

Fibronectin: sc-29011

BACKGROUND

Fibronectin is an extracellular matrix glycoprotein present on most cell surfaces, in extracellular fluids and in plasma. A high molecular weight heterodimeric protein, it was originally discovered as a protein missing from the surfaces of virus-transformed cells, and it has been shown to be involved in various functions including cell adhesion, cell motility and wound healing. Alternative splicing and glycosylation give rise to several different forms of Fibronectin, some of which exhibit restricted tissue distribution or association with malignancies. It has been shown that myofibroblast phenotype formation correlates with the occurrence of glycosylated Fibronectin and Fibronectin splice variants in Dupuytren's disease.

REFERENCES

1. Akiyama, S.K., et al. 1981. The structure of Fibronectin and its role in cellular adhesion. *J. Supermol. Struct. Cell. Biochem.* 16: 345-348.
2. Ruoslahti, E., et al. and Hayman, E.G. 1982. Molecular and biological interactions of Fibronectin. *J. Invest. Dermatol.* 79 Suppl. 1: 65s-68s.
3. Nagai, T., et al. 1991. Monoclonal antibody characterization of two distant sites required for function of the central cell-binding domain of Fibronectin in cell adhesion, cell migration, and matrix assembly. *J. Cell Biol.* 114: 1295-1305.
4. Kosmehl, H., et al. 1995. Differential expression of Fibronectin splice variants, oncofetal glycosylated Fibronectin and Laminin isoforms in nodular palmar fibromatosis. *Pathol. Res. Pract.* 191: 1105-1113.
5. Garat, C., et al. 1996. Soluble and insoluble Fibronectin increases alveolar epithelial wound healing *in vitro*. *Am. J. Physiol.* 271: L844-L853.
6. Matsui, S., et al. 1997. Expression, localization and alternative splicing pattern of Fibronectin messenger RNA in fibrotic human liver and hepatocellular carcinoma. *J. Hepatol.* 27: 843-853

PRODUCT

Fibronectin is purified from human plasma ($\geq 90\%$) by 4-12% SDS PAGE under reducing conditions; supplied as 1 mg, lyophilized, in 100 mM CAPS, 0.15M NaCl, 1 mM calcium chloride, pH 11.0.

The source plasma was tested and found nonreactive for hepatitis B surface antigen (HBsAg) and negative for antibody to human immunodeficiency virus (HIV). Nevertheless, ****THIS PRODUCT SHOULD BE HANDLED USING THE SAME SAFETY PRECAUTIONS USED WHEN HANDLING POTENTIALLY INFECTIOUS MATERIAL****.

The contents of this vial have been tested and found negative for the presence of bacteria, fungi and mycoplasma. Product has been tested for its ability to promote attachment and spreading using BHK-21 cells.

Fibronectin is generally used in the concentration range of 1-5 $\mu\text{g}/\text{cm}^2$ of growth surface for attachment or at 5 $\mu\text{g}/\text{ml}$ as a media additive. Coating protocols are provided as guidelines only; each laboratory should empirically determine the optimal conditions for their unique applications.

MW of Fibronectin: 440 kDa dimeric glycoprotein, non-reduced form.

CAS: 86088-83-7

RECOMMENDED COATING PROTOCOL

- Dilute Fibronectin to desired concentration using serum-free culture Ca^{2+} , Mg^{2+} -free medium or buffer at pH 7-9. The final solution should be sufficiently dilute so that the volume added to the coating surface will coat it evenly (e.g. for a final coating concentration of 5 $\mu\text{g}/\text{cm}^2$, dilute material to 50 $\mu\text{g}/\text{ml}$ and add 1 ml/35 mm dish, 3 ml/60 mm dish, etc.).

NOTE: Because of the CAPS component in the HFN preparation, buffers of media containing Ca^{2+} and/or Mg^{2+} added to the HFN may result in the formation of insoluble metal hydroxides. This will not occur if the buffering capacity of the diluent brings the pH to 8.0 or lower.

- Add appropriate amount of diluted Fibronectin to culture surface.
- Incubate at room temperature for one hour.
- Aspirate remaining material.
- Rinse plates carefully with dH_2O ; avoid scraping bottom surface.
- Plates may be used immediately or may be stored at 2-8° C, damp or air dried, if sterility is maintained.

STORAGE AND RECONSTITUTION

Stable for a minimum of three months from the date of shipment when stored at 2-8° C.

To reconstitute product, equilibrate vial to room temperature. Resuspend in 1 ml sterile distilled water. Allow 30 minutes for material to go into solution. ****DO NOT AGITATE OR SWIRL****. If entire amount of material is not to be used immediately, transfer into appropriate aliquots and store at -20° C.

