

A controlled laboratory evaluation of the scale prevention properties of next-ScaleStop media.

Testing performed by the German
Technical and Scientific Association for
Gas and Water (DVGW) according to the
DVGW Standard W 512.

This is a translation of the original test results.

A description of the test procedure follows the test results.

Test Report

Equipment Tested: nextScaleStop

Supplied by: next filtration technologies inc.
 P.O. Box 4010
 Incline Village, NV 89450

Tested in accordance with DVGW Article W512 “Verification of a water treatment device for the reduction of scale formation”

The test report covers four parallel test rigs. Two of the test rigs are untreated or “Blind” and two of the test rigs are treated or “test”. Please see the accompanying test procedures document for a complete description of the test.

Test Conditions and Results

1. Water Chemistry of test water. See Appendix 1.
2. Test Parameters See Tables 1.1 and 1.2

Table 1.1 First Test Series (Test Rigs 1 and 3 are “blind” or untreated)

| | Test Rig 1 | Test Rig 2 | Test Rig 3 | Test Rig 4 |
|-----------------------|------------|------------|------------|------------|
| Temperature | 80 +/- 3 K | 80 +/- 3 K | 80 +/- 3 K | 80 +/- 3 K |
| Duration (days) | 21 | 21 | 21 | 21 |
| Water volume (l) | 3080 | 3105 | 3051 | 3057 |
| Electrical work (kWh) | 272.4 | 287.4 | 258.6 | 278.4 |

Table 1.2 Second Test Series (Test Rigs 2 and 4 are “blind” or untreated)

| | Track 1 | Track 2 | Track 3 | Track 4 |
|------------------------|------------|------------|------------|------------|
| Temperature | 80 +/- 3 K | 80 +/- 3 K | 80 +/- 3 K | 80 +/- 3 K |
| Duration (days) | 21 | 21 | 21 | 21 |
| Water volume (l) | 3034 | 3028 | 2900 | 2995 |
| Electrical work (kWh)) | 284.6 | 266.8 | 267.8 | 256.5 |

Analytic Results

Table 2.1 First Test Series (Test Rigs 1 and 3 are “blind” or untreated)

| Ca²⁺ + Mg²⁺ (mol) | Test Rig 1 (untreated) | Test Rig 2 (ScaleStop) | Test Rig 3 (untreated) | Test Rig 4 (ScaleStop) |
|--|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| Heating coil | 0.414 | 0.001 | 0.455 | 0.001 |
| Container Walls | 0.622 | 0.000 | 0.691 | 0.000 |
| Residual >500 µm | 0.180 | 0.011 | 0.121 | 0.000 |

Table 2.2 Second Test Series (Test Rigs 2 and 4 are “blind” or untreated)

| Ca²⁺ + Mg²⁺ (mol) | Test Rig 1 (ScaleStop) | Test Rig 2 (untreated) | Test Rig 3 (ScaleStop) | Test Rig 4 (untreated) |
|--|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| Heating coil | 0.001 | 0.448 | 0.001 | 0.470 |
| Container Walls | 0.001 | 0.513 | 0.001 | 0.579 |
| Residual >500 µm | 0.002 | 0.189 | 0.000 | 0.172 |

$$\text{Effectiveness Factor} = \frac{M [\text{Ca}^{2+} + \text{Mg}^{2+}]_{\text{untreated}} - M [\text{Ca}^{2+} + \text{Mg}^{2+}]_{\text{treated}}}{M [\text{Ca}^{2+} + \text{Mg}^{2+}]_{\text{untreated}}} \quad \mathbf{0.996 (99.6\%)}$$

Remarks: nextScaleStop operated in recirculation. The blind streams were also recirculated.

Examined by Mr. Schmidt/Schiemann

Appendix 1. Water Analysis

| Parameter | | |
|---|-------------------------------|----------------|
| pH | | 7.79 |
| Temperature | (°C) | 12.3 |
| Conductivity | (mS/m) | 72.3 |
| Acid capacity KS bis pH 4.3 | mol·m ³ | 6,44 |
| Base capacity KS bis pH 8.2 | mol·m ³ | 0.22 (15.0 °C) |
| Calcium | Ca ²⁺ (mg/l) | 124 |
| Magnesium | Mg ²⁺ (mg/l) | 12 |
| Sodium | Na ⁺ (mg/l) | 23.4 |
| Potassium | K ⁺ (mg/l) | 3.2 |
| Chloride | Cl ⁻ | 41.1 |
| Nitrate | NO ⁻³ | 23 |
| Sulphate | SO ²⁻ ₄ | 60.5 |
| Calcite precipitation capacity after DIN 38-404-10 | CaCO ³ (mg-l) | 44.5 |