

SECTION 1

IDENTIFICATION OF THE PREPARATION AND OF THE COMPANY

1.1. Product identifier:

Product/Trade name:	Bioversal® QF-R		
Article no. /code	FE 851 G	1000 I IBC	1.000 kg
Container size/	FE 852 C	210 I Plastic Drum	210 kg
Content [kg]:	FE 853 J	20 I Jerry Can	20 kg

1.2. Relevant identified uses of the substance or mixture and uses advised against :

Relevant advised applications:	Environment and Operator Safe, High Performance, pH neutral, liquid concentrate, Multi Purpose Micelles Encapsulating Agent, Class A/B/F low-medium expansion foam certified acc. EN 1568-3 : 2008 at 6%, Rating 1A/ 1A free of PFOS,PFOA and its derivatives designed for filling fire extinguishers and fire protection systems and applications with aqueous premixes.
Field of applications:	<ul style="list-style-type: none"> a) Fire Extinguishers Class A/B/F/ at 6-7%. b) Class F Kitchen Fire Suppression Systems & Application at 10%. c) Class F low-medium expansion foam at 10 %. d) Class A/B/ water based fire protection systems at 3 % e) Class A/B/ water based fire protection systems at 6 % f) Class A/B/ water mist fire protection systems at 3-6 % g) High performance 3D Fire Knock-Down h) Temporary Fuel Neutralizer and VOC Mitigation >3 % i) Compatible with any alloy and material j) High Performance Oil Cleaner, de-oils, degreases any surface and material; applicable at any temperature and pressure range with standard equipment at 1 % - 3 % k) Anti Pollution Agent with Bio-Remediation Effectiveness, Bio-Compatible Miscellaneous Oil Spill Control Agent* l) Compatibility with standard oil/water separators, Sewage Plant Compatibility, does not create emulsions.
Applications advised against :	N/A None known.

1.3. Details of the supplier of the Safety Data Sheet :

Manufacturer/ Supplier:	BIOVERSAL International G.m.b.H
Street address :	Georg Sigl Str. 16
Postcode :	A-2384
Place :	Breitenfurt
Country:	Austria
Telephone.:	+43-2239-4278-0
Telefax:	+43-2239-4278-18
E-mail contact:	info@bioversal.com
Responsible SDS:	Ioannis Athanasiou
Contact:	+43-699 171 42 099 ioannis.athanasiou@bioversal.com General Manager

1.4. Emergency telephone: number :

During office hours:	Only available during the following office hours MO-FR 08:00 - 18:00. (+43 - 699 171 42 099)
Non office hours:	Present MSDS at any Anti Poison Center nearby.

SECTION 2

HAZARDS IDENTIFICATION

2.1 Classification of the mixture:

According to Article 31(3)(c):

This product does not meet the criteria for classification in any hazard class according to Regulation (EC) No 1272/2008 on classification, Labeling and packaging of substances and mixtures. (EC) No 12.

2.2 Label elements:

N/A

see 2.1

2.3 Other hazards:

N/A

No specific dangers are known. However the product should be handled with care as generally required for bio-chemicals.
Prevent foam entering in respiratory system and ways by using protective means as usually applied by trained and instructed fire protection professionals according their best practices and protocols when using fire extinguishing foam.

SECTION 3

COMPOSITION & INFORMATION ON INGREDIENTS

3.1 Chemical profile of the mixture:

Aqueous combination of bio-compatible surfactants with low eco-toxicological potential, polyvalent compounds free of phosphates and nitrates, hetero-organic substances, modified glycol derivates as well as natural colors and fragrances.

Bioversal® QF-R contains a BioActivator of vegetal origin regulating bio-compatibility during naturally occurring aerobic Bio-Remediation mechanisms of residual oil/fat pollution present in soil/water and sewage plant.

Bioversal® QF-R does not contain PFOS and PFOA or any of its persistent and bio-accumulative derivatives.

Bioversal® QF-R does not contain solvents, fertilizers/nutriments nor xeno-Majority of ingredients derived from raw materials of vegetal origin or modified components assuring low eco-toxicological impact, high rates of biodegradation & effective bioremediation stimulation of residual oil pollution in the environment.

All ingredients under application conditions are not subject to classification or labelling according EC regulations and Directives.

