



TITLE	:	Report on the Toxicity of Combustion Products for the Fireblock FFG material when tested in accordance with the DEFTSAN (NES 713) test protocol
REQUESTED BY	:	Fest Extinguishing Services (Pty) Ltd PO Box 1654 POTCHEFSTROOM 2520
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FIRELAB cc, Building 28, CSIR Campus, Meiring Naudé Road, Brummeria, Pretoria, SA +27 12 349 2929
www.firelab.co.za

SCOPE

This report contains the small-scale test results for the **Fireblock FFG** when tested in accordance with the **DEFTSAN (NES 713)** test protocol.

Section 1: Product information and photographic identification of the product received for testing

Section 2: Test method used to evaluate the toxicity of combustion gasses

Section 3: Test results

Section 4: Conclusion

Annexure "A": Company information

Annexures "B": Product information and MSDS supplied by **Fest Extinguishing Services**

TABLE OF CONTENTS

LIST OF FIGURES AND TABLES	1
1. PRODUCT DESCRIPTION.....	2
2. TOXICITY: DEFSTAN (NES 713).....	4
2.1. TEST PROCEDURE	4
2.2. TEST EQUIPMENT	4
3. TEST RESULTS.....	5
4. CONCLUSION.....	6
ANNEXURE "A"	7
ANNEXURE "B"	8

LIST OF FIGURES AND TABLES

Figure 1.1: Identification of the specimen received for testing	3
Table 2.1.1: Noxious gases with its lethal limits after 30 minutes of exposure	4
Table 3.1: Toxicity test results	5

1. PRODUCT DESCRIPTION

The product has the following characteristics:

Product information:

Product name:	Fireblock FFG
Product code:	FFG 20220101
Manufacturer:	Fireblock cc
Manufacturing date:	12 January 2022
Batch number:	2022-01-00001

Physical Properties:

Odourless, beige coloured gel

Product Composition/Ingredients:

Component 1:	Potassium polyacrylate	████
Component 2:	Montmorillonite	████
Component 3:	Quartz	████
Component 4:	Mica	████
Component 5:	Stabilizers	████
Component 6:	Thickening agents	████

Intended application or use:

Firefighting gel

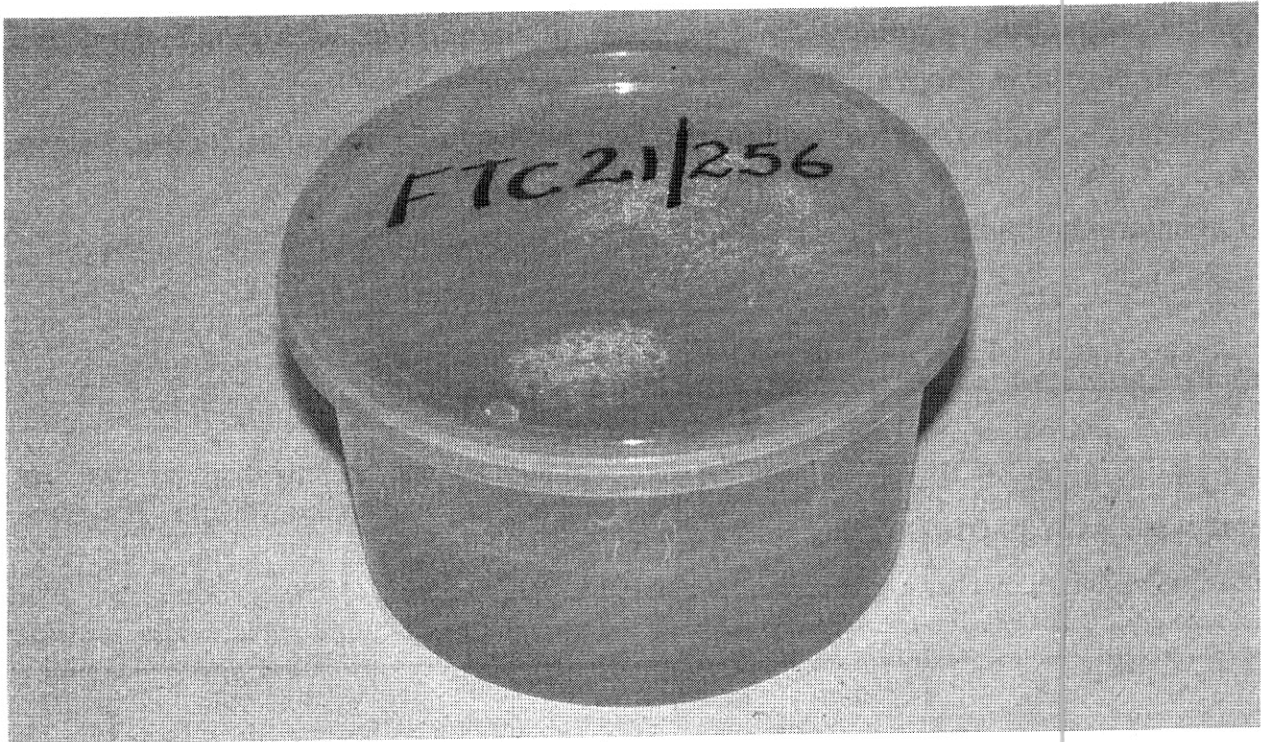


Figure 1.1: Identification of the specimen received for testing

2. TOXICITY: DEFSTAN (NES 713)

2.1. TEST PROCEDURE

One gram (1 g ± 5 mg) of the material was burned in a chamber with a volume of 1 m³. The concentrations of certain specified gases were determined by means of colorimetric (Dräger) tubes. These concentrations were then used to calculate the quantities of gases given off should a 100 g of material burned in a cubic meter (1 m³) of air.

The toxicity index is calculated from the summation of the ratios of these concentrations to the concentrations causing fatality to man after a 30-minute exposure time. Gases to be determined and their fatality limits are:

Gas	Chemical Formula	Conc. (ppm)	Gas	Chemical Formula	Conc. (ppm)
Carbon Dioxide	CO ₂	100 000	Nitrous Oxides	NO _x	250
Carbon Monoxide	CO	4 000	Hydrogen Cyanide	HCN	150
Formaldehyde	CH ₂ O	500	Acrylonitrile	C ₃ H ₃ N	400
Hydrogen Fluoride	HF	100	Ammonia	NH ₃	750
Hydrogen Chloride	HCl	500	Sulphur Dioxide	SO ₂	400
Hydrogen Bromide	HBr	150	Hydrogen Sulphide	H ₂ S	750
Phenol	C ₆ H ₅ OH	250			

Table 2.1.1: Noxious gases with its lethal limits after 30 minutes of exposure

2.2. TEST EQUIPMENT

- Dräger tubes (various as per test protocol)
- Dräger pump
- Toxicity Test Facility

3. TEST RESULTS

The results from the toxicity test conducted on 07 February 2022 are seen in Table 3.1 below. The temperature prior to testing was 27.0 °C.

Fest Extinguishing Services – Fireblock FFG			
Gas detected	Chemical Formula	Conc./100 g (ppm)	Toxicity Index
Carbon Dioxide	CO ₂	100 000	1.000
Carbon Monoxide	CO	5 635	1.409
Formaldehyde	CH ₂ O	100	0.2
Hydrogen Chloride	HCl	-	-
Phenol	C ₆ H ₅ OH	-	-
Nitrous Oxides	NO _x	82	0.328
Hydrogen Cyanide	HCN	Traces	-
Sulphur Dioxide	SO ₂	-	-
Total Toxicity Index			2.937

Table 3.1: Toxicity test results

4. CONCLUSION

The **Fireblock FFG** material supplied by **Fest Extinguishing Services** achieved a Total Toxicity Index of **2.937** during the **DEFSTAN (NES 713)** Toxicity test.

- Notes:**
- » The Toxicity Index result is only an indication and may differ from batch to batch.
 - » Although the toxicity index is relatively low, it has no relevance to the performance of the product for its intended use.
 - » The environmental impact of run-off water during application has not been determined as this would require water quality testing.




Compiled by: **T.H. Swart**



Approved by: **J.S. Strydom**

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ANNEXURE “B”

- SANS 10177 – Part 9 & NES 713 (TOX) –			FIRELAB
- Product Description -			
Product description:			
Product name:	FIREBLOCK FFG		
Generic Identification:	GEL		
Proposed Application:	FIRE FIGHTING GEL		
Product Manufacturer:	FIREBLOCK cc		
Manufacturing Date:	12-01-2022		
Product Code No.:	FFG 20220101		
Batch No.:	2022-01-00001		
Physical description:			
Actual Mass (g/m²):	n/a		
Thickness (mm):	n/a		
Width (mm):	n/a		
Length (mm):	n/a		
Product composition:			
Layer 1:	n/a		
Layer 2:	n/a		
Layer 3:	n/a		
Layer 4:	n/a		
Layer 5:	n/a		
Additional Information: (MSDS to be sent separately for all Toxicity tests)			
This is a gel cant be measured in size.			

OCTOBER 2021

The Test Report and results only relate to the product(s) submitted for testing as identified in Section 1 and Annexures and do not apply to any similar product(s) that have not been tested. This Test Report is only valid for 5 years or until there is a change to the product composition, manufacturing process or previously approved supplier(s).



- MSDS -		FIRELAB	
- Product Information -			
Product description:			
Product name:	FIREBLOCK FFG		
Generic Identification:	GEL		
Proposed Usage:	FIRE FIGHTING GEL		
Manufacturer:	FIREBLOCK cc		
Manufacturing date:	12-01-2022		
Product Code No.:	FFG 20220101		
Batch No.:	2022-01-00001		
Physical description:			
Actual Mass (g):	n/a		
Thickness (mm):	n/a		
Width (mm):	n/a		
Length (mm):	n/a		
Density (kg/m³):	n.a		
Product composition:	Material/Chemical:	Weight %	Volume %
Part 1:	Potassium polyacrylate		
Part 2:	Montmorillonite		
Part 3:	Quartz		
Part 4:	Mica		
Part 5:	Stabilizers		
Part 6:	Thickening Agents		
Part 7:			%

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Additional Information:	
Physical state:	Gel
Phase at 25 °C and 1013 Pa:	Gel
Colour:	Light beige
Odour:	odourless
Odour threshold:	n/a
Melting point/Melting range (°C):	TO BE TESTED
Boiling point/Boiling range (°C):	>800 Degrees
Flash point:	TO BE TESTED
Auto-ignition Temperature (°C):	TO BE TESTED
Evaporation rate:	TO BE TESTED
Flammability:	Not flammable
Vapour density:	TO BE TESTED
Density:	TO BE TESTED
Water solubility:	Not applicable
Thermal decomposition:	TO BE TESTED
Additional Notes:	
Fire fighting gel	