

EN 1825-1:2004


European Certification (CE)

Performance Test

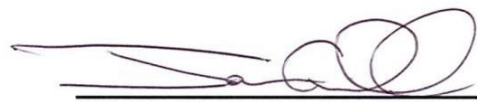
Model No.:
SM-MI-G-PL-1500

MIFAB, Inc.
1321 West 119th Street
Chicago, IL 60643

This document contains the performance test results of plastic grease separators (interceptors) of MIFAB, Inc. in accordance with EN 1825-1:2004.



Michael Whiteside
President, MIFAB, Inc.



Jason Gremchuk
Engineering Manager

Contents

1 Abstract.....	2
2 Reaction to Fire.....	2
3 Performance Test Apparatus	2
Figure 1 – Test Apparatus for SM-MI-G-PL-1500.....	3
Figure 2 – Water supply and Supply channel	4
Figure 3 – Supply channel with weir (left) and flow regulating grid (right).....	5
Figure 4 – Supply channel outlet (left) and light liquid supply (right) at the same level.....	5
4 Test Procedure	6
Table 1 – Test conditions	6
5 Sample Analysis and Results	6
Table 2 – Test results	7
6 Conclusion.....	7
Appendix A: Testing Laboratories	8
Appendix B: Test Apparatus item dimensions.....	8
Figure B1 – Supply Channel Dimensions per EN 1825-1:2004	8
Figure B2 – Collecting Chamber Dimensions per EN 1825-1:2004.....	9
Figure B3 – Sampling Pipe Dimensions per EN 1825-1:2004.....	9
Appendix C: Reaction to Fire Test Procedure	10
Appendix D Reaction to Fire Classification	14

1 Abstract

Performance testing per the European standard EN 1825-1:2004 was conducted on MIFAB, Inc. plastic grease separators (interceptors). The model tested in this report was SM-MI-G-PL-1500 with 5680 liter (1500 gallon) liquid capacity. The results of the testing showed that the SM-MI-G-PL-1500 passes the performance testing per EN 1825-1:2004 at a flow rate of 35 L/s.

VTT Expert Services Ltd performed reaction to fire testing per the standard EN13501-1 as required by EN 1825-1:2004 for any materials that do not meet Class A1 specifications. The material used to manufacture the MIFAB, Inc. plastic interceptors classified as Class E in accordance with EN 13501-1:2007.

2 Reaction to Fire

The European standard EN 1825-1:2004 required testing of grease separators (referred to as interceptors in this report) made with materials that do not meet Class A1 specifications listed in EN 1825-1:2004 Appendix E, which included concrete, aggregate concrete, autoclaved aerated concrete units, iron, aluminum, copper, steel, stainless steel and clay. The interceptors' material needed to be tested and classified per EN 13501-1.

The material used to manufacture the interceptors was PE 3135 Dow 9.39 density. The material was high-density polyethylene with density 0.939 g/cm³ manufactured by Dow or Exxon. VTT Expert Services Ltd performed the tests per the standard EN 13501-1:2007 + A1:2009 (Appendix D)

The material complied with all parameters in EN13501-1:2007 + A1:2009. The material classified as Class E and is valid for all use according to EN13501-1:2007 + A1:2009.

3 Performance Test Apparatus

The test apparatus for grease interceptors was outlined in EN 1825-1:2004 section 8.5.1.2. The test system used in the performance tests followed the EN 1825-1:2004 standard as described in this section and in Appendix B.

