

Date: 02/01/2024

Ref: 2024/001

Subject: Use of detergent in the Accelerated Notched Pipe Test (ANPT) according to ISO 13479

**"PE100+ Association" position letter on Accelerated Notched Pipe Test (ANPT)**

To whomsoever it may concern

Notched Pipe Test (NPT) according to ISO 13479-2009 has been used to assess the slow crack growth (SCG) resistance on pipes for pressure applications since many years. With the introduction of PE 100-RC materials in EN 1555, EN 12201 and ISO 4437 series (ISO 4427 series being still under revision), the option to use a specific surfactant solution was added to the latest version of NPT standard, ISO 13479-2022, to accelerate the test and reduce the failure times. This testing is commonly referred to as Accelerated Notched Pipe Test (ANPT).

Following the well-established experience of the industry, nonyl-phenol ethoxylate (NPE) based surfactant with CAS number 9016-45-9 (with a trade name of Arkopal® N100) was defined in ANPT with a concentration of 2 % (mass fraction) aqueous solution in contact with the outside pipe surface to assess SCG resistance of PE 100-RC materials and pipes.

However, NPE based surfactants (including Arkopal N100) have been included in Annex XIV of REACH regulation (EC) N° 1907/2006 as endocrine disruptors with a sunset date of 04/01/2021. This means that NPE based surfactants are now banned in Europe due to their acute environmental toxicity.

Although there is one exemption for scientific research, laboratory chemicals and development activities, it appeared that it is not practical to source the surfactant in Europe and Middle East. As a consequence, it is almost impossible to consider Arkopal N100 anymore, specifically for the ANPT test.

Activities are ongoing under the umbrella of PE100+ Association to study and select an alternative detergent. Lauramine oxide [CAS number 308062-28-4], commercially available as Dehyton® PL, being the candidate under assessment.

Although preliminary results have just been obtained in one lab, PE100+ Association is not yet able to validate and recommend new requirements for ANPT using Dehyton solution. On top of this, additional Round Robin (RR) tests need to be organized to assess the variability expected between test labs. These activities and reaching a conclusion are expected to take approximately one year from the date of issuance of this position letter.

In the interim and until a conclusion is reached, the **PE100+ Association recommends the following regarding the certification and homologation of PE 100-RC materials and pipes:**

---

***PE100+ association is committed to follow EU anti-competition law.***

For raw material suppliers for national and/or international certifications:

- to accept existing ANPT test reports (obtained in Arkopal N100) until the end of 2025,
- as alternative to consider existing NPT test reports (1 year testing at standard conditions in water) valid until end of 2025 for existing PE 100-RC materials, in case no recipe change took place (also applicable to new materials that cannot be tested in Arkopal N100 solution anymore).

For pipe producers for national and/or international certifications:

- to accept existing ANPT test reports (obtained in Arkopal N100) until the end of 2025,
- to consider/accept the "Strain Hardening Test (SHT)" for pipe group dimension 2 instead of running the ANPT.

Necessary feedback will be provided to relevant standardisation working groups (EN 1555, EN 12201, ISO 4437, ISO 4427, EN ISO 15494) for a proposal of test conditions for ANPT using Dehyton® PL solution (stress, time, temperature, concentration) as soon as PE100+ Association Technical Committee agrees on the outcome of the next ANPT Round Robin.

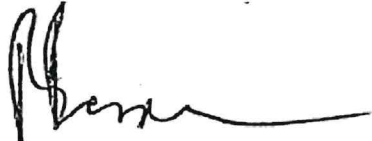
Yours faithfully,

Dr. Suleyman Deveci



Chairman of The Technical Committee  
PE100+ Association

Robin Bresser



President and Chairman of the Board  
PE100+ Association

*Disclaimer: Please note that this is only a recommendation, based on the current discussions of the PE100+ Technical Committee.*

---

**PE100+ association is committed to follow EU anti-competition law.**