According Regulation (EC) Nr. 648/ 2004 for Detergents/Labeling of ingredients:

Bio-compatible surfactants:
< 5 % anionic, < 5 % non-ionic, < 5 % amphoteric

SECTION 4

FIRST AID MEASURES

4.1 Description of first aid measures:

• General notes:	In case of an accident or any discomfort always seek medical attention.
• Following inhalation:	No specific measures. Product does not contain solvents or any other volatile compounds.
• Following skin contact:	Product has been tested according cosmetic requirements on human patch test, and has been evaluated as harmless in contact with skin. <i>[Derma Consult GmbH, GLP, Human Patch Test according guidelines COLIPA, 1997]²</i>
• Following eye contact:	Product has been tested according EEC guidelines on eye irritation & has been evaluated as not irritating for the eyes. <i>[Hygiene Institute Gelsenkirchen, OECD Guidelines 405 & 92/69/EEC on eye irritation]²</i>
• Following ingestion:	Not toxic. Drink plenty of water, consult a physician. Do not induce vomiting. Gastric lavage using a Defoamer, [e.g. Dimeticon]. <i>[Hygiene Institute Gelsenkirchen, Toxicity Evaluation and Assessment, page 5, section 5]²</i>
• Self protection of the 1st aider:	N/A See 2.3

4.2 Most important symptoms and affects, both acute and delayed:

No specific dangers, symptoms and effects, both acute and delayed are known. However the product should be handled with care as generally required with bio-chemicals.
--

4.3 Indication of any immediate medical attention and special treatment needed:

Recommendation:	If swallowed, gastric lavage with the aid of Dimeticon (Defoamer).
------------------------	--

SECTION 5

FIRE FIGHTING MEASURES

5.1 Extinguishing media:

Suitable:	N/A No specific measures.
Unsuitable:	N/A No specific measures.

5.2 Special hazards arising from the mixture:

N/A
No specific measures.

5.3 Advise for fire fighters:

N/A
No specific measures.

SECTION 6

ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

6.1.1 For non emergency personnel:

6.1.2 For emergency responders:

Bioversal® QF-R contains skin friendly surfactants of vegetal origin.

However the product should be handled with care as generally required with bio-chemical substances. Avoid prolonged contact with skin and with eyes.

Protective equipment:

Recommendation: Use goggles and rubber gloves.
See indications above

Emergency procedures:

Recommendation: Use goggles and rubber gloves.
No specific procedures are necessary.

See 6.1.1

Recommendation: Use goggles and rubber gloves.

6.2 Environmental precautions:

6.2.1 Other information

Bioversal® QF-R concentrate contains environmentally friendly, rapidly, easily more than 99,9 % biodegradable, bio-compatible surfactants of vegetal origin with a low eco-toxicological profile destined for intentional release in open and natural environment applied in (with water) diluted form during high performance Fire fighting applications, cleaning activities and oil spill treatment measures on S/W* with parallel VOC mitigation requirements typically present during hydrocarbon induced pollution. Destined for ecological cleaning activities with bioremediation purposes on solid surfaces, soil, water surfaces.

However the accidental release of **Bioversal® QF-R concentrate** in the environment should be avoided.

6.3 Methods and material for containment and cleaning up:

6.3.1 For containment

6.3.2 For cleaning up

Apply methods and materials generally required in best practices for non hazardous bio-chemicals.

Apply liquid-binding and absorbent, standard material and equipment.

Aspirate big quantities, flush small quantities with plenty of water.

6.4 Reference to other sections:

See section 6.1

See section 6.2

SECTION 7

HANDLING AND STORAGE

7.1 Precautions for safe handling:

Protective measures:

Comply with regulations applied for handling and storing non hazardous, bio-chemical products or materials.

Measures to prevent fire:

N/A

No specific measures

Measures to prevent aerosols and dust generation:

N/A

No specific measures

Measures to protect the environment:

N/A

No specific measures

Advice on general occupational hygiene:

N/A

No specific measures

7.2 Conditions for safe storage, including any incompatibilities:

N/A

No specific conditions.

7.3 Specific end use(s):

N/A

No specific end use(s).

SECTION 8

EXPOSURE CONTROLS AND PERSONAL PROTECTION

8.1 Control parameters:

N/A

No specific control parameters.

8.2 Exposure controls:

Bioversal® QF-R is not classified a hazardous product.

However comply with regulations of good occupational hygiene practices in conjunction with other control measures.

8.2.1 Appropriate engineering controls:

N/A

No product related measures to prevent exposure during the identified uses neither structural nor organizational or technical are necessary.

8.2.2 Personal protection equipment:

Comply with standard personal protection regulations and exposure controls applicable for handling standard non-toxic and non-hazardous surfactants.

Eye and face protection:

Wear protective goggles.

Skin protection:

N/A

Hand protection

Wear rubber gloves

8.2.3 Environmental exposure controls:

Keep away from food, drink and feeding stuffs.