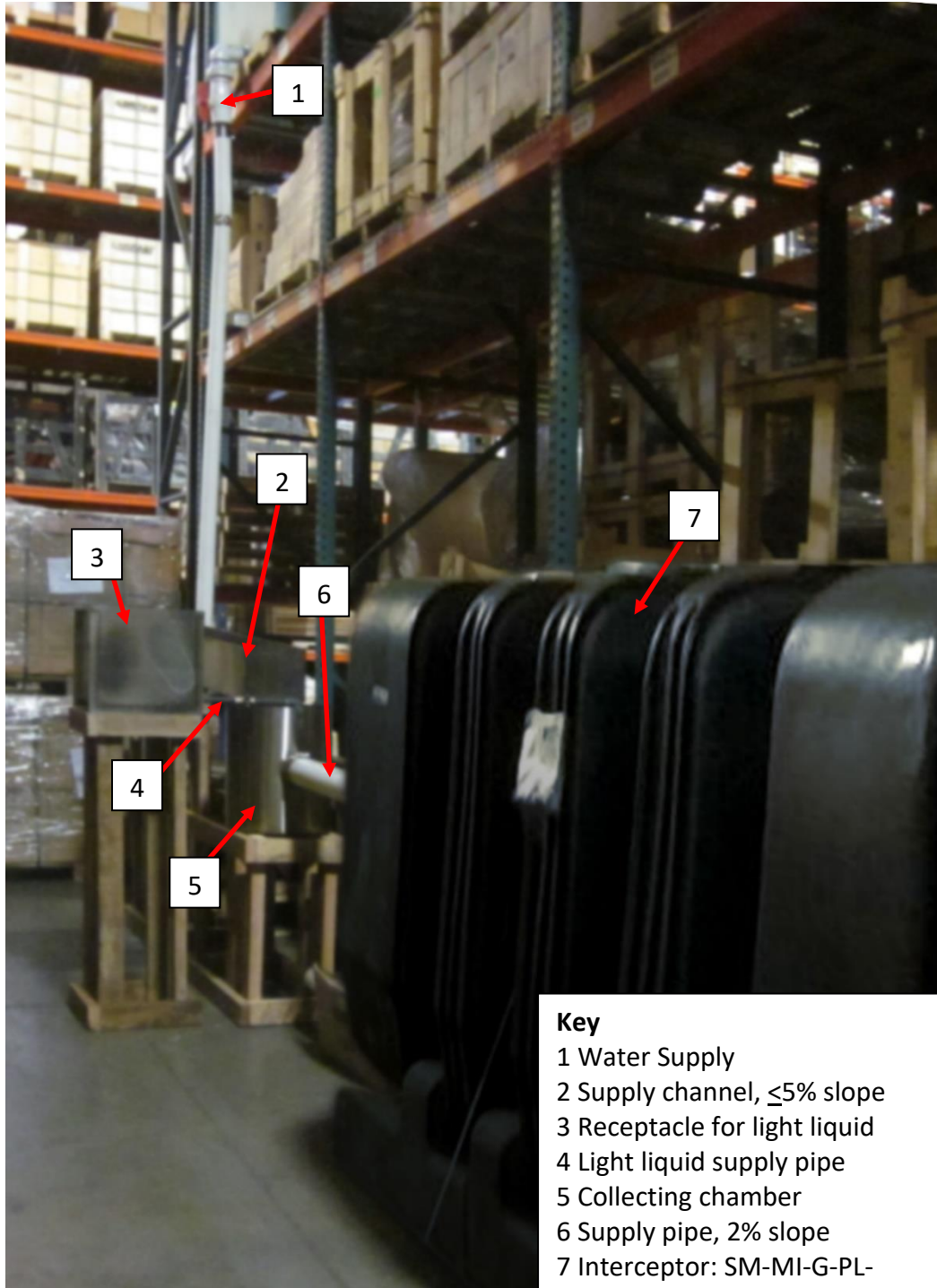


Figure 1 – Test Apparatus for SM-MI-G-PL-1500

The water supply used was Chicago tap water at approximately 10-15°C (50-59°F) with pH value at 7.8. The water supply was composed of a water reservoir, pump and valves (Figure 3).

The water from the reservoir flowed into the supply channel (Figure 1, No. 2). The supply channel was fabricated per the dimensions in EN 1825-1:2004 (Appendix B, Figure B1).

European Certification (CE) Performance Test

The supply channel contained a weir (Figure 4, left) and a stream regulating grid (Figure 4, right). The stream regulating grid had an opening square size of 30mm (1.18in). The supply channel was inclined at approximately 1% or 44.5mm (1.75 inch) rise for a 2500 mm (98.4 inch) horizontal run. The bottom of the outlet of the supply channel was positioned at the same level as the bottom of the outlet of the light liquid supply pipe (Figure 5).

