



Date: 22nd December 2023

Antony Leahey
Pollution Prevention & Control
Natural Resources Wales
Ty Cambria
29 Newport Road
Cardiff
CF24 0TP

Dear Tony,

Reference: Improvement condition IP22V, Permit BS6149IQ

I am writing to update you on the ROCKWOOL UK development and implementation of ammonia emissions reductions to air. This will be discussed in two parts, the first covering the developments from the past year and the second the plan for the year ahead.

1. Developments in 2023

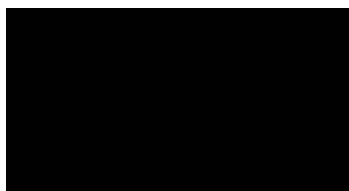
There was a list of proposed improvements in the ROCKWOOL response to CAR NRW0040855, sent on 31st March 2023. Updates from 2023 are provided on each proposed improvement below:

- ROCKWOOL UK will trial reducing ammonia addition in the binder by a further 12%. Various testing will be carried out to determine if this can become a permanent change. The trial is planned by the end of Q3 2023.
A binder trial was run on 12th September between 09:00 and 20:00. The combination of new resin and binder recipe gives us an estimated spinning chamber ammonia reduction of 4.6%. No adverse effects were seen on the day, product quality and work place health exposure were maintained at acceptable levels.
- Pending a successful outcome from the European factory, ROCKWOOL UK will seek capital investment to install a "Jet Scrubber" system on the spinning exhaust from production line 3.
An abatement system was installed in a ROCKWOOL factory in Europe to remove the ammonia from the spinning chamber flue gas and has been in operation since June 2023. The scrubber abatement system utilised sulphuric acid and this generated ammonium sulphate in the scrubber water. Initial results displayed a high efficiency in the removal of ammonia from the flue gas but the generated ammonia sulphate was of a poorer quality than anticipated. Cleaning options are being investigated by ROCKWOOL Group. In addition, as this was only a pilot project, further testing is required prior to upscaling and installing as a permanent solution.
- ROCKWOOL UK has volunteered within the ROCKWOOL Group to trial a new alternative binder when one is available. The trial process would most likely start with a partial substitution rather than a complete replacement.
Discussions are ongoing with Group development team. No new alternative binder trials were carried out in 2023 at ROCKWOOL UK.

2. Plan for 2024

- ROCKWOOL UK to engage with the product certification authorities in Q1 2024 to present findings of the successful resin and binder trial run in September 2023. Once confirmation has been received an extended trial will be planned for Q2 2024 as a next step.
- The jet scrubber system must be tested on a larger scale prior to rolling out at ROCKWOOL UK, date to be confirmed. Further work is also required to ensure that the generated ammonium sulphate is of a satisfactory quality to enable re-use. ROCKWOOL UK will maintain communication with the Group Research and Development team throughout 2024 to be kept up to date with any developments.
- Alternative binder discussions are set to take place in Q1 2024 at ROCKWOOL UK prior to an on site trial, date to be confirmed.

Yours sincerely



Environmental Manager