No instruction measures to prevent exposure are necessary.

No organizational measures to prevent exposure are necessary.

SECTION 9

PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties:

Appearance:	liquid
Odor:	typical, pleasant
Odor threshold:	N/A
pH at [20°C]:	7,0
Melting point/:	N/A
Freezing point:	-6,7 °C
Initial boiling point and boiling range:	>100°C
Flash point:	N/A
Evaporation rate:	N/A; not known.
Flammability (solid,gas):	N/A Bioversal® QF-R is not flammable.
Upper/lower flammability or explosive limits:	N/A Bioversal® QF-R is not flammable. Bioversal® QF-R is not explosive.
Vapour pressure:	23 mbar
Vapour density:	N/A; not known.
Relative density at 20°C:	1,03 g/cm ³
Solubility in water:	completely miscible
Partition coefficient- n-octanol/ water:	N/A
Auto ignition temperature:	N/A Bioversal® QF-R does not auto ignite.
Decomposition temperature:	N/A Not known.
Viscosity at 6 % [mm²/s]:	kinematic 20°C kinematic 0°C kinematic -5°C 77,96 105,16 119,29
Explosive properties:	N/A Bioversal® QF-R does not have explosive properties.
Oxidizing properties:	N/A Bioversal® QF-R does not have oxidizing properties.

9.2 Other information:

Refraction Index:	1,3589	1,3605
Surface tension [mN/m]:	3 %	6%
Spreading coefficient [mN/m]:	18,16-18,25	17,20
Expansion values Potable water:	3 %	6 %
Expansion values Sea water:	4,51-4,96	5,74-6,14
	3 %	6 %
	5,3-6,9	8,51-9,04
	3 %	6 %
	4,98-5,85	7,55-8,04
Infrared Spectrogram available upon request.		

SECTION 10

STABILITY AND REACTIVITY

10.1 Reactivity:

N/A

Bioversal® QF-R is considered non reactive under normal conditions and if used for its intended purpose.

10.2 Chemical Stability:

N/A

Bioversal® QF-R is considered stable under normal conditions and if used for its intended purpose. Freezing and thawing at -30°C and room temperature does not have any negative impact on the chemical stability of the product.

10.3 Possibility of hazardous reactions:

N/A

No hazardous reactions known if used for its intended purpose.

10.4 Conditions to avoid:

N/A

No special precautions are required for this product if used according the supplier's safety instructions.

10.5 Incompatible materials:

N/A

None.

10.6 Hazardous decomposition products:

N/A

No hazardous decomposition products known.

Under environmental conditions **Bioversal® QF-R Premixes (with H2O dilutions)** bio-degrade aerobically up to >98 % to CO₂, H₂O and biomass within 11-12 days and >99, 9 % within 21 Days

SECTION 11

TOXICOLOGICAL INFORMATION²

11.1 Information on toxicological effects:

Acute toxicity:	At values LD50 (rats) > 2000 mg/kg no toxic effects have been observed. Bioversal® QF-R is not acute toxic. (see SECTION 12)
Skin corrosion / skin irritation:	Bioversal® QF-R does not cause serious skin corrosion/irritation. (see SECTION 4.1)
Serious eye damage/ eye irritation:	Bioversal® QF-R does not cause serious eye damage/irritation. (see SECTION 4.1)
Respiratory or skin sensitization:	Bioversal® QF-R does not cause respiratory or skin sensitization. (see SECTION 4.1)
Germ cell mutagenicity:	Bioversal® QF-R does not cause germ cell mutagenicity.
Carcinogenicity:	Bioversal® QF-R is not carcinogenic.
Reproductive toxicity:	Bioversal® QF-R is not reproductive toxic.
Summary of evaluation of the CMR properties:	Bioversal® QF-R does not have CMR properties
STOT single exposure:	Bioversal® QF-R is not toxic.
STOT repeated	Bioversal® QF-R is not toxic.
Aspiration hazard:	Bioversal® QF-R is not volatile, and does not cause aspiration hazards effects

NOTE:

Eyes irritation tests according OECD Guideline 405 have been conducted to evaluate the eyes irritation potential of **Bioversal® QF-R** concentrate.

Test conducted on albino rats according Guideline 92/69/EEC.

[Hygiene Institut Gelsenkirchen, Institut für Umwelthygiene und Umweltmedizin]²

Skin sensitivity tests in form of human patch test have been conducted to evaluate skin irritation potential of **Bioversal® QF-R** concentrate.

Tests conducted according GLP regulations and according guidelines COLIPA.