The light liquid used was in accordance with ISO 8217, designation ISO-F-DMA. The light liquid was supplied by gravity flow from the light liquid receptacle through the light liquid supply pipe, which was half-inch nominal diameter. The flow rate was controlled using an appropriately sized orifice and ball valve.

The test fluids mixed in the collecting chamber (Figure 1, No. 5). The collecting chamber was fabricated per the dimensions in EN 1825-1:2004 (Appendix B, Figure B2).

The supply pipe between the collecting chamber and the grease interceptor was the same diameter as the inlet of the grease interceptor (eight inch nominal diameter). The supply pipe was 2000mm (79in) long and was inclined at 2% or 40.6 mm (1.6 inch) rise for a 2000mm (79in) long run.

The sampling pipe was made per EN 1825-1:2004 (Appendix B, Figure B3) and was the same diameter as the outlet of the grease interceptor (eight inch nominal diameter).

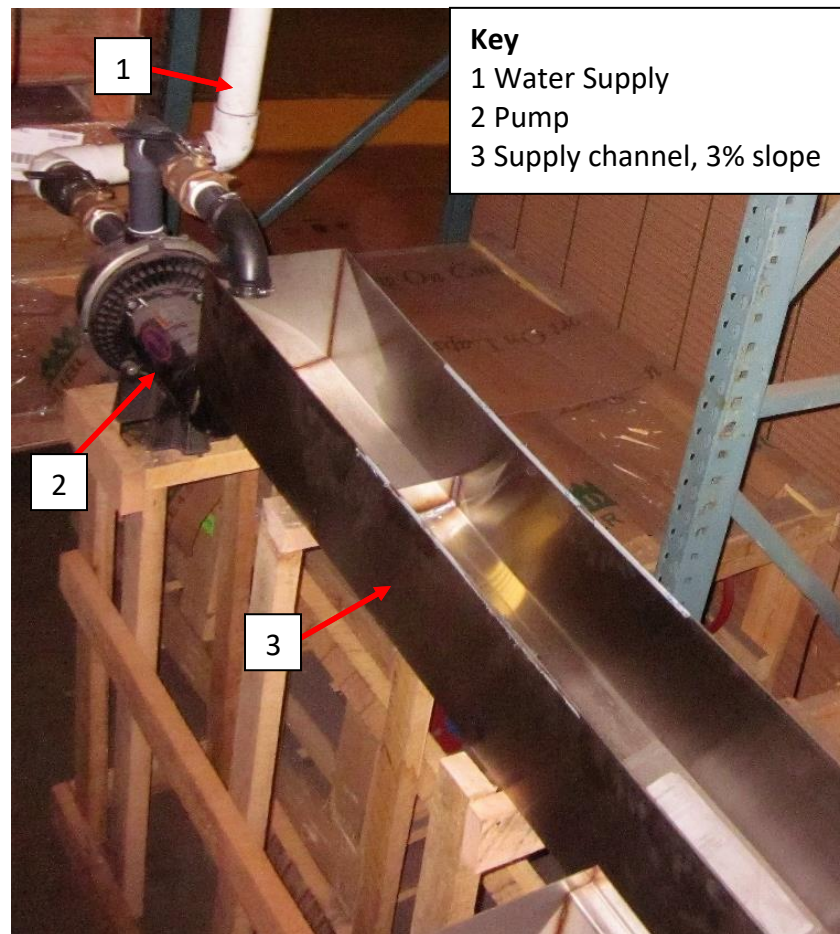


Figure 2 – Water supply and Supply channel

European Certification (CE) Performance Test



Figure 3 – Supply channel with weir (left) and flow regulating grid (right)



Figure 4 – Supply channel outlet (left) and light liquid supply (right) at the same level

