<table>
<thead>
<tr>
<th>PART/CATALOG #</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAS01</td>
<td>Lysis and F-actin stabilization buffer</td>
</tr>
<tr>
<td>PIC02</td>
<td>Protease inhibitor cocktail</td>
</tr>
<tr>
<td>BSA04</td>
<td>ATP</td>
</tr>
<tr>
<td>FAD02</td>
<td>F-actin depolymerizing buffer</td>
</tr>
<tr>
<td>FAE01</td>
<td>F-actin enhancing solution</td>
</tr>
<tr>
<td>AKL99</td>
<td>G-actin protein standard</td>
</tr>
<tr>
<td>AAN01</td>
<td>Anti-actin rabbit polyclonal antibody</td>
</tr>
<tr>
<td>SDS01</td>
<td>SDS sample buffer</td>
</tr>
<tr>
<td>DMSO</td>
<td>DMSO</td>
</tr>
</tbody>
</table>
MATERIAL SAFETY DATA SHEET

SECTION 1. CHEMICAL IDENTIFICATION

CATALOG/PRODUCT#: LAS01

NAME: LYSIS AND F-ACTIN STABILIZATION BUFFER

USE: LABORATORY CHEMICALS

MANUFACTURER/SUPPLIER:

CYTOSKELETON INC.
1830 S. Acoma St.
Denver, CO 80223
PHONE: 303-322-2254
FAX: 303-322-2257

24H EMERGENCY TOLL-FREE NUMBER: CALL INFOTRAC DAY OR NIGHT
WITHIN USA AND CANADA: 1-800-535-5053
OUTSIDE USA AND CANADA: +1 352-323-3500 (COLLECT CALLS ACCEPTED)

SECTION 2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

OSHA HAZARDS
TARGET ORGAN EFFECT, TOXIC BY INHALATION, TOXIC BY INGESTION, HIGHLY
TOXIC BY SKIN ABSORPTION, CORROSIVE

TARGET ORGANS
KIDNEY, LUNGS

GHS CLASSIFICATION
ACUTE TOXICITY, ORAL (CATEGORY 4)
ACUTE TOXICITY, INHALATION (CATEGORY 4)
ACUTE TOXICITY, DERMAL (CATEGORY 3)
SKIN IRRITATION (CATEGORY 2)
SERIOUS EYE DAMAGE (CATEGORY 1)
SKIN SENSITIZATION (CATEGORY 1)
ACUTE AQUATIC TOXICITY (CATEGORY 1)
CHRONIC AQUATIC TOXICITY (CATEGORY 1)

GHS LABEL ELEMENTS, INCLUDING PRECAUTIONARY STATEMENTS

PICTOGRAM:
HAZARD STATEMENTS
H302 + H332  HARMFUL IF SWALLOWED OR INHALED
H311  TOXIC IN CONTACT WITH SKIN
H315  CAUSES SKIN IRRITATION
H317  MAY CAUSE AN ALLERGIC SKIN REACTION
H318  CAUSES SERIOUS EYE DAMAGE
H410  VERY TOXIC TO AQUATIC LIFE WITH LONG LASTING EFFECTS

PRECAUTIONARY STATEMENTS
P273  AVOID RELEASE TO THE ENVIRONMENT
P280  WEAR PROTECTIVE GLOVES/EYE PROTECTION/FACE PROTECTION
P305+P351+P338  IF IN EYES: RINSE CAUTIOUSLY WITH WATER FOR SEVERAL MINUTES. REMOVE CONTACT LENSES IF PRESENT AND EASY TO DO. CONTINUE RINSING.
P312  CALL A POISON CENTER OR PHYSICIAN IF YOU FEEL UNWELL.
P501  DISPOSE OF CONTENTS/CONTAINER TO AN APPROVED WASTE DISPOSAL PLANT.

NFPA RATINGS (SCALE 0-4)
FIRE = 0
HEALTH = 3
REACTIVITY = 0

HMIS RATINGS
HEALTH = 3
FIRE = 0
REACTIVITY = 0
CHRONIC HEALTH HAZARD = *

POTENTIAL HEALTH EFFECTS
INHALATION  TOXIC IF INHALED. MATERIAL IS EXTREMELY DESTRUCTIVE TO THE TISSUE OF THE MUCOUS MEMBRANES AND UPPER RESPIRATORY TRACT.
SKIN  MAY BE FATAL IF ABSORBED THROUGH SKIN. CAUSES SKIN BURNS.
EYES  CAUSES EYE BURNS.
INGESTION  TOXIC IF SWALLOWED.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

OF THE FOLLOWING INGREDIENTS, GLYCEROL, 2-MERCAPTOETHANOL, TWEEN20 AND NONIDET P-40 ARE HAZARDOUS AT ABOVE 1% CONCENTRATIONS. ONLY GLYCEROL IS PRESENT AT >1% CONCENTRATION
IN THIS PRODUCT. THE PRESENCE OF THE OTHER REAGENTS DOES NOT CONSTITUTE A HAZARD SINCE THEY ARE PRESENT AT <1%.

GLYCEROL  
CAS#: 56-81-5  
EINECS#: 200-289-5  
5%

2-MERCAPTOETHANOL  
CAS#: 60-24-2  
EINECS#: 200-464-6  
0.1%

WATER  
CAS#: 7732-18-5  
EINECS#: 231-791-2  
90%

POTASSIUM CHLORIDE  
CAS#: 7447-40-7  
EINECS#: 231-211-8  
<1%

MAGNESIUM CHLORIDE  
CAS#: 7791-18-6  
EINECS#: UNLISTED  
<1%

TWEEN 20  
CAS#: 9005-64-5  
EINECS#: 500-018-3  
0.1%

ANTIFOAM C  
CAS#: UNLISTED  
EINECS#: UNLISTED  
<0.001%

NONIDET P-40  
CAS#: 9016-45-9  
EINECS: 500-024-6  
0.1%

PIPES (PIPERAZINE-N, N-BIS(2-ETHANESULFONIC ACID), SESQUISODIUM SALT)  
EINECS#: UNLISTED  
<1%

SECTION 4. FIRST-AID MEASURES

GENERAL ADVICE: MOVE OUT OF DANGEROUS AREA. CONSULT A PHYSICIAN. SHOW THIS SAFETY DATA SHEET TO THE DOCTOR IN ATTENDANCE.

