Translation from German

[Letterhead of ofi]

Notified Body No. 1085
in accordance with the Construction Products
Directive 89/106 EEC

ofi Technologie und Innovation GmbH
A-1030 Vienna
Arsenal, site 213
5 Franz Grill Street
T +43 1 798 16 01-0
F +43 1 798 16 01-8
E office@ofi.co.at
I www.ofi.co.at

Classification Report for Reaction to Fire

according to ÖNORM EN 13501-1: 2002

Report No. 308.692 on the classification of the reaction to fire of the construction product with the designation

House drainage system MASTER 3 according to prEN 15012: 2007

on behalf of (owner of the classification report)

Pipelife Austria GmbH & Co KG.
Industrial Centre NÖ South, Street 1, site 27
2351 Wiener Neudorf

1. Introduction

This classification report defines the classification assigned to the above-mentioned construction product in accordance with the procedure specified in ÖNORM EN 13501-1: 2007.

2. Details of the Classified Construction Product

2.1 Type and Scope of Application

The above-mentioned construction product is defined as a "type of classified construction product". Its classification is valid for the following applications: House drainage system

2.2 Description

House drainage system; designation: "MASTER 3"; structure: MASTER 3 drainage system (3 layers); Inner layer: smooth, made of PP-CO (polypropylene copolymer), signal white; middle layer: solid, made of PP-MV (mineral-reinforced polypropylene), graphite black; outer layer: impact-resistant, made of PP-CO, red-brown

According to the information provided by the owner of the classification report, the construction product complies with the following European product specification:

Plastic pipeline systems - pipeline systems for the discharge of waste water within the building structure - properties for the serviceability of pipes, fittings and their connections; German version of prEN15012: 2007

3. Test Reports and Test Results on which the Classification is Based
3.1 Test Reports

Name of the laboratory	Client	No./ date of the test report	Test procedure
ofi Technologie & Innovation GmbH	Pipelife Austria GmbH & Co KG	308.892 / 26.07.2007	ÖNORM EN ISO 11925-2
ofi Technologie & Innovation GmbH	Pipelife Austria GmbH & Co KG	MA 39 VFA 2007-0890.01 /09.07.2007	ÖNORM EN 13823

3.2 Test Results for the Product

Test procedure	Parameters	Number of tests	Test result	
			continuous parameter (average value m)	Discrete parameters
ÖNORM EN 13823 (Arrangement according to Annex A of prEN 15012: 2007)	FIGRA $_{0,2}$ [W/s]	3	238	(-)
	FIGRA $_{0,4}$ [W/s]		238	(-)
	LFS < border		(-)	N
	THR_{600s} [MJ]		18,2	(-)
	SMOGRA [m^2/s^2]		13	(-)
	TSP_{600s} [m^2]		154	(-)
	Flaming droplets/falling away		(-)	J
ÖNORM EN ISO 11925-2	Surface exposure 30 s Flame spread ≤ 150 mm	6 each	(-)	J
	Edge flaming (exposure) 30 s Flame spread ≤ 150 mm	6 each	(-)	J

4. Classification and Direct Scope of Application

The classification was carried out in accordance with Section 11.4 of ÖNORM EN 13501-1: 2007. The building product (designation: house drainage system MASTER 3 according to prEN 15012: 2007) is classified in relation to its reaction to fire:

Reaction to fire		Smoke development			Flaming droplets/falling away	
D	-	s	2	,	d	2

This classification is valid for the end-use conditions as a house drainage system and applies to the following product parameters: house drainage system; designation: "MASTER 3"; for construction, see point 2.2 of this classification report.

5. Restrictions

5.1 Warning Notice

This document is a report on the classification of the reaction to fire. The declaration of conformity of the product must be made in accordance with prEN 15012.

Report	Name	Signature	Date
Prepared by:	Eng. M. Bichler	[Signature – illegible]	2007-08-08
Checked by:	Dr. M. Englisch	[Signature – illegible] [Round seal – illegible]	2007-08-08
For and on behalf of ofi Technologie und Innovation GmbH			

ofi Technologie und Innovation GmbH
A-1030 Vienna
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F +43 1 798 16 01-8
E office@ofi.co.at
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Monitoring report No: 310.273k date: 2008-05-27

Plastic piping systems for wastewater discharge within the structure of the building made of polypropylene with a multilayer wall structure

