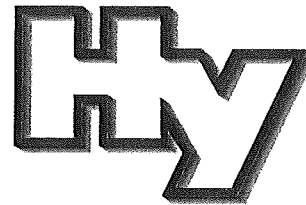


Hygiene-Institut des Ruhrgebiets

Institut für Umwelthygiene und Toxikologie

Direktor: Prof. Dr. rer. nat. L. Dunemann

Träger: Verein zur Bekämpfung der Volkskrankheiten im Ruhrkohlengebiet e.V.



Hygiene-Institut · Postfach 10 12 55 · 45812 Gelsenkirchen

Plascoat
International Process Technologies Ltd.
Mr. Bied-Charreton
Trading Estate, Farnham
Surrey GU9 9NY
United Kingdom

Visitors/ postal address:
Rotthäuser Str. 21, 45879 Gelsenkirchen,
Germany

Switchboard (0049209) 9242-0
Phone (0049209) 9242-230
Fax (0049209) 9242-222
E-Mail c.schell@hyg.de
Internet www.hyg.de

Reference: W-231517ae-13-SI
Responsible: Dr. Ch. Schell

Gelsenkirchen, 28.06.2013

Test according to DVGW Technical Standard W 270 of PPA 571 AQUA

Your order dated 18.07.2012, Ordner No. 20619712

Dear Mr. Bied-Charreton,

please find enclosed the test report and test certificate (**W-231517e-13-SI**) for the material **PPA 571 AQUA** together with the appropriate invoice.

Best regards

The Director of the Institute

p.p.

Dr. Ch. Schell

Head of Laboratory

Department of Water Hygiene and Environmental Microbiology

Enclosure

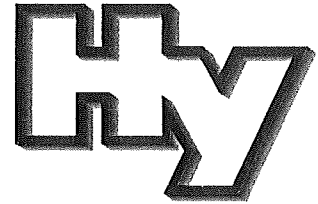


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Reference: W-231517e-13-SI
Responsible: Dr. Ch. Schell

Gelsenkirchen, 14.06.2013

TEST CERTIFICATE

Enhancement of Microbial Growth on Materials to Come into Contact with Drinking water Test pursuant to DVGW Technical Standard W 270, November 2007

Client: Plascoat
International Process Technologies Ltd.
Trading Estate, Farnham
Surrey GU9 9NY
United Kingdom

Test material: PPA 571 AQUA

Test method: Material test

According to test report **W-231517e-13-SI** of **14.06.2013**, the material **PPA 571 AQUA** is conform to the requirements for the use in the area of drinking water systems pursuant to DVGW Technical Standard W 270. Details regarding testing procedure and test results are itemized in the test report.

This test certificate is valid from the date of issue and, given that the conditions and requirements remain unaltered, expires on **14.06.2018**. Upon request, the validity may be extended up to another 5 year term provided that the specifications of Technical Standard W 270 are met.

The Director of the Institute

p.p.

Dr. Ch. Schell
Head of Laboratory
Department of Water Hygiene and Environmental Microbiology

The test results and assessments refer exclusively to the examined test specimens and all applicable statutory regulations. The validity of the document expires in case of modifications in the composition of the material or the processing conditions. This present document may only be published and reproduced unabridged and unaltered.

This document is no DVGW certification.



Träger: Verein zur Bekämpfung der Volkskrankheiten im Ruhrkohlengebiet e.V., Vereinsregister: VR 519 Amtsgericht Gelsenkirchen, USt-ID: DE125018356
Vorstand: Prof. Dr. Werner Schlake (Vors.), Prof. Dr. Jürgen Kretschmann, Dr. Emanuel Grün, Volker Vohmann, Prof. Dr. Lothar Dunemann (geschäftsführ. Vorstand)

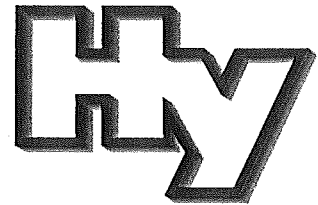
Hygiene-Institut des Ruhrgebiets

Institut für Umwelthygiene und Toxikologie

Direktor: Prof. Dr. rer. nat. L. Dunemann

Träger: Verein zur Bekämpfung der Volkskrankheiten im Ruhrkohlengebiet e.V.

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Internet www.hyg.de

Reference: W-231517e-13-SI
Responsible: Dr. Ch. Schell

Gelsenkirchen, 14.06.2013

TEST REPORT

**Enhancement of Microbial Growth on Materials to Come into Contact with Drinking water
Test pursuant to DVGW Technical Standard W 270, November 2007**

Client: Plascoat
International Process Technologies Ltd.
Trading Estate, Farnham
Surrey GU9 9NY
United Kingdom

Ordering date: 18.07.2012

Description of the material:

Test material:	PPA 571 AQUA
Composition:	recipe submitted and checked (3576)
Processing instructions:	for specifications, consult the client
Field of application:	for specifications, consult the client
Quantity of material per area unit:	for specifications, consult the client

Test samples:

Nature and property:	7 coated plates, blue, 20 cm x 20 cm
Manufacturing:	carried out by the client (description submitted)
Processing conditions:	carried out by the client (description submitted)

Date of receipt of test samples: 18.02.2013

Storing conditions in the testing laboratory until start of test: at room temperature

This test report consists of 3 pages.