[Derma Consult GmbH, Gesellschaft zur Prüfung von Dermatika]^{** /²}

CONCLUSION²:

On the basis of the test results and under the test conditions, the product **Bioversal® QF-R** concentrate is to be classified as harmless as regards the possibility of skin irritation.

On the basis of the test results and under the test conditions, the product **Bioversal® QF-R** concentrate is to be classified as non irritating for the eyes.

The product is applied at a maximum dilution rates with water at 10 % as premix.

SECTION 12

ECOLOGICAL INFORMATION ** /2

12.1 Toxicity:

12.1.1 Bacteria:

ORGANISM Test object	Conc./Dil. Rates	Methodology	Guidelines Institute	Result of testing
Activated sludge organisms	Bioversal® QF; 0,2 %	Bacteria Inhibition; BOD inhibition [mg/l]	Austrian Standard ÖNORM 5105; IMU, Vienna;	At 0,2 % [2g/l] No Inhibition Observed
Activated sludge organisms	Bioversal® QF; 0,1 -0,3 %	Nitrification Inhibition at 20° in darkness	EU Norm EN ISO 9509; IMU, Vienna	EC50 > 0,2-0,3 % (incubation) corresponds EC50 > 2- 3 g/l No inhibition
Pseudomonas Sp.	Bioversal® QF; 6 %	Cell Proliferation; Inhibition Test 16 hrs	GHI Germany DIN 38412 L8	4-hours incubation, including determination of ammonium N through capillary electrophoresis EC10 [16 h] > 800 g/L EC50 [16 h] >800 g/L No Inhibition Observed
Pseudomonas Sp.	Bioversal® QF; Undiluted	Cell Proliferation Inhibition Test 16 hrs	Conversion Undiluted IZLUI Univ. Prof. Dr. Reinhard Dallinger	EC10 [16 h] >384 g/L EC50 [16h] >384 g/L No Inhibition Observed

CONCLUSION²:

For LCO/ECO/NOEC < 500 - 600 ** mg/L **the application of the concentrate Bioversal® QF-R** has to be considered non toxic/harmless for naturally present bacterial diversity in soil, aquatic environment and sewage plants.

The product is applied at a maximum dilution rate with water at 10 % as premix.

[IZLUI, Univ., Prof.Dr. R.Dallinger, Ecotoxicological Evaluation on the application of

"Bioversal" in combating mineral oil contamination in soil and water,

Expert report, 08/2001, Institute for Zoology and Limnology of the University of Innsbruck]

Synergistic Eco-Toxicity & Inhibition Effects of Bioversal® QF-R coated oil micelles:

Vibrio fischeri	Bioversal® QF + 8,3 mg/l Diesel	Luminescent Bacteria test 30 min, 15°C, Lumis Tox Dr. Lange	DIN 38412 IFA, Tulln, Department of Eco- Toxicity	NOEC for synergistic effect: >=100 mg/l
-----------------	---	---	---	--

CONCLUSION²:

Bioversal® QF-R does not enhance bacterial eco-toxicity of treated oil pollution.

SECTION 12

ECOLOGICAL INFORMATION** /² continued

12.1 Toxicity:

12.1.2 Algae:

ORGANISM	Conc.	Methodology	Guidelines Institute	Results
Scenedesmus Subspicatus	Bioversal® QF; 6%	Inhibition effect of the cell proliferation 23°C 8000 Lux over 72 h	OECD 201 GHI, Germany	EC10 (72 h): 14.000 mg/l EC50 (72 h): 16.900 mg/l
Scenedesmus Subspicatus	Bioversal® QF; Undiluted	Inhibition effect of the cell proliferation 23°C 8000 Lux over 72 h	OECD 201 GHI, Germany	EC10 (72 h): 840 mg/l EC50 (72 h): 1.014 mg/l
Scenedesmus Subspicatus	Undiluted	Inhibition effect of the cell proliferation 23°C 7000 Lux over 72 h	Pursuant Enclosure No 2 Decree No 299/98 Slg. Czech Republic, ECOTEST company	EC50 (72 h) [growth speed]: >100 mg/L EC50 (0 - 72 h) [biomass]: 64,65 mg/l

CONCLUSION²:

For LCO/ECO/NOEC < 600 - 700 **mg/L the application of the concentrate

Bioversal® QF-R has to be considered non toxic/harmless for Algae naturally present in soil and aquatic environment.

The product is applied at a maximum dilution rate with water at 10% as premix.