AFTER INHALATION: SUPPLY FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. CONSULT PHYSICIAN.

AFTER SKIN CONTACT: IMMEDIATELY WASH SKIN WITH SOAP AND RINSE WITH COPIOUS AMOUNTS OF WATER. TAKE VICTIM IMMEDIATELY TO HOSPITAL. CONSULT PHYSICIAN.

AFTER EYE CONTACT: RINSE OPENED EYE FOR AT LEAST 15 MINUTES UNDER RUNNING WATER. CONTINUE RINSING EYES DURING TRANSPORT TO HOSPITAL. CONSULT PHYSICIAN.

AFTER SWALLOWING: DO NOT INDUCE VOMITING. WASH OUT MOUTH WITH WATER PROVIDED PERSON IS CONSCIOUS. CONSULT PHYSICIAN.

WASH CONTAMINATED CLOTHING BEFORE REUSE.

SECTION 5. FIREFIGHTING MEASURES

CONDITIONS OF FLAMMABILITY
NOT FLAMMABLE OR COMBUSTIBLE

EXTINGUISHING MEDIA

SUITABLE EXTINGUISHING AGENTS: USE WATER SPRAY, ALCOHOL-RESISTANT FOAM, DRY CHEMICAL OR CARBON DIOXIDE

ADVICE FOR FIREFIGHTERS

PROTECTIVE EQUIPMENT: MOUNT RESPIRATORY PROTECTIVE DEVICE
PREVENT CONTACT WITH SKIN AND EYES.
HAZARDOUS COMBUSTION PRODUCTS: HAZARDOUS DECOMPOSITION PRODUCTS FORMED UNDER FIRE CONDITIONS: CARBON OXIDES, NITROGEN OXIDES, SULPHUR OXIDES, HYDROGEN CHLORIDE GAS, SODIUM OXIDES

SECTION 6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES: WEAR PROTECTIVE CLOTHING, RESPIRATOR, CHEMICAL SAFETY GOGGLES, GLOVES. AVOID BREATHING VAPORS, MIST OR GAS. ENSURE ADEQUATE VENTILATION.
ENVIRONMENTAL PRECAUTIONS: DILUTE WITH PLENTY OF WATER. DO NOT ALLOW TO ENTER SEWERS/SURFACE OR GROUND WATER. PREVENT FURTHER LEAKAGE IF SAFE TO DO SO. DISCHARGE INTO THE ENVIRONMENT MUST BE AVOIDED.
METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP: SOAK UP WITH INERT ABSORBENT MATERIAL AND DISPOSE OF AS HAZARDOUS WASTE, KEEP IN SUITABLE, CLOSED CONTAINERS FOR DISPOSAL.
REFERENCE TO OTHER SECTIONS: SEE SECTION 8 FOR INFORMATION ON PERSONAL PROTECTION EQUIPMENT. SEE SECTION 13 FOR DISPOSAL INFORMATION.

SECTION 7. HANDLING AND STORAGE

HANDLING
PRECAUTIONS FOR SAFE HANDLING: AVOID CONTACT WITH SKIN AND EYES. AVOID INHALATION OF VAPOR OR MIST. ENSURE GOOD VENTILATION/EXHAUSTION AT THE WORKPLACE. WEAR APPROPRIATE PROTECTIVE CLOTHING (SEE SECTION 8). DO NOT RE-USE CONTAINER.

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES
STORAGE
REQUIREMENTS TO BE MET BY STOREROOMS AND RECEPTACLES: STORE AT 4°C. KEEP CONTAINER TIGHTLY CLOSED AND SEALED UNTIL READY FOR USE IN A DRY AND WELL-VENTILATED PLACE. CONTAINERS WHICH ARE OPENED MUST BE CAREFULLY RESEALED AND KEPT UPRIGHT TO PREVENT LEAKAGE.
FURTHER INFORMATION ABOUT STORAGE CONDITIONS: KEEP RECEPTACLE TIGHTLY SEALED.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

COMPONENTS WITH WORKPLACE CONTROL PARAMETERS

<table>
<thead>
<tr>
<th>COMPONENTS</th>
<th>CAS#</th>
<th>VALUE</th>
<th>CONTROL PARAMETERS</th>
<th>BASIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>GLYCEROL</td>
<td>56-81-5</td>
<td>TWA</td>
<td>10 mg/m3</td>
<td>USA. OSHA-TABLE Z-1 LIMITS FOR AIR CONTAMINANTS-1910.1000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>5 mg/m3</td>
<td>USA. OSHA-TABLE Z-1 LIMITS FOR AIR CONTAMINANTS-1910.1000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>10 mg/m3</td>
<td>USA. ACGIH THRESHOLD LIMIT VALUES (TLV)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>REMARKS:</td>
<td>UPPER RESPIRATORY TRACT IRRITATION</td>
<td>TWA</td>
<td>15 mg/m3</td>
<td>USA. OCCUPATIONAL EXPOSURE LIMITS (OSHA) - TABLE Z-1 LIMITS FOR AIR CONTAMINANTS</td>
</tr>
</tbody>
</table>
TWA 5 mg/m³ USA. OCCUPATIONAL EXPOSURE LIMITS (OSHA) – TABLE Z-1 LIMITS FOR AIR CONTAMINANTS

SEE APPENDIX D – SUBSTANCES WITH NO ESTABLISHED RELS

2-MERCAPTO-ETHANOL 60-24-2 TWA 0.2 ppm USA. WORKPLACE ENVIRONMENTAL EXPOSURE LEVELS (WEEL)