Applicant:	Pipelife Austria GmbH & CO KG Industrial Centre NÖ South, Street 1, site 27 2351 Wiener Neudorf
Subject matter:	Pipes made of polypropylene (PP) with a multi-layer wall structure and fittings made of PP for discharge of waste water at low and high temperatures within the structure of the building in the dimensions DN/OD 50 and DN/OD 160, each in rigidity class SN 4 with the application area BD
Content:	External monitoring based on ÖNORM EN 1451-1 for the monitoring period 2008

Assignment:	According to the Monitoring Contract of 2008-03-25
Date of sampling:	2008-03-18
Location of sampling:	Wiener Neudorf / AT
Receipt of samples:	2008-03-25
Sign:	Dl. Papp / Popu

Procedures that are not accredited are designated as such.
GZ. 92714/630-IX/2//98. BGBl. II Nr. 461/2005

Table 10: Measurements (in mm)

Test material	d_{em}	e_{min}	e_{max}	$e_{m\ max}$	$d_{sm,\ min}$	$e_{2\ min}$	$e_{3\ min}$	A_{min}	C_{max}	$L_{t\ min}$
3	50,1	1.85	2.10	2.00	51,0	1,65	1,80	27	15	47
4	50,1	2,05	2,20	2,20	50,9	1,80	1,90	29	15	56
	—				50,8	1,65	1.90	30	15	—
	—	—	—	—	50,8	1,90	1,20	35	—	—
	—	—	—	—	51,0	1,60	1,60	35	—	—
6	160,1	4,30	4,50	4,40	162,5	3.70	3,50	49	24	98
7	160,5	4.10	4,30	4.20	162.6	3,60	2,90	52	27	91
	—	—	—	—	111.4	2,60	2,80	43	21	—
8	—	—	—	—	161,4	3,70	3,40	60	24	—
	—	—	—	—	161,7	3,70	3,40	60	24	—
Start:	50,0+0.3	$1,80 \le e_m \le 2,20$			≥ 50,3	≥ 1,60	≥ 1.00	≥ 28	≤ 18	≥ 46
Start:	110,0+0,4	$2,70 \le e_m \le 3,20$			≥ 110.4	≥ 2,40	≥ 1.50	≥ 36	≤ 22	≥ 58
Start:	160,0+0.5	$3,90 \le e_m \le 4,50$			≥ 160.5	≥ 3,50	≥ 2.20	≥ 41	≤ 32	≥ 73

4.4 SELF-MONITORING

Regarding the self-monitoring control carried out during sampling, it is confirmed that the company Pipelife Austria GmbH & CO KG has the prerequisites for self-monitoring in accordance with the standards, and that it has also been carried out and recorded.
It has also been confirmed that the quality management system of Pipelife Austria GmbH & CO KG is certified as per ÖNORM EN ISO 9001.

5. ASSESSMENT

The pipes with multi-layer wall construction and fittings made of polypropylene (PP) for the discharge of waste water at low and high temperatures within the building structure

in dimension groups 1 and 2 as well as rigidity class SN 4 with the application symbol BD and the associated fittings in fitting groups 1, 2 and 3 of the company Pipelife Austria GmbH & CO KG have been tested based on ÖNORM EN 1451-1 and have met all the mentioned requirements of external monitoring according to ÖNORM EN 1451-1 for the monitoring period 2008.

This monitoring report No. 310.273k
includes 10 sheets with 10 table (s), 0 illustration (s), 0 attachment (s)

Official in charge	Responsible test manager for pipes and pipeline components
Martin Populorum	Dipl. Eng. Udo Pappler
[Signature – illegible]	[Signature – illegible]

[Round seal of ofi Technologie & Innovation GmbH]

ofi Technologie und Innovation GmbH
A-1030 Vienna
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5 Franz Grill Street
T +43 1 798 16 01-0
F +43 1 798 16 01-8
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I www.ofi.co.at

Monitoring report No: 310.713-1 date: 2008-07-08

Polypropylene multilayer pipes and related fittings made of polypropylene (PP 3 Master System)

Applicant:	Pipelife Austria GmbH & CO KG Industrial Centre NÖ South, Street 1, site 27 2351 Wiener Neudorf
Test item:	Polypropylene multilayer pipes and fittings made of polypropylene (PP 3 Master System) in the dimension DN 50

Test:	Determination of tightness under negative pressure as well as characterization of emissions by determining the sum parameters VOC as toluene equivalent (TÄQ) and FOG as hexadecane equivalent (HÄQ) based on VDA 278
Assignment:	Written order (2008-06-02) by Hm. Kremsner
Sampling:	No sampling Submission of the samples by the client
Receipt of samples:	2008-06-02
Sign:	Dl. Papp / Popu