Synergistic Eco-Toxicity & Inhibition Effects of Bioversal® QF-R² coated oil micelles:

Selenastrum capricornutum	Bioversal® QF + 8,3 mg/l Diesel	Acute Inhibiting effect of the cell proliferation 72 h at 22°C	DIN38412- L33; OECD 201; IFA Tulln Eco-Tox Dep.	NOEC for Synergistic Effect: 49,6 mg/L
---------------------------	--	--	---	---

CONCLUSION²:

Bioversal® QF-R does not enhance algae eco-toxicity of treated oil pollution.

SECTION 12

ECOLOGICAL INFORMATION** /² continued

12.1 Toxicity:

12.1.3 Invertebrates:

ORGANISM	Conc.	Methodology	Guidelines Institute	Results
Daphnia Magna [STRAUS]	Bioversal® QF: 6%	Immobility Test 20°C 48 h	OECD 202 GHI Germany	ECO (48h): 2.000 mg/l EC50 (48h): 4.500 mg/l EC100 (48h): 7.000 mg/l
Daphnia Magna [STRAUS]	Bioversal® QF: Undiluted	Immobility Test 20°C 48 h	Conversion Undiluted IZLUI Univ. Prof. Dr. Reinhard Dallinger	ECO (48h): 120 mg/l EC50 (48h): 270 mg/l EC100 (48h): 420 mg/l
Daphnia Magna [Own stock]	Bioversal® QF: Undiluted	Immobility Test 21°C 48 h	Pursuant Enclosure No 2 Decree No 299/98 Slg./ Czech Republic, ECOTEST company	EC50 (48h): >100 mg/l

CONCLUSION²:

For LCO/ECO/NOEC < 110**² mg/L the application of the concentrate **Bioversal® QF-R** has to be considered non toxic/harmless for invertebrates naturally present in soil and aquatic environment.

The product is applied at a maximum dilution rate with water at 10% as premix.

Synergistic Eco-Toxicity & Inhibition Effects of Bioversal® QF-R coated oil micelles:

Invertebrates [Daphniae magna]	Bioversal® QF + 8,3 mg/l Diesel	Acute toxicity test 48 h at 22°C	DIN38412- L30; OECD 202; IFA Tulln Eco-Tox Dep.	NOEC for Synergistic Effect: 24,6 mg/L
--------------------------------------	---	--	---	---

CONCLUSION²:

Bioversal® QF-R does not enhance invertebrates eco-toxicity of treated oil pollution.

SECTION 12

ECOLOGICAL INFORMATION** /² continued

12.1 Toxicity:

12.1.4 Fish:

ORGANISM	Conc.	Methodology	Guidelines Institute	Results
Golden Orfe [Leuciscus Idus]	Bioversal® QF: 6%	Acute Fish Toxicity 20°C 48 h	DIN 38412 Part 15 GHI, Germany	LC0 (48h): 4.000 mg/l LC50 (48h): 4.500 mg/l LC100 (48h): 5.000 mg/l
Golden Orfe [Leuciscus Idus]	Bioversal® QF: Undiluted	Acute Fish Toxicity 20°C 48 h	Conversion Undiluted IZLUI Univ. Prof. Dr. Reinhard Dallinger	LC0 (48h): 240 mg/l LC50 (48h): 270 mg/l LC50 (48h): 300 mg/l
Guppies [Poecilia Reticulata]	Bioversal® QF: Undiluted	Acute Fish Toxicity 22°C 96 h	Pursuant Enclosure No 2 Decree No 299/98 Slg. Czech Republic, ECOTEST company	LC50 (48h): >100 mg/l LC50 (96h): >100 mg/l

CONCLUSION²:

With LCO/ECO/NOEC < 110** mg/L the application of the concentrate **Bioversal® QF-R** has to be considered non toxic/harmless for Fish naturally present in aquatic environment.

The product is applied at a maximum dilution rate with water at 10% as premix

Synergistic Eco-Toxicity & Inhibition Effects of Bioversal® QF-R coated oil micelles:

Fish [Brachydanio rerio]	Bioversal® QF + 8,3 mg/l Diesel	Acute toxicity test 96 h at 21°C	EEC Comission Directive 92/96, C.I.	NOEC for Synergistic Effect: >100 mg/L
--------------------------------	---	--	--	---

CONCLUSION²:

Bioversal® QF-R does not enhance fish eco-toxicity of treated oil pollution.