REMARKS: SKIN

PERSONAL PROTECTIVE EQUIPMENT
GENERAL PROTECTIVE AND HYGIENIC MEASURES
KEEP AWAY FROM FOODSTUFFS, BEVERAGES AND FEED
WASH HANDS BEFORE BREAKS AND AT THE END OF WORK
IMMEDIATELY REMOVE ALL SOILED AND CONTAMINATED CLOTHING
AVOID CONTACT WITH THE EYES AND SKIN

BREATHING EQUIPMENT
WHERE RISK ASSESSMENT SHOWS AIR-PURIFYING RESPIRATORS ARE APPROPRIATE, USE A FULL-FACE RESPIRATOR WITH MULTI-PURPOSE COMBINATION OR TYPE ABEK RESPIRATOR CARTRIDGES AS A BACK-UP TO ENGINEERING CONTROLS. IF THE RESPIRATOR IS THE SOLE MEANS OF PROTECTION, USE A FULL-FACE SUPPLIED AIR RESPIRATOR.

PROTECTION OF HANDS
PROTECTIVE GLOVES.
THE GLOVE MATERIAL HAS TO BE IMPERMEABLE AND RESISTANT TO THE PRODUCT/SUBSTANCE/PREPARATION. AS THE PRODUCT IS A PREPARATION OF SEVERAL SUBSTANCES, THE RESISTANCE OF THE GLOVE MATERIAL CANNOT BE CALCULATED IN ADVANCE AND THEREFORE HAS TO BE CHECKED PRIOR TO APPLICATION. NO RECOMMENDATION CAN BE GIVEN FOR THE GLOVE MATERIAL FOR THIS PRODUCT. SELECT GLOVE MATERIALS BASE ON PENETRATION TIMES, RATES OF DIFFUSION AND DEGRADATION OF MATERIAL.

MATERIAL OF GLOVES
THE SELECTION OF SUITABLE GLOVES DEPENDS NOT ONLY ON THE MATERIAL BUT ON QUALITY OF MATERIAL AND VARIES FROM MANUFACTURER TO MANUFACTURER.

PENETRATION TIME OF GLOVE MATERIAL
THE EXACT BREAK THROUGH TIME HAS TO BE FOUND OUT BY THE MANUFACTURER OF THE PROTECTIVE GLOVES AND HAS TO BE OBSERVED.

FOR THE PERMANENT CONTACT OF A MAXIMUM OF 15 MINUTES, GLOVES MADE OF THE FOLLOWING MATERIALS ARE SUITABLE:
NEOPRENE GLOVES

EYE PROTECTION: TIGHTLY SEALED GOGGLES OR SAFETY GLASSES WITH SIDESHIELDS. ALSO USE FACESHIELD (8 INCH MINIMUM).

BODY PROTECTION: PROTECTIVE WORK CLOTHING

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES
INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

GENERAL INFORMATION

FORM: LIQUID

SAFETY DATA
pH: NO DATA AVAILABLE
MELTING POINT/MELTING RANGE: NO DATA AVAILABLE
BOILING POINT/BOILING RANGE: NO DATA AVAILABLE
FLASH POINT: NO DATA AVAILABLE
IGNITION TEMPERATURE: NO DATA AVAILABLE
AUTOIGNITION TEMPERATURE: NO DATA AVAILABLE
LOWER EXPLOSION LIMIT: NO DATA AVAILABLE
UPPER EXPLOSION LIMIT: NO DATA AVAILABLE
VAPOR PRESSURE: NO DATA AVAILABLE
DENSITY: NO DATA AVAILABLE
SOLUBILITY IN/MISCIBILITY WITH WATER: NO DATA AVAILABLE
ODOR: UNPLEASANT

SECTION 10. STABILITY AND REACTIVITY

REACTIVITY

CHEMICAL STABILITY
STABLE UNDER RECOMMENDED STORAGE CONDITIONS.

THERMAL DECOMPOSITION/CONDITIONS TO BE AVOIDED: BASES, STRONG BASES, OXIDIZING AGENTS, STRONG REDUCING AGENTS, METALS

POSSIBILITY OF HAZARDOUS REACTIONS: NO DATA AVAILABLE

HAZARDOUS DECOMPOSITION PRODUCTS: HAZARDOUS DECOMPOSITION PRODUCTS FORMED UNDER FIRE CONDITIONS: CARBON OXIDES, NITROGEN OXIDES, SULPHUR OXIDES, HYDROGEN CHLORIDE GAS, SODIUM OXIDES

SECTION 11. TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

TO THE BEST OF OUR KNOWLEDGE, THE CHEMICAL, PHYSICAL AND TOXICOLOGICAL PROPERTIES OF THIS PRODUCT HAVE NOT BEEN THOROUGHLY INVESTIGATED.

ACUTE TOXICITY
LD50 ORAL: NO DATA AVAILABLE

INHALATION LC50
LC50 INHALATION: NO DATA AVAILABLE

DERMAL LD50
LD50 DERMAL: NO DATA AVAILABLE
SKIN IRRITATION AND CORROSION
NO DATA AVAILABLE

SERIOUS EYE DAMAGE/EYE IRRITATION
NO DATA AVAILABLE

RESPIRATORY OR SKIN SENSITIZATION
NO DATA AVAILABLE

GERM CELL MUTAGENICITY
NO DATA AVAILABLE

CARCINOGENICITY
NO COMPONENT OF THIS PRODUCT PRESENT AT LEVELS GREATER THAN OR EQUAL TO 0.1% IS IDENTIFIED AS PROBABLE, POSSIBLE OR CONFIRMED HUMAN CARCINOGEN BY IARC, ACGIH, NTP OR OSHA

REPRODUCTIVE TOXICITY
NO DATA AVAILABLE

TERATOGENICITY
NO DATA AVAILABLE

SPECIFIC TARGET ORGAN TOXICITY –SINGLE EXPOSURE (GLOBALLY HARMONIZED SYSTEM)
NO DATA AVAILABLE

SPECIFIC TARGET ORGAN TOXICITY –REPEATED EXPOSURE (GLOBALLY HARMONIZED SYSTEM)
NO DATA AVAILABLE

ASPIRATION HAZARD
NO DATA AVAILABLE

POTENTIAL HEALTH EFFECTS

INHALATION TOXIC IF INHALED. MATERIAL IS EXTREMELY DESTRUCTIVE TO THE TISSUE OF THE MUCOUS MEMBRANES AND UPPER RESPIRATORY TRACT.