4 Test Procedure

1. Fill the grease interceptor with water.
2. Measure the maximum static water volume, V_k , of the interceptor.
3. Calculate the running-in period, T_E , of the test. The running-in period is the length of time needed to exchange the water volume of the interceptor four times, with a minimum of 15 minutes. Q_w is the predetermined maximum flow rate of the interceptor. The running-in period T_E is calculated as:

$$T_E = \frac{4 \times V_k}{Q_w \times 60}$$

4. Allow water to run through the test apparatus at the predetermined allowable water flow rate, Q_w , for the length of time calculated, T_E . At the same time allow light liquid to flow at 5mL of light liquid per liter of water.
5. The predetermined allowable water flow rate should be within a tolerance of $\pm 2\%$ during the test. The tolerance for the flow rate of the light liquid should be $+5\%$ making sure no light liquid builds up in the collecting chamber.
6. After the running in period, take samples of at least 500mL from the sampling pipe at 1 minute intervals. Take 5 samples in total.
7. Analyze the samples to determine the light liquid content of each sample. No sample should have more than 30mg of light liquid per liter of sample.

Table 1 – Test conditions

Model Number	Max flow rate, Q_w (L/s)	Static water volume, V_k (L)	Calculated running-in period, T_E (min)	Actual running-in period (min)	Light liquid flow rate (mL/s)
SM-MI-G-PL-1500	35	5680	12.6	15	175

5 Sample Analysis and Results

Research and Analytical Laboratories, Inc. analyzed the samples' contents using the EPA 1664 B method. The samples' content analysis results are shown in Appendix C and summarized in the following table (Table 2). Any sample with a concentration of 30mg/L of light liquid results in noncompliance of the interceptor with EN 1825-1:2004.

Table 2 – Test results

Model Number	Max flow rate, Q_w (L/s)	Light liquid flow rate (mL/s)	Sample number	mg Oil/L water (mg/L)
SM-MI-G-PL-1500	35	175	1	<5
			2	<5
			3	<5
			4	<5
			5	<5

6 Conclusion

The MIFAB, Inc. grease interceptors tested, model number SM-MI-G-PL-1500, performed within the standards set forth by EN 1825-1:2004. The maximum light liquid concentration was less than 5 mg/L in the SM-MI-G-PL-1500 for the flow rate of 35 L/s. The European standard EN 1825-1:2004 allowed up to 30 mg/L concentration in the discharge of the interceptor.

The reaction to fire test showed the grease interceptors material met the specifications set forth by EN 13501-1 as required by EN 1825-1:2004. The interceptor material classified as Class E, qualifying the interceptor for all end use.

Appendix A: Testing Laboratories

Research and Analytical Laboratories, Inc. performed the analysis of the samples collected from the interceptors during performance testing.

Research and Analytical Laboratories, Inc.
106 Short St.
Kernersville, NC 27284
(336) 996-2841

VTT Expert Services Ltd. performed the interceptors' material reaction to fire tests and gave the material classification.

VTT Expert Services Ltd
Kivimiehentie 4
Espoo, P.O. Box 1001, FI-02044 VTT, Finland
+356 20 722 4827

