



Industrie Service

**Choose certainty.
Add value.**

TÜV SÜD Industrie Service GmbH · 80684 München · Germany

CDM Executive Board

Your reference/letter of	Our reference/name	Tel. extension/E-mail	Fax extension	Date/Document	Page
	IS-USC-MUC/Bb	+49-89 5791-2170	+49-89 5791-2756	2007-06-21	1 of 4
	Werner Betzenbichler	Werner.Betzenbichler@tuev-sued.de			

Request for review

Dear Sirs,

Please find below the response to the request for review formulated for the CDM project with the registration number 0116. In case you have any further inquiries please let us know as we kindly assist you.

Yours sincerely,

Werner Betzenbichler
Carbon Management Service

Headquarter: München
Trade Register: München HRB 96 869

Supervisory Board:
Dr. Axel Stepken (Chairman)
Board of Management:
Dr. Manfred Bayerlein (Chairman)
Dr. Udo Heisel

Telefon: +49 89 5791-1733
Telefax: +49 89 5791-2756
www.tuev-sued.de

TÜV SÜD Industrie Service GmbH
Certification Body "Climate and Energy"
Westendstraße 199
80686 München
Germany

Response to the CDM Executive Board

Request 1, 2 and 3

Issue:

Although the DOE verified the calculation of the emission reductions, the total amount of the adipic acid production in the attached excel sheet (#11) was not clear. The project participant is required to provide the details of the calculation of the production amount.

Response by the project participant:

The details of the calculations of the production amount are as follows:

In accordance with the Project Design Document of the CDM project number 0116 for N₂O destruction, the adipic acid production in Paulínia is determined based on the production of adipic acid both as a dry product and as slurry. The diagram followed (Figure 1) indicates the main streams participating of the material balance around the plant. The total daily adipic acid made by the nitric oxidation reaction is the sum of two terms (Equation (1)):

Total Production [P_AdOH] = [Finished Product] + [Variation of the In-Process Product]	(1)
--	-----