Stabilized product should be used within two weeks. ****DO NOT STORE IN FROST-FREE FREEZER. AVOID MULTIPLE FREEZE-THAW CYCLES****.

RESEARCH USE

For research use only, not for use in diagnostic procedures. Not for resale.



The Power to Question

SAFETY DATA SHEET

Santa Cruz Biotechnology, Inc.

Revision date 11-Jan-2018

Version 1.2

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier

Product Name Fibronectin
Product Code SC-29011

Recommended use of the chemical and restrictions on use

For research use only. Not intended for diagnostic or therapeutic use.

Details of the supplier of the safety data sheet

Santa Cruz Biotechnology, Inc.
10410 Finnell Street
Dallas, TX 75220
831.457.3800
800.457.3801
scbt@scbt.com

Emergency telephone number

Chemtrec
1.800.424.9300 (Within USA)
+1.703.527.3887 (Outside USA)

2. HAZARDS IDENTIFICATION

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification

Serious eye damage/eye irritation Category 2A
Specific target organ toxicity (single exposure) Category 3

Label elements

Signal word Warning
Hazard statements Causes serious eye irritation
May cause respiratory irritation
Symbols/Pictograms



Precautionary Statements - Prevention

Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves/protective clothing/eye protection/face protection

Precautionary Statements - Response

Avoid breathing dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
IF EXPOSED OR CONCERNED: Get medical advice/attention
IF IN EYES: Rinse cautiously with water for several minutes.
Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor/physician if you feel unwell
Store in a well-ventilated place. Keep container tightly closed
Store locked up
Precautionary Statements - Storage
Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)



Hazards not otherwise classified (HNOC)

Not applicable

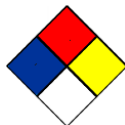
Other Information

Unknown acute toxicity

11% of the mixture consists of ingredient(s) of unknown toxicity.

NFPA

Health hazards -
 Flammability -
 Stability -
 Physical and chemical properties -



HMIS

Health hazards -
 Flammability -
 Physical hazards -
 Personal protection -

3. COMPOSITION/INFORMATION ON INGREDIENTS

CAS No 86088-83-7
 Molecular Weight No information available
 Formula No information available

Chemical Name	CAS No	Weight %	Oral LD50	Dermal LD50	Inhalation LC50
Sodium Chloride	7647-14-5	70 - 90	= 3 g/kg (Rat)	> 10 g/kg (Rabbit)	> 42 g/m ³ (Rat) 1 h
Fibronectin	86088-83-7	7 - 13	-	-	-
CAPS	1135-40-6	1 - 5	-	-	-
Calcium Chloride	-	1 - 5	-	-	-

4. FIRST AID MEASURES

First Aid Measures

General advice If symptoms persist, call a physician.
 Eye contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If symptoms persist, call a physician. Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Keep eye wide open while rinsing.
 Skin Contact Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician. Wash contaminated clothing before reuse. Wash off immediately with plenty of water. Immediate medical attention is not required. Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes.
 Inhalation Remove to fresh air If symptoms persist, call a physician Artificial respiration and/or oxygen may be necessary Call a physician Immediate medical attention is not required Move to fresh air in case of accidental inhalation of vapors
 Ingestion Immediate medical attention is not required. Rinse mouth. Drink plenty of water. Do NOT induce vomiting. Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Call a physician.
 Self-protection of the first aider Use personal protective equipment as required.

Most important symptoms and effects, both acute and delayed

Symptoms No information available.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Suitable Extinguishing Media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.



Unsuitable Extinguishing Media None.

Specific hazards arising from the chemical

Specific hazards arising from the chemical No information available.
Hazardous combustion products No information available.

Explosion data

Sensitivity to Mechanical Impact No information available.
Sensitivity to Static Discharge No information available.

Protective equipment and precautions for firefighters

Protective equipment and precautions for firefighters As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Use personal protective equipment as required. Avoid contact with eyes and skin. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

Environmental precautions

Environmental precautions Prevent entry into waterways, sewers, basements or confined areas. Do not flush into surface water or sanitary sewer system. Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. See Section 12 for additional Ecological Information.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.
Methods for cleaning up Use personal protective equipment as required. Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry. Take up mechanically, placing in appropriate containers for disposal. Avoid creating dust. Clean contaminated surface thoroughly. Soak up with inert absorbent material. Dam up. Pick up and transfer to properly labeled containers. Sweep up and shovel into suitable containers for disposal. After cleaning, flush away traces with water. Take precautionary measures against static discharges.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Ensure adequate ventilation, especially in confined areas. Use personal protective equipment as required. Use with local exhaust ventilation. Do not breathe dust/fume/gas/mist/vapors/spray.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep container tightly closed. Keep out of the reach of children. Keep containers tightly closed in a cool, well-ventilated place. Keep in properly labeled containers. Store at 4 °C.
Incompatible materials None known based on information supplied.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