SKIN MAY BE FATAL IF ABSORBED THROUGH SKIN. CAUSES SKIN BURNS.

EYES CAUSES EYE BURNS.
INGESTION  TOXIC IF SWALLOWED.

SIGNS AND SYMPTOMS OF EXPOSURE

BURNING SENSATION, COUGH, WHEEZING, LARYNGITIS, SHORTNESS OF BREATH, HEADACHE, WEAKNESS, NAUSEA, UNCONSCIOUSNESS

SYNERGISTIC EFFECTS

NO DATA AVAILABLE

SECTION 12. ECOLOGICAL INFORMATION

TOXICITY

NO DATA AVAILABLE

PERSISTENCE AND DEGRADABILITY

NO DATA AVAILABLE

BIOACCUMULATIVE POTENTIAL

NO DATA AVAILABLE

MOBILITY IN SOIL

NO DATA AVAILABLE

PBT AND vPvB ASSESSMENT

NO DATA AVAILABLE

OTHER ADVERSE EFFECTS

AN ENVIRONMENTAL HAZARD CANNOT BE EXCLUDED IN THE EVENT OF UNPROFESSIONAL HANDLING OR DISPOSAL. VERY TOXIC TO AQUATIC LIFE

SECTION 13. DISPOSAL CONSIDERATIONS

WASTE TREATMENT METHODS

CONTACT A LICENSED PROFESSIONAL WASTE DISPOSAL SERVICE TO DISPOSE OF THIS MATERIAL. DISPOSAL OF THIS PRODUCT, SOLUTIONS AND ANY BY-PRODUCTS SHOULD AT ALL TIMES COMPLY WITH THE REQUIREMENTS OF ENVIRONMENTAL PROTECTION AND WASTE DISPOSAL LEGISLATION AND ANY REGIONAL LOCAL AUTHORITY REQUIREMENTS. AVOID DISPERAL OF SPILLED MATERIAL AND RUNOFF AND CONTACT WITH SOIL, WATERWAYS, DRAINS AND SEwers. OBSERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS. DISSOLVE OR MIX THE MATERIAL WITH A COMBUSTIBLE SOLVENT AND BURN IN A CHEMICAL INCINERATOR EQUIPPED WITH AN AFTERBURNER AND SCRUBBER.
DISPOSE OF CONTAMINATED PACKAGING AS UNUSED PRODUCT

SECTION 14. TRANSPORT INFORMATION

THIS PRODUCT IS SUBJECT TO THE DE MINIMIS EXCEPTIONS FOR DANGEROUS GOODS/HAZARDOUS MATERIALS IN ACCORDANCE WITH THE FOLLOWING REGULATIONS: IATA 2.6.10, ADR 3.5.1.4, AND U.S. DOT 49 CFR 173.4b.

DOT CLASSIFICATION: THIS PRODUCT IS CONSIDERED TO BE NON-HAZARDOUS FOR TRANSPORT.

IATA-DGR CLASSIFICATION: THIS PRODUCT IS CONSIDERED TO BE NON-HAZARDOUS FOR TRANSPORT.

IMDG CLASSIFICATION: THIS PRODUCT IS CONSIDERED TO BE NON-HAZARDOUS FOR TRANSPORT.

SECTION 15. REGULATORY INFORMATION

OSHA HAZARDS
TARGET ORGAN EFFECT, TOXIC BY INHALATION, TOXIC BY INGESTION, HIGHLY TOXIC BY SKIN ABSORPTION, CORROSIVE

UNITED STATES REGULATORY INFORMATION

SARA (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986-USA)

NONE OF THE INGREDIENTS IS LISTED.

SARA (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986-USA)
SECTION 313:

THIS MATERIAL DOES NOT CONTAIN ANY CHEMICAL COMPONENTS WITH KNOWN CAS NUMBERS THAT EXCEED THE THRESHOLD (DE MINIMIS) REPORTING LEVELS ESTABLISHED BY SARA TITLE III, SECTION 313.

SARA 311/312 HAZARDS
ACUTE HEALTH HAZARD, CHRONIC HEALTH HAZARD

MA RIGHT TO KNOW COMPONENTS
GLYCEROL CAS#: 56-81-5
2-MERCAPTOETHANOL CAS#: 60-24-2

PA AND NJ RIGHT TO KNOW COMPONENTS
WATER CAS#: 7732-18-5
GLYCEROL CAS#: 56-81-5
2-MERCAPTOETHANOL CAS#: 60-24-2
TWEEN20 CAS#: 9005-64-5
CALIFORNIA PROP. 65 COMPONENTS
THIS PRODUCT DOES NOT CONTAIN ANY CHEMICALS KNOWN TO STATE OF
CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS, OR ANY OTHER
REPRODUCTIVE HARM.

SECTION 16. OTHER INFORMATION

THIS INFORMATION IS BASED ON OUR PRESENT KNOWLEDGE. HOWEVER, THIS
SHALL NOT CONSTITUTE A GUARANTEE FOR ANY SPECIFIC PRODUCT FEATURES
AND SHALL NOT ESTABLISH A LEGALLY VALID CONTRACTUAL RELATIONSHIP.
THE ABOVE INFORMATION IS BELIEVED TO BE CORRECT, BE ALL INCLUSIVE AND
SHALL BE USED ONLY AS A GUIDE. CYTOSKELETON INC. SHALL NOT BE HELD
LIABLE FOR ANY DAMAGE RESULTING FROM CONTACT WITH THE ABOVE
PRODUCT.