Appendix B: Test Apparatus item dimensions

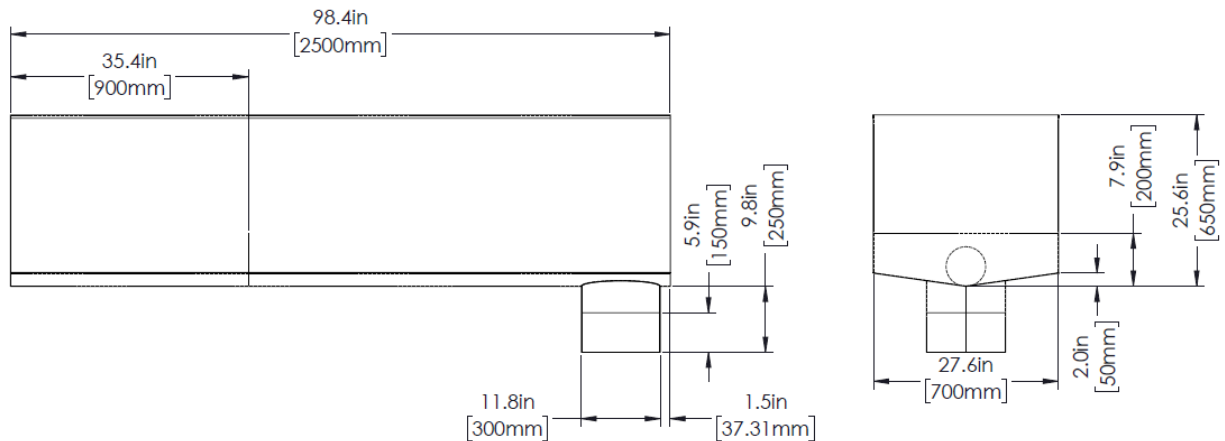


Figure B1 – Supply Channel Dimensions per EN 1825-1:2004

European Certification (CE) Performance Test

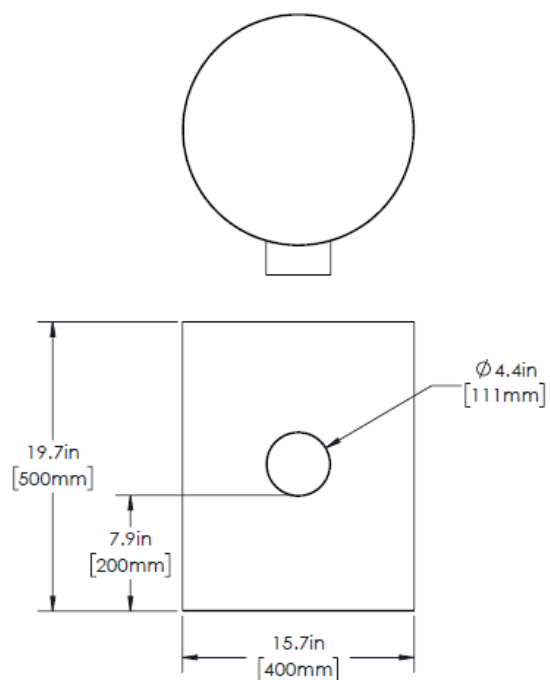


Figure B2 – Collecting Chamber Dimensions per EN 1825-1:2004

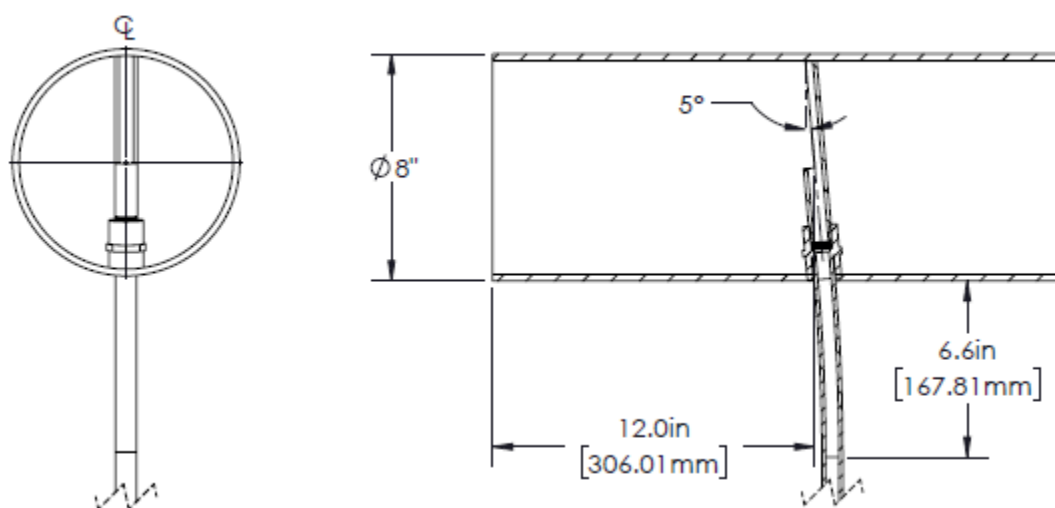





Figure B3 – Sampling Pipe Dimensions per EN 1825-1:2004

Appendix C: Reaction to Fire Test Procedure

TEST REPORT	No. VTT-S-4861-15	21 October 2015
<p>Determination of the ignitability according to EN ISO 11925-2:2010</p> <p>PE 3135 Dow 9.39 density; 3.5 MI</p> <p>  Finnish Accreditation Service T001 (EN ISO/IEC 17025)</p> <p>Requested by: Mifab Inc.</p> <p> VTT EXPERT SERVICES LTD</p>		

Requested by Mifab Inc.
1321 West 119th Street
Chicago, IL 60643, U.S.A.