SECTION 12

ECOLOGICAL INFORMATION ** /² continued

12.1 Toxicity:

12.1.5 Mammals:

ORGANISM	Conc.	Methodology	Guidelines Institute	Results
Rats	Bioversal® QF: 6%	Acute Mammal Toxicity Dose per kg body weight	KZ20307 Limit Test UBA GHI, Germany	LD50> 2.000 mg/kg
Rats	Bioversal® QF: Undiluted	Acute Mammal Toxicity Dose per body weight	GHI, Germany, calculated	LD50> 200 mg/kg
Rabbits albino 2 kg body weight	Bioversal® QF: Undiluted	Irritating Effect on Eyes	OECD 405 Assessment Score system acc. EEC reg. 92/69/ EEC; GHI, GER	Does not irritate the eyes.
Human	Bioversal® QF: Undiluted	Main Compatibility Skin Irritation	GLP Derma Consult GmbH Guidelines COLIPA, Walker A.P. et al.: Test guidelines for assessment of Skin Compatibilities of Cosmetic Finished Products in Man. Food and Chemical Toxicology 34, 1996, 651-660.	Harmless in regards to skin irritation

CONCLUSION²:

For doses <200 mg/kg (concentrate) and <2.000 mg/kg (6 %)

Bioversal® QF-R is non toxic/harmless for Mammals as well non irritating for For eyes and skin.

The product is applied at a maximum dilution rate with water at 10% as premix.

SECTION 12

ECOLOGICAL INFORMATION ** /² continued

12.2 Persistence and degradability:

ORGANISM	Conc.	Methodology	Guidelines Institute	Results
Biological degradation by determining the BOD5 value activated sludge	Bioversal® QF: Undiluted 1 ml in 1 l activated sludge	Manometric determination of the BOD5 with COD as calculation basis	Miti Test OECD 301 c GHI, Germany	Bio-chemical Degrad.-rates after: 5 Days=66% 13 Days= 98% 21 Days > 99,9%
Biological degradation by determining the BOD5 value activated sludge	Bioversal® QF: 6 %	Manometric determination of the BOD5 with COD as basis	Miti Test OECD 301 c GHI, Germany	Bio-chemical Degrad.-rates after: 5 Days=87% 11 Days= 98% 21 Days > 99,9%
Degradation rate of the anionic surface active agents; aerobic, polyvalent micro organisms	Bioversal® QF: Undiluted 1 ml in 1 l activ. sludge suspension	Determination of the content of anion active detergents in creep test; Initial content: 6,1 mg/l	DIN 38409 Part 23-1 GHI, Germany	Residual anion active detergents After: 7Days<0,05mg/l Elimination Rate: >99%

Synergistic Biodegradation Effects of Bioversal® QF-R coated oil micelles:

Biological degradation of hydrocarbons (diesel oil) active. sludge	Bioversal® QF: 1ml in 1 l activated sludge suspension; Corresponds to 0,1 % with 870 mg Diesel	Quantitative determination of hydrocarbons	DIN 38409 Part 18	Bioremediation Effectiveness: Elimination Rate of Hydrocarbons: >99 % In 11 Days completed
--	---	--	-------------------	---

CONCLUSION²:

Bioversal® QF-R is not persistent.

Bioversal® QF-R is rapidly and nearly completely biodegradable.

Bioversal® QF-R is compatible for sewage plant treatment.

Bioversal® QF-R treated/coated oil micelles are highly biodegradable.

Bioversal® QF-R has oil pollution bioremediation effectiveness capacities.

The product is applied at a maximum dilution rate with water at 10% as premix.

12.3 Bio-accumulative potential:

N/A

The product does not contain PFOS, PFOA and its derivatives.

[SGS Institut Fresenius, LC-MS/MS test method, Report Nr. 2000990-02a]

The product is not bio-accumulative. SEE SECTION 12

SECTION 12

ECOLOGICAL INFORMATION ** /² continued

12.4 Mobility in Soil	N/A	<p>Bioversal® QF is designed as a high performance fire extinguishing agent for Class A fire and is especially effective in Class B/F fire applications. Mobility in soil is enhanced and foam water can enter soil, aquifer and open waters. Treat concerned area by spraying clean water till NOEC/ECO values are reached. SEE SECTION 12.1</p>
<p>Bioversal® QF-R is completely soluble in water.</p>		<p>In case of Class B fires collect/ absorb/ skim mechanically concerned area then spray clean water till NOEC/ECO values are reached. SEE SECTION 12.1 Monitor oil pollution. If necessary retreat with Bioversal® QF-R to stimulate bioremediation.* Avoid accidental release.</p>
	<p>Applications on hydrocarbon pollutants present in soil and aquifer, enhances their mobility.</p>	<p>Application of Bioversal® QF-R on oil polluted soil and aquifer enhances their mobility and is an intended and crucial effect of the soil washing and bio-remediation effectiveness of the product. Bioversal® QF-R makes pollution bio- avail. to micro-organisms , if used in a controlled way according the safety instructions of the supplier and environmental engineers' best practices. Product does not create stable emulsions with hydrocarbons. Application of the product should always be in accordance with local, state or national legislation.</p>
12.5 Results of PBT and vPvB assessment:	N/A	
	Not a PBT and not a vPvB according to REACH Annex XIII	
12.6 Other adverse effects:	N/A	
	No other adverse effects.	
12.7 Additional information:	N/A	
	No information available.	