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MATERIAL SAFETY DATA SHEET

SECTION 1. CHEMICAL IDENTIFICATION

CATALOG/PRODUCT#: PIC02

NAME: PROTEASE INHIBITOR COCKTAIL

USE: LABORATORY CHEMICALS

MANUFACTURER/SUPPLIER:

CYTOSKELETON INC.
1830 S. Acoma St.
Denver, CO 80223
PHONE: 303-322-2254
FAX: 303-322-2257

24H EMERGENCY TOLL-FREE NUMBER: CALL INFOTRAC DAY OR NIGHT
WITHIN USA AND CANADA: 1-800-535-5053
OUTSIDE USA AND CANADA: +1 352-323-3500 (COLLECT CALLS ACCEPTED)

SECTION 2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

OSHA HAZARDS
IRRITANT

GHS CLASSIFICATION
SKIN IRRITATION (CATEGORY 2)
EYE IRRITATION (CATEGORY 2A)
SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (CATEGORY 3)
ACUTE TOXICITY, ORAL (CATEGORY 5)

PICTOGRAM

SIGNAL WORD: WARNING

HAZARD STATEMENTS
H303 MAY BE HARMFUL IF SWALLOWED
H315 CAUSES SKIN IRRITATION
H319 CAUSES SERIOUS EYE IRRITATION
H335 MAY CAUSE RESPIRATORY IRRITATION

PRECAUTIONARY STATEMENTS
P261 AVOID BREATHING DUST/FUME/GAS/MIST/VAPORS/Spray
P305 + P351 + P338 IF IN EYES: RINSE CAUTIOUSLY WITH WATER FOR SEVERAL
MINUTES. REMOVE CONTACT LENSES, IF PRESENT AND EASY TO DO. CONTINUE RINSING.
NFPA RATINGS (SCALE 0-4)
FIRE = 0
HEALTH = 2
REACTIVITY = 0

HMIS RATINGS
HEALTH = 2
FIRE = 0
REACTIVITY = 0

POTENTIAL HEALTH EFFECTS

INHALATION MAY BE HARMFUL IF INHALED. CAUSES RESPIRATORY TRACT IRRITATION.
SKIN MAY BE HARMFUL IF ABSORBED THROUGH SKIN. CAUSES SKIN IRRITATION.
EYES CAUSES EYE IRRITATION.
INGESTION MAY BE HARMFUL IF SWALLOWED.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

BENZAMIDINIUM CHLORIDE CAS#: 206752-36-5
EC#: 216-795-4
SYNONYMS: AMIDINOBENZENE HYDROCHLORIDE, BENZAMIDINIUM CHLORIDE, BENZENECARBOXIMIDAMIDE HYDROCHLORIDE
FORMULA: C₇H₈N₂ ClH H₂O
MOLECULAR WEIGHT: 156.61 g/mol

PEPSTATIN A CAS#: 26305-03-3
EC#: 247-600-0
FORMULA: C₁₄H₂₆N₅O₉C₁₄H₂₆N₅O₉
MOLECULAR WEIGHT: 685.89 g/mol

LEUPEPTIN HYDROCHLORIDE CAS#: 24125-16-4
EC#: NONE
FORMULA: C₂₀H₃₈N₆O₄ HCl
MOLECULAR WEIGHT: 463.01 g/mol

Nα–p-TOSYL-L-ARGININE METHYL ESTER HYDROCHLORIDE CAS#: 1784-03-8
EC#: 217-235-1
SYNONYMS: TAME HYDROCHLORIDE
FORMULA: C₁₄H₂₃N₄O₂ S HCl
MOLECULAR WEIGHT: 378.87 g/mol

SECTION 4. FIRST-AID MEASURES
GENERAL ADVICE: CONSULT A PHYSICIAN. SHOW THIS SAFETY DATASHEET TO THE PHYSICIAN. MOVE OUT OF DANGEROUS AREA.
AFTER INHALATION: SUPPLY FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. CONSULT A PHYSICIAN.
AFTER SKIN CONTACT: IMMEDIATELY WASH SKIN WITH SOAP AND RINSE WITH COPIOUS AMOUNTS OF WATER. CONSULT A PHYSICIAN.
AFTER EYE CONTACT: RINSE OPENED EYE FOR AT LEAST 15 MINUTES UNDER RUNNING WATER. CONSULT A PHYSICIAN
AFTER SWALLOWING: WASH OUT MOUTH WITH WATER PROVIDED PERSON IS CONSCIOUS. CONSULT A PHYSICIAN.
WASH CONTAMINATED CLOTHING BEFORE RE-USE.

SECTION 5. FIREFIGHTING MEASURES

CONDITIONS OF FLAMMABILITY: NOT FLAMMABLE OR COMBUSTIBLE

EXTINGUISHING MEDIA
SUITABLE EXTINGUISHING AGENTS: CARBON DIOXIDE, ALCOHOL-RESISTANT FOAM, DRY CHEMICAL OR WATER SPRAY.

ADVICE FOR FIREFIGHTERS
PROTECTIVE EQUIPMENT: WEAR SELF-CONTAINED BREATHING APPARATUS FOR FIRE FIGHTING IF NECESSARY
HAZARDOUS COMBUSTION PRODUCTS: HAZARDOUS DECOMPOSITION PRODUCTS FORMED UNDER FIRE CONDITIONS: CARBON OXIDES, NITROGEN OXIDES, HYDROGEN CHLORIDE GAS

SECTION 6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES: AVOID DUST FORMATION AND AVOID BREATHING VAPORS, MIST OR GAS. ENSURE ADEQUATE VENTILATION. WEAR PROTECTIVE CLOTHING, RESPIRATOR, CHEMICAL SAFETY GOGGLES, GLOVES.
ENVIRONMENTAL PRECAUTIONS: DILUTE WITH PLENTY OF WATER. DO NOT ALLOW TO ENTER SEWERS/SURFACE OR GROUND WATER.
METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP: IN POWDER FORM, SWEEP UP AND SHOVEL. AFTER RECONSTITUTION, ABSORB WITH LIQUID-BINDING MATERIAL (SAND, DIATOMITE, ACID BINDERS, UNIVERSAL BINDERS, SAWDUST). DISPOSE CONTAMINATED MATERIAL AS WASTE ACCORDING TO SECTION 13. ENSURE ADEQUATE VENTILATION.
REFERENCE TO OTHER SECTIONS: SEE SECTION 8 FOR INFORMATION ON PERSONAL PROTECTION EQUIPMENT. SEE SECTION 13 FOR DISPOSAL INFORMATION.

