

REPORT
STUDY AND EVALUATION OF THE
PROPERTIES OF ION RELEASING ON A
'RE.VITYL FABRIC' SAMPLE

15/12/2021

SUMMARY

1. Description of samples.....	3
2. Description of the equipment used and the method of measuring the negative ion emissions.....	4
3. Results. Release of negative ions (anions)	5
4. Analysis of results. Closing remarks	7
Confidentiality statement.....	7

1. Description of samples

One sample of fabric, for the assessment of its anion releasing properties (negative-charged ions) after the finishing process with a special compound based on tourmaline, named TURMAL.INK®.



- **RE.VITYL FABRIC** (a stretch-type dark grey fabric for mattress. The sample was supplied to AITEX by REPRESENTACIONES DE DESCANSO, S.L.).



Appearance of the sample RE.VITYL FABRIC.

2. Description of the equipment used and the method of measuring the negative ion emissions

To assess the rate of anion emissions of the supplied fabric —after checking that it had no emissions whatever when the employed ion counter was placed near it— it had to be rubbed vigorously, in such a manner as to activate the active ingredient or the special finish contained in the sample and that could be detected by the ion counter.

As a preliminary verification procedure manual rubbing was applied to the sample. It was observing that it could not be considered as an objective measurement method, as it depended on the force and manner that the finished fabric was rubbed. By this reason, a Crockmeter was selected as the auxiliary equipment to provide continuous rubbing, with a controlled rhythm and force (although the exerted force of the rubbing was unknown).

Then, the function of the equipment known as a Crockmeter was adapted (this equipment is used to determine the colour fastness of fabrics against rubbing) to the evaluation requirements, that is to perform the rubbing in a continuous manner and with a controlled force and rhythm. On the other hand, the measurement of the ion emissions was performed by using a portable ion counter on each of the delivered fabrics. AITEX's own test method consisted of laying the fabric sample flat and placing on it a rubbing pin consisting of a 16 ± 0.1 mm diameter cylinder which underwent back and forth movements in a straight line. Thus, the Crockmeter was programmed to perform rubbing cycles and periodic annotations of the measurements were taken.

The portable ion counter was placed just to the side of the fabric under evaluation. The unit of measurement of the ion emissions was anions/cm³ of air.



3. Results. Release of negative ions (anions)

On a purely informative level it must be remarked that the delivered sample, RE.VITYL FABRIC, presented a base level of emissions when submitted to manual rubbing (rubbing without control of the force used for each movement, as it logically varies from one person to the next), which it was in the range of 800 – 1,500 anions/cm³ of air in most cases. In addition, it should be noted that performing the said manual rubbing, some positive-charged measurements were detected. For the expression of the anionic emission level, those '+' charged emission values were not considered.

As explained in the previous chapter, the manual rubbing doesn't result in an exact method for measuring and quantifying the '-' (negative) ionic emissions of the fabric.

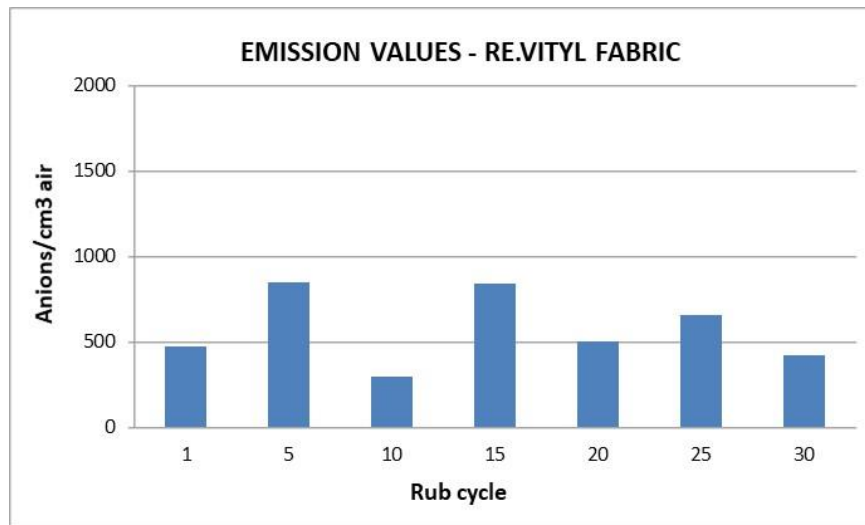
Thus, a Crockmeter was chosen as the auxiliary equipment to perform the rubbing in a continuous way (controlled force and rhythm). The average rate of ionic emission measured in the sample RE.VITYL FABRIC, applying a cycle of 30 rubs (1 rub/second) according to the method set by AITEX, was as follows:

RE.VITYL FABRIC	
Rub cycle	Anions/cm ³
1	470
5	850
10	300
15	840
20	500
25	660
30	420
Average	577

Measured values of ion emission (anionic) of the RE.VITYL FABRIC, in terms of the number of rubs applied by means of the Crockmeter.

The average value obtained from the sample of RE.VITYL FABRIC as delivered, is related with an average emission of **577 anions/cm³ of air**, when rubbed regularly.

In graphic format, the performance of RE.VITYL FABRIC emitting "-" ions is shown as follows.



Distribution of the values of ion emission (anionic) of the RE.VITYL FABRIC, in terms of the number of rubs applied by means of the Crockmeter.

4. Analysis of results. Closing remarks

- The RE.VITYL FABRIC sample was assessed in terms of anionic release under a continuous rubbing force, providing an average rate near to 580 anions/cm³ of air.
- This ionic emission rate is in the same range of values provided by fabrics finished with a piezoelectric/ceramic dispersion (e.g. tourmaline-like). This fabric is considered as an effective anion-emitter, always considering the own method set by AITEX.
- Anyway, it should be remarked that a tourmaline-based finished fabric needs to be rubbed in a continuous way to be 'activated' and to provide the anion-emission functionality. This effect is caused by the specific mechanism of activation of the tourmaline-like mineral present in the finishing compound.

Confidentiality statement

AITEX guarantees the confidentiality of the information that may be acquired by the Company because of the execution of the work carried out.