDC 200 SE) ” product, a description of which can be found on the web site www.total.com¹ and in the external datasheet dated November 24, 2016, has obtained the “Total Ecosolutions” label in accordance with the version 5 of the “Total Ecosolutions Guidelines” dated June 3, 2016 (hereafter referred to as the “Guidelines”); the Guidelines, which can be downloaded from the web site www.total.com¹, 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.total.com¹.

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 Total 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 “Total Ecosolutions” label to the “Drilling fluids range EDC (EDC 95-11, EDC 99-DW, EDC Diamond, EDC 170 SE, EDC 200 SE) ” product.

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 “Total Ecosolutions” 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 “Total Ecosolutions” Labelling Committee and the Total Ecosolutions 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: <http://www.total.com/total-ecosolutions>



To conduct the aforementioned procedures, we call 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 “Total Ecosolutions” 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 product “ Drilling fluids range EDC (EDC 95-11, EDC 99-DW, EDC Diamond, 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 reference product selected by Total has been adapted to the studied impacts:
 - The reference used for the environmental analysis is a hypothetical product reflecting the market shares of the other drilling fluids, respectively diesel (77%) and other “clean oils” (23%).
 - Regarding the eco-toxicological analysis, EDC products range performances are compared to those of diesel and “clean oils” products.
- The environmental performance and reduction in resource consumption delivered by the « Drilling fluids range EDC (EDC 95-11, EDC 99-DW, EDC Diamond, EDC 170 SE, EDC 200 SE) » product is realized through an eco-toxicological analysis using a Generic Exposure Scenario defined by the ECHA (European Chemical Agency²) and a toxicological analysis using the PROC (Process Category) scenarios defined at the European level for oil drilling platform workers.
- Aromatics content reduction is obtained through a severe catalytic hydrogenation which implies an increase of both energy consumption and greenhouse gases emissions during the production step, in comparison with the reference product. This impact transfer is considered non significant due to the eco-toxicological benefit on the one hand (reduction of the RCR³ of a factor 100 compared to other “clean oils” drilling fluids) and considering, on the other hand, the additional emissions compared to those generated by the use of the product from an average petrol oil field (<0,1 %).
- The selected functional unit is the “development of a “standard” off-shore oil field”. This development requires drilling about fifteen wells (production and/or injection) with the use of approximately 10,000 tons of oil.

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”.

³ RCR : Risk Characterisation Ratios ; this is the evaluation of the risks through a ratio between the exposure and the threshold value to be not exceeded.



- The benefits considered significant and validated by the "Total Ecosolutions" Management Committee are a reduction of the RCR of a factor 18,000 between a diesel and the EDC range of products, a reduction of factor 100 between the standard "clean oils" products and the EDC range of products as well as a reduction of the toxicological risk of a factor 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.

Conclusion

In our opinion, the "« Drilling fluids range EDC (EDC 95-11, EDC 99-DW, EDC Diamond, EDC 170 SE, EDC 200 SE) » product has been awarded the "Total Ecosolutions" label, in all its significant aspects, in accordance with the Guidelines.

Paris-La Défense, December 16, 2016

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