SECTION 13

DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods:

Disposal should be in accordance with local, state or national legislation.

13.1.1 Product and packaging disposal:

- EU Waste Codes=07-06-01, Aqueous wash solution.
- Discharge at sewage or any other biological water treatment facility.
- Cleaned, empty packages are reusable

13.1.2 Waste treatment relevant information:

N/A

See 13.1.3

13.1.3 Sewage disposal-relevant information:

COD [mg/l]=	20 g/l, at 6% diluted with water
BOD5 [mg/l]=	12 g/l, at 6% diluted with water
Nitrification inhibition=	EC50 (incubation) > 0,2-0,3% corresponds
	EC50>2-3g/l, no inhibition effect
Bacterial inhibition=	EC0<=500-600 mg/l, concentrate, no inhibition effects
Biological degradation	>98 % in 11 Days; >99,9% in 21 Days
In activated sludge=	Readily biodegr. ; easily, rapidly and nearly completely

13.1.4 Other disposal recommendations:

N/A

SECTION 14

TRANSPORT INFORMATION

14.1 UN number: recommendations:

N/A

14.2 UN proper shipping name: recommendations:

N/A

14.3 Transport hazard classes: recommendations:

N/A

14.4 Packing group: recommendations:

N/A

14.5 Environmental hazards: recommendations:

N/A
On available data, **Bioversal® QF-R** is not harmful to the environment.

14.6 Special precautions for User: Recommendations:

N/A
No special precautions are required for this product.

SECTION 14

TRANSPORT INFORMATION *continued*

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC code:

N/A

SECTION 15

REGULATORY INFORMATION

15.1 Safety, health and the Environmental regulations/legislation specific for mixture:

Safety, health and environmental regulations/legislations for the substance or mixture:

Council Directive 1999/45/EEC classification, packing and labeling of dangerous preparations. Refer to current Substances Directive 67/548/EEC

- This safety Data Sheet is provided in compliance with the EC Directive 1907/2006-453/2010
- Composition information in accordance with EC Regulation 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents

FIRE PROTECTION: International Certificates and Approvals,

- I) EN1568-3 : 2000-10/EN1568-3: 2001-03, Rating 1A/ 1A, low expansion foam at 3 %.
[MPA, Test Report Nr. 2000-23-456/Bi 04, 08/06/2000]²
- II) EN1568-3: 2008-08, Rating 1A/ 1A, low expansion foam at 6 %.
[MPA, Certif.- Nr. SP06/12, Test Rep.-Nr. 2011-F-2685/Bi 10, 21/06/2011]
- III) Partie I, Hydrocarbures, émulseurs filmogènes, catég . 2 I .m-2.min-1 à 3 % .
Testé au site d'essai Vernon, France, qualifié et listé, www.gesip.com
[GESIP, conformément au Circulaire du 06/05/1999/12, Rapport.-Nr. 99/02]²
- IV) ICAO, qualified according requirements Level B, low expansion foam at 3 %.
[SP, Sweden, Reference Nr. of Test Report P 00 6420, issue date 31/05/2000]²
- V) Extinguishing qualities successfully tested at 3 % acc. UL162, 7th Edition,
[TNO, Netherlands, Test Report 97-CVB-R0859, issue date August 1997]²

ENVIRONMENTAL PROTECTION.: International Certificates & Approvals²

- I) GERMANY Ministry of Environment, Environmental Agency:
 - HC classification WGK 0 "Generally not dangerous for waters" old norm
 - HC class. WGK 1 "Slightly dangerous for waters" new norm
 WKG 0 does not exist in the new norm, all detergents no matter their environmental properties are at best case WGK 1

More data see SECTIONS 9/11/12/13.

Certificates Approvals and Expert Reports available upon request.

15.2 Chemical Safety Assessment

N/A
None

SECTION 16

OTHER INFORMATION

16.1 Disclaimer:

The information provided about the product on this Safety Data Sheet has been compiled based on knowledge of laboratory tests from accredited institutes and authorities according regional, local or national regulations and legislations or international standards, applicable in different countries, certificates, approvals academic studies and expert evaluations.

Approvals, Certificates, Expert Evaluations available upon request.

The Data given here only applies when product used for proper application(s). The product is not sold as suitable for other applications. Do not use for other application(s) without seeking advice from Bioversal International.

The Data given here is based on current knowledge and empirical data.

This Safety Data Sheet describes the product in terms of safety requirements and does not signify or imply any warranty with regard to the product's properties.

16.2 Relevant R-Phrases:

N/A

16.3 Relevant S-Phrases:

S 02	Keep out of the reach of children.
S 26	In case of contact with eyes rinse immediately with plenty of water and seek medical advice.
S 28	After contact with skin wash immediately with plenty of water.
S 36	Wear suitable protective clothing.
S 45	In case of accident or if you feel unwell seek medical attention.

16.4 Abbreviations and acronyms:

LD50	Lethal Dose 50%
LC50	Lethal Concentration 50%
LC0	Lethal Concentration 0%
EC0	Effective concentration 0%
EC50	Half maximal effective concentration
NOEC	Non Observed Effective Concentration
COD	Chemical Oxygen Demand
BOD5	Biological Oxygen Demand 5 Days
N/A	Not applicable
WGK	Wasser Gefährdungsklasse=Water Hazard Class
COLIPA	Walker A.P. et al.: Test Guidelines for Assessment of Skin Compatibility of Cosmetic Finished Products in Man. Food and Chem. Toxicology,34 , 1996, 651-660
UBA	Umweltbundesamt/Environmental Agency Germany
GLP	Good Laboratory Practice
GHI	Gelsenkirchen Hygiene Institute
IMU, Vienna	Institut für Mineralölprodukte und Umweltanalytik
IZLUI	Institute for Zoology and Limnology of the University of Innsbruck
N/A	Not Applicable
HP	High Performance
VOC/voc	Volatile Organic Compound
S/W	Soil/Water
EEC	European Economic Community
OECD	Organization of Economic Co-operation & Development
*	Application in Accordance with Local, Regional or National Regulations.
**	<p>Bioversal® QF-R does not contain such hazardous substances, which are subject to classification and labelling according EC Regulations, and hence would have to be assessed under SECTION 13.</p> <p>Nevertheless BVI puts at the disposal of the Users the Eco-Toxicity data and profile of the product Bioversal® QF-R to ensure a transparent, responsible, decision making tool for the users when operating in an open environment and eco-system.</p> <p>Evaluation and assessment of the available Eco-Toxicity Data suggests that the product is harmless for Ecosystem for effective field dilution rates under 0,1-0,8 %.</p>

Recommendations*:

In case of Bioversal® QF-R applications where foam spills on soil are inevitable, sprinkle water quantities to reach NOEC/ECO values of 0,5% effective field dilution rates. In case of maritime operations, field dilution rates are naturally reached.

In case of combined Bioversal QF-R/Oil Spills collect, skim hydrocarbons, then dilute as indicated above to reach 0,1-0,8 %.

Monitor residual oil pollution in soil/water/aquifer, if necessary; Under optimum environmental conditions, Bioversal® QF-R bioremediation effectiveness is immediately activated through enhanced

- ☑ Fire Protection A/B/F
- ☑ Explosion Protection
- ☑ Oil/Fat Cleaning Agent
- ☑ VOC Suppression
- ☑ S/W Anti Pollution Agent*
- ☑ Bio-Remed. Effectiveness

MATERIAL SAFETY DATA SHEET

In accordance with EC-Directive 1907/2006/EC, Art. 31 (REACH)

Doc.Id.: MSDS_QF-R_EN_v01072014

Last Revision 01/07/2014 | Print Date: 14/07/2014

bio-availability and bio-compatibility of encapsulated oil micelles.

Aerobic biodegradation of residual hydrocarbon pollution is stimulated during the next 14-21 Days. For further Anti Pollution measures on the spot, sprinkle Bioversal® QF-R at 0,5 %.

2

Bioversal® QF-R contains Bioversal® QF & an ecological additive to neutralize organic odors induced by Bioversal® BioActivator & aerobic biodegradation processes, that can occur when premixes stored in fire extinguishers contain water based organic impurities (i.e. dust, sludge).

SECTION 16

OTHER INFORMATION *continued*

16.5 Indication of changes:

<u>Date of changes</u>	<u>Document Identity:</u>	<u>Comments/Changes:</u>
01/08/2013	MSDS_QF-R_EN_v01082014	Creation new format
22/06/2014	MSDS_QF-R_EN_v22062014	First update
01/07/2014	MSDS_QF-R_EN_v01072014	Second update