Procedures that are not accredited are designated as such.
GZ. 92714/630-IX/2//98. BGBl. II Nr. 461/2005

1. PRODUCT:
As per the order, the following tests should be carried out on polypropylene multilayer pipes and associated fittings made of polypropylene (PP Master 3 System) in the dimension DN 50:
- Determination of the tightness under negative pressure (test arrangement: standing) over 1 h at -0.8 bar;
- Characterization of emissions by determining the sum parameters VOC as toluene equivalent (TÄQ) and FOG as hexadecane equivalent (HÄQ) based on VDA 278;

2. TEST ITEM:
The client sent ofi Technologie & Innovation GmbH (hereinafter referred to as ofi) the samples listed in Table 1 to carry out the tests.

Table 1: Test material

Test material	Description
1	Rohr PP 3 Master in DN 50 L22 25.02.2008
2	Bow in DN 50 90° 08
3	Bow in DN 50 45° 08
4	Single branch in DN 50 45° 08
5	End cap in DN 50 12/07
6	Sleeve in DN 50 07

2.1 SCOPE OF APPLICATION, EXECUTION OF THE TESTS
The results contained in this test report have been obtained under the special conditions of the respective test. They serve the client as proof of the conformity of the samples examined with the test requirements specified in Section 1.

The relevant tests were carried out in the period from week 24/2008 to week 26/2008 in the relevant specialized departments within the scope of the competence of the authorized signatories in accordance with the quality management manual of ofi.

3. TESTS CARRIED OUT

3.1 LEAK TIGHTNESS UNDER NEGATIVE PRESSURE

To determine the tightness against negative pressure, pipes and the corresponding fittings (test item 1 to test item 6) were connected in a standing test set-up (Fig. 1).
This test set-up was subjected to a pressure of -0.8 bar for 1 hour. After the end of the test, no change in pressure was to be detected. The tightness under negative pressure was thus proven.

Fig. 1: Test set-up for tightness against negative pressure

3.2 EMISSION MEASUREMENTS BASED ON VDA 278

The emission measurements were carried out on the master 3 fittings (upper thrust socket, test item 6) and the inner layer of the master 3 multilayer pipe (test item 1) based on VDA 278 by determining the sum parameters VOC as toluene equivalent (TAQ) and FOG as hexadecane equivalent (HAQ).

The thermal desorption analysis of organic emissions was carried out taking into account the in-house SOP 111.028. A Turbo-Matrix ATD from Perkin Elmer was used as the thermal desorption unit. Sample separation and identification was carried out on an Agilent 6890 gas chromatograph with a mass-selective detector HP 5873N by Agilent. A 50 m quartz capillary of the HP Ultra-2 type was used for the analyzes. The carrier material was helium.

A quantity of approx. 2 mg of the inner layer of the respective samples was used as sample weight. The samples were “thermally extracted” based on the VDA 278 standard at 90°C for 30 minutes and at 120°C for 30 minutes.

The semi-quantitative estimation of the VOC emissions was carried out as toluene equivalents (calibration with an external toluene standard), the semi-quantitative estimation of the FOG emissions was carried out as hexadecane equivalents (calibration with an external hexadecane standard). The results have been summarized in Table 2.

Table 2: Result of the emission measurements

Test item	VOC in ppm [TAQ]	FOG in ppm [HAQ]
1	103	1.415
6	150	1.290

Generally, the VOC value describes the emission quantities of low molecular weight, volatile components that occur at low temperatures (including room temperature). The values of 103 and 150 ppm [TAQ] given in Table 2 can be determined as good. In the interior area of automobiles, values around 300 ppm to 400 ppm [TAQ] are common.

Generally, the FOG value describes the emission quantities of less volatile, high molecular components occurring at higher temperatures (over 100°C) and is therefore not decisive for the use of the products in ventilation pipes.

This monitoring report No. 310.713-1
includes 6 sheets with 2 table (s), 2 illustration (s), 0 attachment (s)

Official in charge
Martin Populorum

[Signature – illegible]

Responsible test manager for pipes and pipeline components
Dipl. Eng. Udo Pappler

[Signature – illegible]

[Round seal of ofi Technologie & Innovation GmbH]

I, the undersigned Goran Raynovski, holder of Confirmation № 02377-1, issued on 15.03.2019 by the Consular Relations Directorate - Ministry of Foreign Affairs of the Republic of Bulgaria, hereby certify that the translation from German to English of the present document – Classification Report for Reaction to Fire, has been made by me and is true to the original. The translation consists of 8 (eight) pages.
Translator:
(Goran Raynovski)