Order No 37731, 25 August 2015 / Ken Kiernan

Contact person at VTT **VTT Expert Services Ltd**
Product Manager Tiia Ryyänen
Kivimiehentie 4, Espoo, P.O. Box 1001, FI-02044 VTT, Finland
Tel. + 358 20 722 4827, Email: tiia.ryynanen@vtt.fi

Assignment **Determination of the ignitability of a product**

Product The customer gave the following information about the product tested:
Product name: PE 3135 Dow 9.39 density; 3.5 MI
Manufacturer: Dow or Exxon
Type of product: material for grease separators
Material: PE-HD
Density: 0,939 g/m³
Thickness of material in grease separators: 9,5 mm (controlled by VTT)

Sample Date of delivery: 7 October 2015
Type of sample: test specimens of product
The sample was chosen and the test specimens were made by the customer.

Date of test 15 October 2015

Test method EN ISO 11925-2:2010 *Reaction to fire tests – Ignitability of products subjected to direct impingement of flame - Part 2: Single-flame source test*
(ISO 11925-2:2010)
The description of the test method is presented in Appendix 1.
The specimens were conditioned prior to the tests to a constant mass at a temperature of (23 ± 2) °C and a relative humidity of (50 ± 5) %.



The test results relate only to the sample tested.

The use of the name of VTT Expert Services Ltd or the name VTT Technical Research Centre of Finland in advertising or publication in part of this report is only permissible with written authorisation from VTT Expert Services Ltd.

DESCRIPTION OF THE METHOD

EN ISO 11925-2:2010 *Reaction to fire tests – Ignitability of products subjected to direct impingement of flame - Part 2: Single-flame source test (ISO 11925-2:2010)*

The test specimens

Three test specimens lengthwise and three crosswise with the dimensions of 250 mm x 90 mm. Products of normal thickness 60 mm or less are tested using their full thickness. Products of normal thickness greater than 60 mm are reduced to a thickness of 60 mm. If the product is not essentially flat, the specimens can be tested in the form as in end use. Each different surface which can be exposed in practice shall be tested (surface exposure). For multilayer products greater than 10 mm thick, an additional set of tests is carried out with the specimen turned at 90° round its vertical axis and the flame impinging at the bottom edge of each different layer. A special test specimen holder is used for loose fill materials.

The test specimens are conditioned prior to the test at a temperature of $(23 \pm 2 \text{ }^{\circ}\text{C})$ and relative humidity of $(50 \pm 5 \text{ \%RH})$.

The ignition flame

The specimens are ignited with a 20 mm high propane gas flame. The burner is inclined at 45°. The flame is impinged on the bottom edge of the specimen (edge exposure) or 40 mm above the bottom edge (surface exposure).

For loose fill materials in the special test specimen holder only the test with surface flame attack is carried out.

The specimen is exposed to flame for 15 s or 30 s as required.

Test procedure

The conditioned specimens are fixed vertically in the frame. The occurrence of burning particles is observed with filter paper placed below the specimen. If the flame application time is 15 s, the total test duration is 20 s from the time at which the flame is first applied. If the flame application time is 30 s, the total test duration is 60 s from the time at which the flame is first applied.

For each test specimen it is recorded whether an ignition* occurs, whether the flame tip reaches 150 mm above the flame application point and the time at which this occurs and whether ignition of the filter paper occurs.