**Appropriate engineering controls**

Engineering Controls	Showers Eyewash stations Ventilation systems
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Individual protection measures, such as personal protective equipment

Eye/face protection	Tight sealing safety goggles. Face protection shield.
Skin and Body Protection	Wear protective gloves and protective clothing.
Respiratory protection	If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.
General Hygiene Considerations	When using do not eat, drink or smoke. Wash contaminated clothing before reuse. Regular cleaning of equipment, work area and clothing is recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Solid
Appearance	lyophilized
Odor	No information available

Property

<u>Property</u>	<u>Values</u>
pH	No information available
Melting point/freezing point	No information available
Boiling point	No information available
Flash point	No information available
Density	No information available
Evaporation rate	No information available
Upper flammability limits	No information available
Lower flammability limit	No information available
Vapor pressure	No information available
Vapor density	No information available
Specific gravity	No information available
Water solubility	No information available
Solubility in other solvents	No information available
Partition coefficient	No information available
Autoignition temperature	No information available
Decomposition temperature	No information available
Kinematic viscosity	No information available
Explosive properties	No information available
Oxidizing properties	No information available

10. STABILITY AND REACTIVITY

Reactivity	Not applicable
Chemical stability	Stable under recommended storage conditions.
Possibility of Hazardous Reactions	None under normal processing.
Hazardous polymerization	No information available.
Conditions to avoid	Extremes of temperature and direct sunlight.
Incompatible materials	Strong oxidizing agents.
Hazardous Decomposition Products	None known based on information supplied.

11. TOXICOLOGICAL INFORMATION



Information on likely routes of exposure

Inhalation No data available.
 Eye contact No data available.
 Skin Contact No data available.
 Ingestion No data available.

Information on toxicological effects

Symptoms No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Chronic Toxicity Avoid repeated exposure.

Numerical measures of toxicity - Product Information

Unknown acute toxicity 11% of the mixture consists of ingredient(s) of unknown toxicity

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral) 3069 mg/kg
 ATEmix (dermal) 10230 mg/kg
 ATEmix (inhalation-vapor) 43 mg/l

12. ECOLOGICAL INFORMATION

Ecotoxicity May cause long lasting harmful effects to aquatic life

Chemical Name	Algae/aquatic plants	Fish	Toxicity to Microorganisms	Crustacea
Sodium Chloride 7647-14-5	-	5560 - 6080: 96 h Lepomis macrochirus mg/L LC50 flow-through 12946: 96 h Lepomis macrochirus mg/L LC50 static 4747 - 7824: 96 h Oncorhynchus mykiss mg/L LC50 flow-through 7050: 96 h Pimephales promelas mg/L LC50 semi-static 6420 - 6700: 96 h Pimephales promelas mg/L LC50 static 6020 - 7070: 96 h Pimephales promelas mg/L LC50 static	-	340.7 - 469.2: 48 h Daphnia magna mg/L EC50 Static 1000: 48 h Daphnia magna mg/L EC50

13% of the mixture consists of components(s) of unknown hazards to the aquatic environment.

Persistence and degradability No information available.
 Bioaccumulation No information available.
 Mobility No information available.

13. DISPOSAL CONSIDERATIONS

Disposal of wastes Disposal should be in accordance with applicable regional, national and local laws and regulations.
 Contaminated packaging Do not reuse container.
 Other Information Waste codes should be assigned by the user based on the application for which the product was used.

14. TRANSPORT INFORMATION



DOT Not regulated

IMDG Not regulated

IATA Not regulated

15. REGULATORY INFORMATION

International Inventories

All of the components in the product are on the following Inventory lists

No information available

Chemical Name	TSCA	DSL	NDSL	EINECS	ELINCS	ENCS	IECSC	KECL	PICCS	AICS
Sodium Chloride	X	X	-	X	-	X	X	X	X	X
Fibronectin	-	X	-	X	-	-	X	-	-	X
CAPS	X	-	X	X	-	-	-	-	-	-

X - Listed

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories

Acute health hazard	Yes
Chronic Health Hazard	No
Fire hazard	No
Sudden release of pressure hazard	No
Reactive hazard	No

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

US State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

This product does not contain any substances regulated by state right-to-know regulations

16. OTHER INFORMATION

Revision note

No information available

**Disclaimer**

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet