



FIRELAB

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**

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1. PRODUCT DESCRIPTION

The product has the following characteristics:

Product information:

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

Physical Properties:

Odourless, beige coloured gel

Product Composition/Ingredients:

<i>Component 1:</i>	Potassium polyacrylate (60%)
<i>Component 2:</i>	Montmorillonite (20%)
<i>Component 3:</i>	Quartz (5%)
<i>Component 4:</i>	Mica (5%)
<i>Component 5:</i>	Stabilizers (5%)
<i>Component 6:</i>	Thickening agents (5%)

Intended application or use:

Firefighting gel

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).

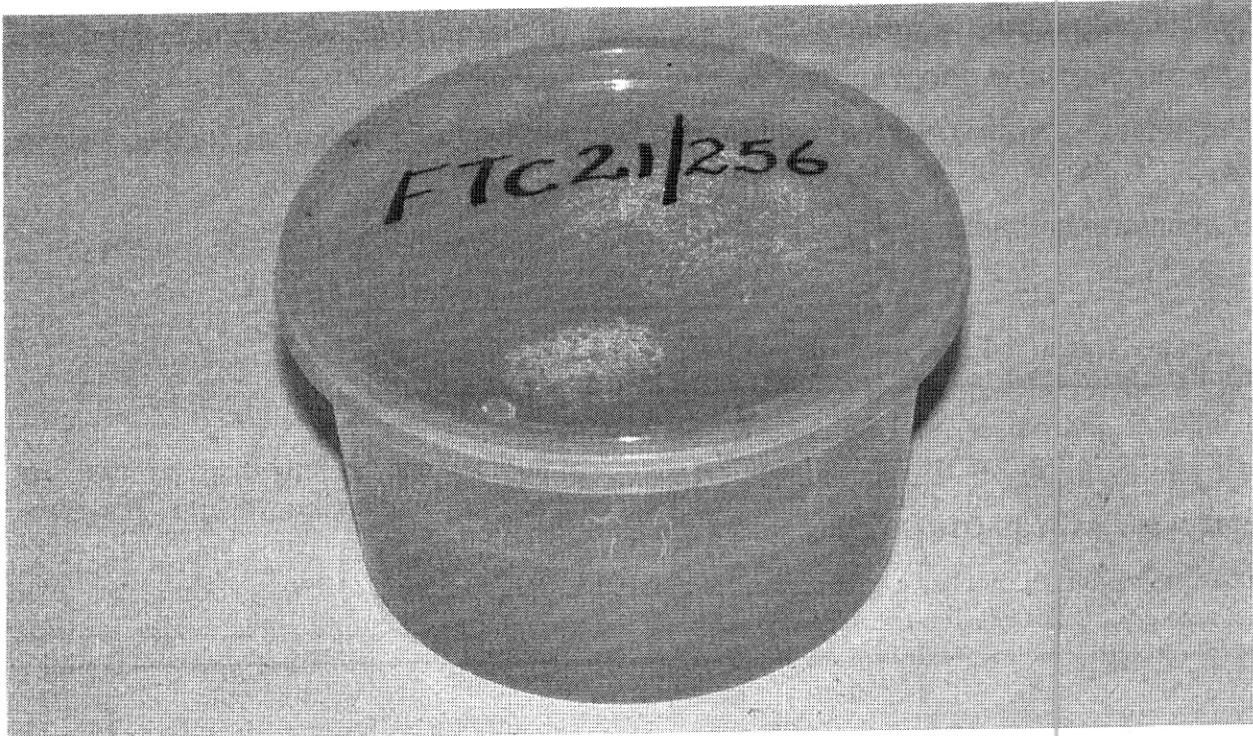


Figure 1.1: Identification of the specimen received for testing

2. TOXICITY: DEFSTAN (NES 713)

2.1. TEST PROCEDURE

One gram ($1\text{ g} \pm 5\text{ mg}$) of the material was burned in a chamber with a volume of 1 m^3 . 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 m^3) 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.



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



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

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ANNEXURE "B"

- SANS 10177 – Part 9 & NES 713 (TOX) – - 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/m ²):	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 2018

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- MSDS - - Product Information -		FIRELAB	
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/m ³):	n.a		
Product composition:	Material/Chemical:	Weight %	Volume %
Part 1:	Potassium polyacrylate	[]	60
Part 2:	Montmorillonite	[]	20%
Part 3:	Quartz	[]	5%
Part 4:	Mica	[]	5%
Part 5:	Stabilizers	[]	5%
Part 6:	Thickening Agents	[]	5%
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	