* ignition: flaming for a period greater than 3 s

5.5.2014

The use of the name of VTT Expert Services Ltd or the name VTT Technical Research Centre of Finland in advertising or publication in part of this report is only permissible with written authorisation from VTT Expert Services Ltd.

TEST RESULTS**Product name:** PE 3135 Dow 9.39 density; 3.5 MI**Test method:** EN ISO 11925-2:2010**Test conditions:** 19 °C, 41 % RH**Flame application time:** 15 s**Exposure conditions:** Surface and edge exposure

Surface exposure:

Specimen	Ignition* of specimen	The flame tip reaches 150 mm	Ignition of the filter paper
1	No	No	No
2	No	No	No
3	No	No	No
4	No	No	No
5	No	No	No
6	No	No	No

Edge exposure:

Specimen	Ignition* of specimen	The flame tip reaches 150 mm	Ignition of the filter paper
1	Yes	No	No
2	Yes	No	No
3	Yes	No	No
4	Yes	No	No
5	Yes	No	No
6	Yes	No	No

* Flaming for a period greater than 3 s

Appendix D: Reaction to Fire Classification

CLASSIFICATION REPORT

No. VTT-S-4862-15

21 October 2015



CLASSIFICATION OF REACTION TO FIRE IN ACCORDANCE WITH EN 13501-1:2007 + A1:2009

Sponsor: Mifab Inc.
1321 West 119th Street
Chicago, IL 60643, U.S.A.

Prepared by: VTT Expert Services Ltd
Kivimiehentie 4, Espoo
P.O. Box 1001
FI-02044 VTT, Finland

Notified Body No: 0809

Product: PE 3135 Dow 9.39 density; 3.5 MI

Classification report No: VTT-S-4862-15

Date of issue: 21 October 2015

This classification report consists of three pages and may be used or reproduced in its entirety.



1 Introduction

This classification report defines the classification assigned to the product PE 3135 Dow 9.39 density; 3.5 MI in accordance with the procedures given in EN 13501-1:2007 + A1:2009.

2 Details of classified product

2.1 General

The product PE 3135 Dow 9.39 density; 3.5 MI is defined as material for grease separators

2.2 Product description

The product PE 3135 Dow 9.39 density; 3.5 MI described below.

Manufacturer: Dow or Exxon

Type of product: material for grease separators

Material: PE-HD

Density: 0,939 g/m³

Thickness of material in grease separators: 9,5 mm

3 Test reports and test results in support of classification

3.1 Test reports

Name of laboratory	Name of sponsor	Test report	Test method and date
VTT Expert Services Ltd	Mifab Inc.	VTT-S-4861-15	EN ISO 11925-2 21 October 2015

3.2 Test results

Test method	Parameter	Number of tests	Continuous parameter mean	Compliance parameters
EN ISO 11925-2 15 s surface and edge flame exposure	$F_s \leq 150$ mm	12	-	Y
flaming droplets/particles	ignition of the filter paper	12	-	Y



FINAS
Finland Accreditation Service
T001 (EN ISO/IEC 17025)

The test results relate only to the sample tested.

The use of the name of VTT Expert Services Ltd or the name VTT Technical Research Centre of Finland in any other form in advertising or publication in part of this report is only permissible with written authorisation from VTT Expert Services Ltd.

4 Classification and field of application

4.1 Reference of classification

This classification has been carried out in accordance with EN 13501-1:2007 + A1:2009.

4.2 Classification

The product PE 3135 Dow 9.39 density; 3.5 MI in relation to its reaction to fire behaviour is classified:

E

4.3 Field of application

This classification is valid for all end use conditions.

5 Limitations

This classification report does not represent type approval or certification of the products.

Espoo, 21 October 2015



Tiia Ryyänen
Product Manager



Katja Ruotanen
Expert

DISTRIBUTION Customer
Archive

Original (2)
Original



FINAS
Finnish Accreditation Service
T801 (EN ISO/IEC 17025)

The test results relate only to the sample tested.

The use of the name of VTT Expert Services Ltd or the name VTT Technical Research Centre of Finland in any other form in advertising or publication in part of this report is only permissible with written authorisation from VTT Expert Services Ltd.