The test results and assessments refer exclusively to the examined test specimens and all applicable statutory regulations. The validity of the document expires in case of modifications in the composition of the material or the processing conditions. This present document may only be published and reproduced unabridged and unaltered. This document is no DVGW certification.



Träger: Verein zur Bekämpfung der Volkskrankheiten im Ruhrkohlengebiet e.V., Vereinsregister: VR 519 Amtsgericht Gelsenkirchen, USt.-ID: DE125018356
Vorstand: Prof. Dr. Werner Schlake (Vors.), Prof. Dr. Jürgen Kretschmann, Dr. Emanuel Grün, Volker Vohmann, Prof. Dr. Lothar Dunemann (geschäftsführ. Vorstand)

Test conditions:

The tests were performed in accordance with the recommendations contained in DVGW Technical Standard W 270 as of November 2007. Details regarding testing procedures, as well as testing conditions will be given in said Technical Standard. The surface of the examined test pieces totals to 800 cm² each. Using two test items per test period the following test scheme was applied:

- monthly sampling of surface biomass (test period 4 months altogether)
- sampling after 2 months (test period 4 months altogether)
- sampling after 3 months (test period 3 months altogether)

Prior to testing, the test specimens were placed in running tap water for 20 hours, followed by a disinfection procedure using 1% chlorine bleach for 30 ± 5 minutes and then rinsed with drinking water.

Time of exposure:

1-month samples	1a:	1 st	test period from 07.03.2013 to 04.04.2013
	1b:	2 nd	test period from 04.04.2013 to 02.05.2013
	1c:	3 rd	test period from 02.05.2013 to 28.05.2013
2-month samples	2a:	1 st	test period from 07.03.2013 to 02.05.2013
3-month samples	3a:	1 st	test period from 07.03.2013 to 28.05.2013

The exposure took place in containers filled with ground water of drinking water quality at a continuous flow rate of approx. 20 l/h over a period of three months. The water temperature ranged from 9.1°C to 10.7°C.

After one, two and three months the surfaces of the test pieces, as well as the corresponding negative reference samples (stainless steel) and positive reference samples (paraffin) were scraped clean in order to examine for biofilm formation. Afterwards, the surface biomass was transferred to suitable centrifuge tubes. The subsequent centrifugation was carried out at 3.000 x g for 10 minutes followed by the determination of the volume of the sediment.

Test results:

The positive reference sample (pK) showed a pronounced formation of biofilm during all test periods. There was no formation of surface biomass on the negative reference sample (nK).

The results of the analyses of the single specimens of 800 cm² surface in total, pursuant to DVGW Technical Standard W 270 were as follows:

Volume of surface biomass

(single values and arithmetic mean of two test pieces, given in ml / referring to 800 cm²)

Start of test: 07.03.2013		1-month values		2-month values		3-month values
07.03.2013 - 04.04.2013	1a nK pK	(0.01 / 0.02) 0.02 < 0.01 > 1.5	2a	(< 0.01/< 0.01) -		
04.04.2013 - 02.05.2013	1b nK pK	(< 0.01/< 0.01) - < 0.01 > 1.5	nK pK	< 0.01 > 1.5	3a nK pK	(< 0.01/< 0.01) - < 0.01 > 1.5
02.05.2013 - 28.05.2013	1c nK pK	(< 0.01/< 0.01) - < 0.01 > 1.5				

Limiting values [ml / 800 cm²] pursuant to DVGW Technical Standard W 270 (11/2007)

General application: arithmetic means	≤ (0.05 + 0.02)	≤ (0.05 + 0.02)	≤ (0.05 + 0.02)
Large surface seals (D 1): arithmetic means	≤ (0.12 + 0.03) whereas 1c ≤ 1b	≤ (0.12 + 0.03)	≤ (0.12 + 0.03) whereas 3a ≤ 2a
Small surface seals (D 2): arithmetic means	≤ (0.20 + 0.03) whereas 1c ≤ 1b	≤ (0.20 + 0.03)	≤ (0.20 + 0.03) whereas 3a ≤ 2a
Negative Control:	< 0.01 ml	< 0.01 ml	< 0.01 ml
Positive Control:	≥ 1.5 ml	≥ 1.5 ml	≥ 1.5 ml

Assessment:

Provided that it is applied correctly, the material

PPA 571 AQUA

is suitable for use in drinking water systems according to the results of the microbiological examinations pursuant to DVGW Technical Standard W 270 (11/2007).

The Director of the Institute
 p.p.

Dr. Ch. Schell
 Head of Laboratory
 Department of Water Hygiene and Environmental Microbiology