SECTION 7. HANDLING AND STORAGE

HANDLING
PRECAUTIONS FOR SAFE HANDLING: AVOID CONTACT WITH SKIN AND EYES. AVOID FORMATION OF DUST AND AEROSOLS. ENSURE GOOD
VENTILATION/EXHAUSTION AT THE WORKPLACE. WEAR APPROPRIATE PROTECTIVE CLOTHING (SEE SECTION 8). DO NOT RE-USE CONTAINER.

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

STORAGE REQUIREMENTS TO BE MET BY STOREROOMS AND RECEPTACLES:
STORE AT 2-8°C. KEEP CONTAINER TIGHTLY CLOSED AND SEALED UNTIL READY FOR USE. STORE DESICCATED. HYGROSCOPIC.
FURTHER INFORMATION ABOUT STORAGE CONDITIONS: KEEP RECEPTACLE TIGHTLY SEALED IN A DRY AND WELL-VENTILATED PLACE.

SECTION 8. EXPOSURE CONTROLS/PERSOAL PROTECTION

NO SUBSTANCES ARE PRESENT THAT REQUIRE MONITORING

PERSONAL PROTECTIVE EQUIPMENT

GENERAL PROTECTIVE AND HYGIENIC MEASURES
KEEP AWAY FROM FOODSTUFFS, BEVERAGES AND FEED
WASH HANDS BEFORE BREAKS AND AT THE END OF WORK
IMMEDIATELY REMOVE ALL SOILED AND CONTAMINATED CLOTHING
AVOID CONTACT WITH THE EYES AND SKIN. DO NOT BREATHE DUST.

BREATHING EQUIPMENT
FOR SHORT TERM FILTER DEVICE TO PROTECT FROM NUISANCE LEVELS OF DUST, USE TYPE N95 OR TYPE P1 DUST MASKS. FOR HIGHER LEVEL PROTECTION, USE TYPE OV/AG/P99 OR ABEK-P2 RESPIRATOR CARTRIDGES.

PROTECTION OF HANDS

PROTECTIVE GLOVES.
THE GLOVE MATERIAL HAS TO BE IMPERMEABLE AND RESISTANT TO THE PRODUCT/SUBSTANCE/PREPARATION. THE RESISTANCE OF THE GLOVE MATERIAL CANNOT BE CALCULATED IN ADVANCE AND THEREFORE HAS TO BE CHECKED PRIOR TO APPLICATION. NO RECOMMENDATION CAN BE GIVEN FOR THE GLOVE MATERIAL FOR THIS PRODUCT. SELECT GLOVE MATERIALS BASE ON PENETRATION TIMES, RATES OF DIFFUSION AND DEGRADATION OF MATERIAL.

MATERIAL OF GLOVES
THE SELECTION OF SUITABLE GLOVES DEPENDS NOT ONLY ON THE MATERIAL BUT ON QUALITY OF MATERIAL AND VARIES FROM MANUFACTURER TO MANUFACTURER.

PENETRATION TIME OF GLOVE MATERIAL
THE EXACT BREAK THROUGH TIME HAS TO BE FOUND OUT BY THE MANUFACTURER OF THE PROTECTIVE GLOVES AND HAS TO BE OBSERVED.

FOR THE PERMANENT CONTACT OF A MAXIMUM OF 15 MINUTES, GLOVES MADE OF THE FOLLOWING MATERIALS ARE SUITABLE:
NEOPRENE GLOVES

EYE PROTECTION: TIGHTLY SEALED GOGGLES OR SAFETY GLASSES WITH SIDE-SHIELDS
BODY PROTECTION: PROTECTIVE WORK CLOTHING

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

GENERAL INFORMATION

FORM: SOLID (LYOPHILIZED POWDER)
COLOR: OFF-WHITE
pH: NO DATA AVAILABLE
MELTING POINT/MELTING RANGE: NO DATA AVAILABLE
BOILING POINT/BOILING RANGE: NO DATA AVAILABLE
FLASH POINT: NO DATA AVAILABLE
IGNITION TEMPERATURE: NO DATA AVAILABLE
LOWER EXPLOSIVE LIMIT: NO DATA AVAILABLE
UPPER EXPLOSIVE LIMIT: NO DATA AVAILABLE
VAPOR PRESSURE: NO DATA AVAILABLE
DENSITY: NO DATA AVAILABLE
SOLUBILITY IN/MISCIBILITY WITH WATER: NO DATA AVAILABLE

SECTION 10. STABILITY AND REACTIVITY

REACTIVITY

CHEMICAL STABILITY: STABLE UNDER RECOMMENDED STORAGE CONDITIONS.

THERMAL DECOMPOSITION/CONDITIONS TO BE AVOIDED: AVOID ALKALINES, STRONG ACIDS AND STRONG BASES, STRONG OXIDIZING AGENTS

POSSIBILITY OF HAZARDOUS REACTIONS: NO DATA AVAILABLE

HAZARDOUS DECOMPOSITION PRODUCTS: HAZARDOUS DECOMPOSITION PRODUCTS FORMED UNDER FIRE CONDITIONS: CARBON OXIDES, NITROGEN OXIDES, SULPHUR OXIDES, HYDROGEN CHLORIDE GAS

SECTION 11. TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

TO THE BEST OF OUR KNOWLEDGE, THE CHEMICAL, PHYSICAL AND TOXICOLOGICAL PROPERTIES OF THIS PRODUCT HAVE NOT BEEN THOROUGHLY INVESTIGATED.