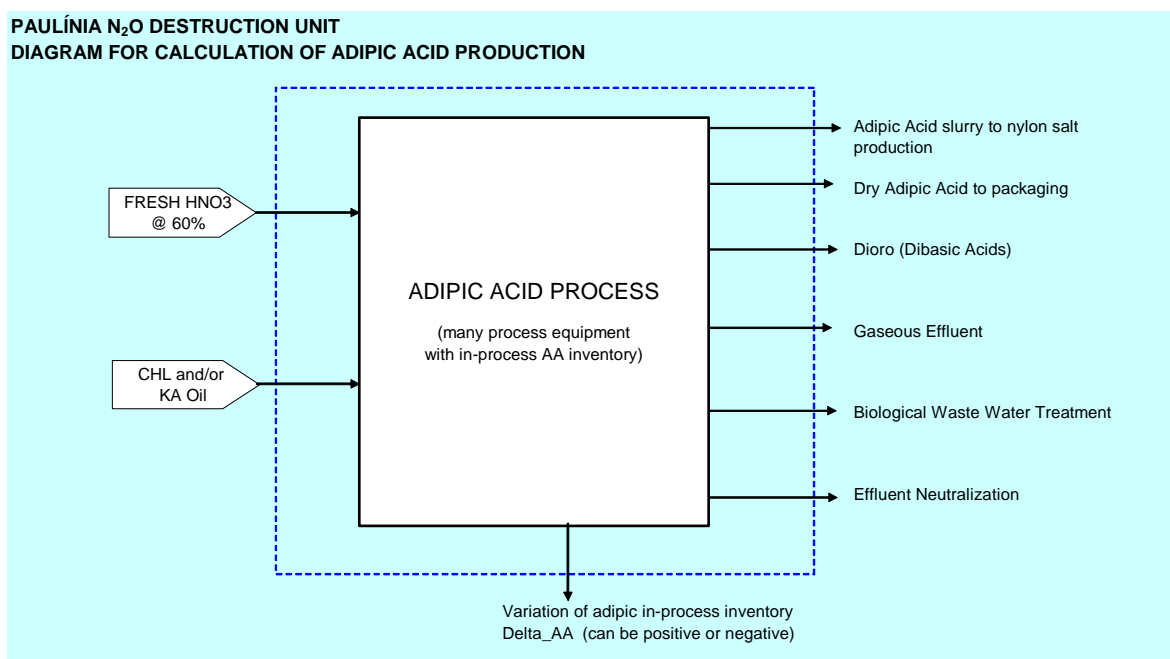


Figure 1: Main stream of material balance in Adipic Acid Plant

The finished adipic acid production is obtained by adding the production of dry and slurry adipic acid, according to Equation (2).

$[\text{Finished Product}] = [\text{Dry Adipic Acid}] + [\text{Slurry Adipic Acid}]$	(2)
--	-----

Only the product that has actually left the plant is considered as finished product. In this case:

- Dry adipic acid: is the product which was actually packaged (determined by weigh scales).
- Slurry Adipic Acid: is the product actually used to react with HMD and make nylon salt. Nylon salt truck loads are very accurately weighed, analyzed and its inventory variation is taken into account to determine the adipic acid consumed by means of stoichiometric equivalence.

The in-process adipic acid is obtained by adding the amount of adipic acid contained in all process equipment where adipic is present at different concentrations.

The variation of the In-Process Product inventory of day N is obtained by subtracting the total In-Process Product of day N minus In-Process Product of day (N-1) as in Equation (3):

$[\text{Variation of the In-Process Product}] = [\text{In-process Product of day N}] - [\text{In-process Product of day (N-1)}]$	(3)
--	-----

Therefore, according to described in the sections above, the total production of adipic acid is the sum of the following terms described in Equation (4), after rewriting Equation (1) using Equation (2):

$\text{Total Production } [P_{\text{AdOH}}] = [\text{Dry Adipic Acid}] + [\text{Slurry Adipic Acid}] + [\text{Variation of the In-Process Product}]$	(4)
--	-----

It is obvious that the total production on any specific day will only match the finished product exactly when the in-process inventory is constant from one day to another. This is quite unusual, since the in-process inventory is normally varying. Therefore we can expect that the total production will be different from the finished product on a daily basis. The total production can be higher or lower than that of the finished product. On a long term basis however those differences compensate each other and the accumulated total production will of course tend to the sum of dry + slurry.

It is also clear that, for the purpose of determining the daily amount of N₂O generated by the nitric oxidation reaction of the raw materials, we must use the total production and not the finished adipic acid production. That is due to the fact that N₂O is generated by the reaction and, for a limited time (up to 1 or 2 days) is independent of the finished production. In fact we may stop the nylon salt production and the packaging of dry adipic acid and still keep the reaction zone running thus producing adipic acid (and N₂O). Dur-

ing such limited time the adipic acid made at the reaction will be accumulated in the process equipments awaiting to go through purification and drying.

Response by TÜV SÜD:

The assessment team has been aware of the calculation at any time and confirms the reproducibility of all underlying data. Although a data file with a size of 1.6 MB is uploaded to UNFCCC secretariat this is not ensuring the traceability of all calculations for the RIT process. Caused by the complexity of the activity the submitted records are originally derived from further databases e.g. running on the SAP system of the client, totaling up to some ten MB for a single verification period. It is obvious that at some stage data has to be disconnected and cannot be forwarded to UNFCCC secretariat simply by technical reasons. It should also be mentioned that re-calculating emission reduction is not the original scope of the RIT process as confirmed during the Joint CDM Workshop. Once again we are confirming the correctness of the given emission reduction calculation being aware that a total re-calculation by a further party would require several man-days only for getting familiar with the system. As verifier for this project activity TÜV SÜD spent this effort for familiarization with the system in order to provide the required level of assurance in the context of our verification statements. The liability issue in CDM even requires our attention for any potential mistake especially in projects of this dimension.