TECHNICAL BULLETIN: SPRAY SOLUTION TEST
WEKO FLUID APPLICATION SYSTEM

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WEKO sets global standards with its non-contact **WFA** **W**EKO **F**luid **A**pplication system for the paper, textile, wood fibre board, nonwoven, tissue and plastic film industries.

This application system is particularly suitable for the application of low-viscosity, water-based liquids (e.g. water, lotions, plasticizers, antistatic, anti-block, anti-fog, ...) on webs or continuously moving material webs.

We offer a spray solution test for purpose of preliminary clarification to ensure optimal results of the WFA. This standardized test can be used to ascertain to a large extent the suitability of the process liquid with the WFA system.

The WEKO spray solution test is used to determine the basic suitability of a liquid in the WFA system by a short-time test. This test does not release the user from his own tests and assessments.

A legally binding assurance of certain properties or suitability for a specific application or process cannot be derived from this. Further knowledge can be gained from tests in the WEKO Technical Centre which are subject to a charge.

Despite the spray solution test, later incompatibilities of certain components with the liquids can emerge. A claim in any form, such as conversion or warranty claims do not arise from it.

Requirements for the spray solution test

- 3 litres ready-to-use mixture or concentrate for 3 litres liquid (liquor)
- Completed questionnaire with information on concentration/mixing ratio and intended use. Specific information on the preparation of the mixture (e.g. demineralised water, temperature, stirring, ...)
- Safety data sheet with hazard warnings
- Technical bulletin with information on the intended use, via Mail before the liquid is shipped
- Instructions on disposal or return of the test liquid

Requirements for WEKO-compatible liquids

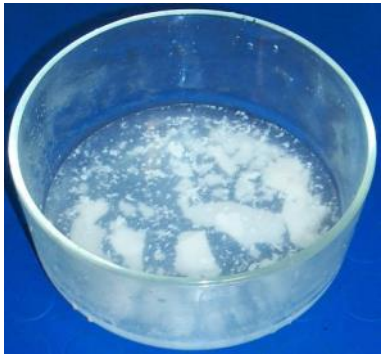
- Water-soluble, even after drying redispersible or removable using an alternative non-explosive surfactant.
- Non-explosive (system does not provide explosion protection)
- Preferably <100 mPa•s at 20 °C. Max. viscosity not clearly determinable.
- Max. temperature 60 °C
- Electrically conductive (Special solutions are possible on request)
- Shear resisting
- No or low foam formation (suitable defoamer if necessary)
- No flocculation or churning

Example for compatible liquid after the test

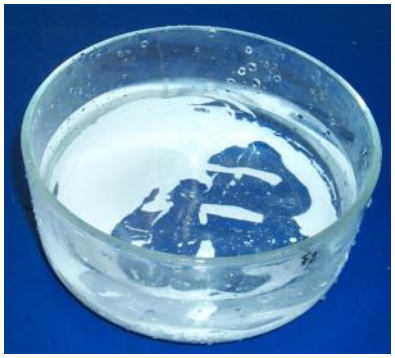
Preliminary tests

Drying/film formation and segregation

Redispersible
liquid > OK



Non-redispersible
liquid > NOK



Non-redispersible
liquid > NOK

Test liquid is filled in Petri dishes. An assessment is made after 2.5, 4.5 and 12 hours each.

2.5 hours drying/film formation, no segregation ➔ **pre-test failed. End.**

4.5 hours partly drying/film formation, no segregation ➔ **pre-test passed with restrictions.**
Use in the application system only possible with increased cleaning effort.
Filters, restrictors and other parts may be blocked.

12 hours no drying/film formation, no segregation ➔ **pre-test passed.**

Preliminary tests

Viscosity, conductivity and pH value

Viscosity (measuring method: Ford Cup 4 mm)
< 100 mPa•s ➔ pre-test passed
> 100 mPa•s ➔ if possible dilute to below 100 mPa•s and continue test

Conductivity (measuring method: conductivity meter)
Conductivity > 50 µmS/cm ➔ pre-test passed
Conductivity < 50 µmS/cm ➔ pre-test passed, but with note: Use a mass flow meter.

pH-value (measuring method: indicator paper)
If highly alkaline or acidic additional material resistance test.
➔ pre-test passed

Main test in the liquid tester

Foaming, shear stability, no flocculating or thickening

Foaming

Foam formation can have a disturbing effect on the application system. Tank and/or troughs can overflow. The pump may deliver foam instead of application liquid.

This spray solution test can only reflect the situation in an application system to a limited extent, but it can certainly provide clues. The application engineer will make a recommendation on how to proceed further, e.g. repeat test with suitable defoaming agent, test with larger test quantity in the original application system or…

➔ the liquid is not sprayable.

Shear stability, no flocculating or thickening

The liquid is subjected to mechanical stress both in the pump and by the rotors. This may damage the liquid, resulting in flocculation, churning or thickening of the liquid.

➔ not sprayable.

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