ACUTE TOXICITY:
LD50 ORAL: NO DATA AVAILABLE

INHALATION LC50 AND DERMAL LD50:
NO DATA AVAILABLE
SKIN CORROSION/IRRITATION:
NO DATA AVAILABLE

SERIOUS EYE DAMAGE/EYE IRRITATION:
NO DATA AVAILABLE

RESPIRATORY OR SKIN SENSITIZATION:
NO DATA AVAILABLE

GERM CELL MUTAGENICITY:
NO DATA AVAILABLE

CARCINOGENICITY
NO COMPONENT OF THIS PRODUCT PRESENT AT LEVELS GREATER THAN OR EQUAL TO 0.1% IS IDENTIFIED AS PROBABLE, POSSIBLE OR CONFIRMED HUMAN CARCINOGEN BY IARC, ACGIH, NTP OR OSHA

REPRODUCTIVE TOXICITY:
NO DATA AVAILABLE

SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (GLOBALLY HARMONIZED SYSTEM):
INHALATION - MAY CAUSE RESPIRATORY IRRITATION

SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE (GLOBALLY HARMONIZED SYSTEM):
NO DATA AVAILABLE

ASPIRATION HAZARD
NO DATA AVAILABLE

POTENTIAL HEALTH EFFECTS

INHALATION    MAY BE HARMFUL IF INHALED. CAUSES RESPIRATORY TRACT IRRITATION.
SKIN          MAY BE HARMFUL IF ABSORBED THROUGH SKIN. CAUSES SKIN IRRITATION.
EYES          CAUSES EYE IRRITATION.
INGESTION     MAY BE HARMFUL IF SWALLOWED.

SECTION 12. ECOLOGICAL INFORMATION

TOXICITY
NO DATA AVAILABLE

PERSISTENCE AND DEGRADABILITY
NO DATA AVAILABLE

BIOACCUMULATIVE POTENTIAL
NO DATA AVAILABLE
MOBILITY IN SOIL
NO DATA AVAILABLE

PBT AND vPvB ASSESSMENT
NO DATA AVAILABLE

SECTION 13. DISPOSAL CONSIDERATIONS

WASTE TREATMENT METHODS
CONTACT A LICENSED PROFESSIONAL WASTE DISPOSAL SERVICE TO DISPOSE OF THIS MATERIAL. DISPOSAL OF THIS PRODUCT, SOLUTIONS AND ANY BY-PRODUCTS SHOULD AT ALL TIMES COMPLY WITH THE REQUIREMENTS OF ENVIRONMENTAL PROTECTION AND WASTE DISPOSAL LEGISLATION AND ANY REGIONAL LOCAL AUTHORITY REQUIREMENTS. AVOID DISPERSAL OF SPILLED MATERIAL AND RUNOFF AND CONTACT WITH SOIL, WATERWAYS, DRAINS AND SEWERS. OBSERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.

DISPOSE OF CONTAMINATED PACKAGING AS UNUSED PRODUCT

SECTION 14. TRANSPORT INFORMATION

DOT CLASSIFICATION: THIS PRODUCT IS CONSIDERED TO BE NON-HAZARDOUS FOR TRANSPORT.

IMDG CLASSIFICATION: THIS PRODUCT IS CONSIDERED TO BE NON-HAZARDOUS FOR TRANSPORT.

IATA-DGR CLASSIFICATION: THIS PRODUCT IS CONSIDERED TO BE NON-HAZARDOUS FOR TRANSPORT.

SECTION 15. REGULATORY INFORMATION

OSHA HAZARDS
IRRITANT

DSL STATUS
THIS PRODUCT CONTAINS THE FOLLOWING COMPONENTS THAT ARE NOT ON THE CANADIAN DSL NOR NDSL LISTS

LEUPEPTIN HYDROCHLORIDE CAS #: 24125-16-4


NONE OF THE INGREDIENTS ARE LISTED.

SARA 313 COMPONENTS:
THIS MATERIAL DOES NOT CONTAIN ANY CHEMICAL COMPONENTS WITH KNOWN CAS NUMBERS THAT EXCEED THE THRESHOLD (DE MINIMIS) REPORTING LEVELS ESTABLISHED BY SARA, TITLE III, SECTION 313.

SARA 311/312 HAZARDS

ACUTE HEALTH HAZARD

PA AND NJ RIGHT TO KNOW COMPONENTS

BENZAMIDINIMUM CHLORIDE CAS #: 206752-36-5
PEPSTATIN A CAS #: 26305-03-3
LEUPEPTIN HYDROCHLORIDE CAS #: 24125-16-4
Na\textsuperscript{+}p-TOSYL-L-ARGININE METHYL ESTER HYDROCHLORIDE CAS#: 1784-03-8

CALIFORNIA PROP. 65 COMPONENTS

THIS PRODUCT DOES NOT CONTAIN ANY CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR ANY OTHER REPRODUCTIVE HARM.

SECTION 16. OTHER INFORMATION

THIS INFORMATION IS BASED ON OUR PRESENT KNOWLEDGE. HOWEVER, THIS SHALL NOT CONSTITUTE A GUARANTEE FOR ANY SPECIFIC PRODUCT FEATURES AND SHALL NOT ESTABLISH A LEGALLY VALID CONTRACTUAL RELATIONSHIP. THE ABOVE INFORMATION IS BELIEVED TO BE CORRECT, BE ALL INCLUSIVE AND SHALL BE USED ONLY AS A GUIDE. CYTOSKELETON INC. SHALL NOT BE HELD LIABLE FOR ANY DAMAGE RESULTING FROM CONTACT WITH THE ABOVE PRODUCT.

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MATERIAL SAFETY DATA SHEET

SECTION 1. CHEMICAL IDENTIFICATION

CATALOG/PRODUCT#: BSA04

NAME: ADENOSINE 5'-TRIPHOSPHATE DISODIUM SALT (ATP)

USE: LABORATORY CHEMICALS

MANUFACTURER/SUPPLIER:

CYTOSKELETON INC.
1830 S. Acoma St.
Denver, CO 80223
PHONE: 303-322-2254
FAX: 303-322-2257

24H EMERGENCY TOLL-FREE NUMBER: CALL INFOTRAC DAY OR NIGHT
WITHIN USA AND CANADA: 1-800-535-5053
OUTSIDE USA AND CANADA: +1 352-323-3500 (COLLECT CALLS ACCEPTED)

SECTION 2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

OSHA HAZARDS
TOXIC BY INGESTION, IRRITANT

NFPA RATINGS (SCALE 0-4)
FIRE = 0
HEALTH = 2
REACTIVITY = 0

HMIS RATINGS
HEALTH = 2
FIRE = 0
REACTIVITY = 0

GHS CLASSIFICATION:

SIGNAL WORD: DANGER

HAZARD PICTOGRAMS:

ACUTE TOXICITY, CATEGORY 4
SERIOUS EYE DAMAGE, CATEGORY 1
CHRONIC AQUATIC TOXICITY, CATEGORY 3
HEALTH HAZARD STATEMENTS:

H302: HARMFUL IF SWALLOWED
H315: CAUSES SKIN IRRITATION
H318: CAUSES SERIOUS EYE DAMAGE
H319: CAUSES SERIOUS EYE IRRITATION
H335: MAY CAUSE RESPIRATORY IRRITATION
H412: HARMFUL TO AQUATIC LIFE WITH LONG-LASTING EFFECTS

PRECAUTIONARY STATEMENTS:

P261: AVOID BREATHING DUST/FUMES/GAS/MIST/VAPORS/SPRAY
P264: WASH SKIN THOROUGHLY AFTER HANDLING
P270: DO NOT EAT, DRINK OR SMOKE WHEN USING THIS PRODUCT
P280: WEAR PROTECTIVE GLOVES/EYE PROTECTION/FACE PROTECTION
P301 + P312: IF SWALLOWED, CALL A POISON CENTER OR PHYSICIAN IF YOU FEEL UNWELL.
P305+P351+P338: IF IN EYES: RINSE CAUTIOUSLY WITH WATER FOR SEVERAL MINUTES. REMOVE CONTACT LENSES IF PRESENT AND EASY TO DO. CONTINUE RINSING.

POTENTIAL HEALTH EFFECTS

INHALATION MAY BE HARMFUL IF INHALED. CAUSES RESPIRATORY IRRITATION.
SKIN MAY BE HARMFUL IF ABSORBED THROUGH SKIN. CAUSES SKIN IRRITATION.
EYES CAUSES EYE IRRITATION.
INGESTION TOXIC IF SWALLOWED.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

COMPRISED OF:

DIGUANIDINIUM CARBONATE CAS#: 593-85-1
EINECS#: 209-813-7

ADENOSINE 5'-TRIPHOSPHATE DISODIUM SALT (ATP) CAS#: 42373-41-1
EINECS#: UNLISTED

SECTION 4. FIRST-AID MEASURES

AFTER INHALATION: SUPPLY FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. CONSULT PHYSICIAN.
AFTER SKIN CONTACT: IMMEDIATELY WASH SKIN WITH SOAP AND RINSE WITH COPIOUS AMOUNTS OF WATER. CONSULT PHYSICIAN.
AFTER EYE CONTACT: RINSE OPENED EYE FOR AT LEAST 15 MINUTES UNDER RUNNING WATER. CONSULT PHYSICIAN.
AFTER SWALLOWING: WASH OUT MOUTH WITH WATER PROVIDED PERSON IS CONSCIOUS. CONSULT PHYSICIAN.

WASH CONTAMINATED CLOTHING BEFORE REUSE.

SECTION 5. FIREFIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT: NO DATA AVAILABLE
IGNITION TEMPERATURE: NO DATA AVAILABLE

EXTINGUISHING MEDIA

SUITEABLE EXTINGUISHING AGENTS: CARBON DIOXIDE, EXTINGUISHING POWDER, ALCOHOL-RESISTENT FOAM OR WATER SPRAY.

ADVICE FOR FIREFIGHTERS

PROTECTIVE EQUIPMENT: MOUNT RESPIRATORY PROTECTIVE DEVICE PREVENT CONTACT WITH SKIN AND EYES

SECTION 6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES: WEAR PROTECTIVE CLOTHING, RESPIRATOR, CHEMICAL SAFETY GOGGLES, GLOVES. AVOID DUST FORMATION. AVOID BREATHING VAPORS, MIST OR GAS.

ENVIRONMENTAL PRECAUTIONS: DILUTE WITH PLENTY OF WATER. DO NOT ALLOW TO ENTER SEWERS/SURFACE OR GROUND WATER.

METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP: IN LYOPHILIZED FORM, PICK UP WITHOUT GENERATING DUST. IN RECONSTITUTED FORM, ABSORB WITH LIQUID-BINDING MATERIAL (SAND, DIATOMITE, ACID BINDERS, UNIVERSAL BINDERS, SAWDUST). DISPOSE CONTAMINATED MATERIAL AS WASTE ACCORDING TO SECTION 13. ENSURE ADEQUATE VENTILATION.

REFERENCE TO OTHER SECTIONS: SEE SECTION 8 FOR INFORMATION ON PERSONAL PROTECTION EQUIPMENT. SEE SECTION 13 FOR DISPOSAL INFORMATION.

SECTION 7. HANDLING AND STORAGE

HANDLING

PRECAUTIONS FOR SAFE HANDLING: ENSURE GOOD VENTILATION/EXHAUSTION AT THE WORKPLACE. AVOID FORMATION OF DUST AND AEROSOLS. WEAR APPROPRIATE PROTECTIVE CLOTHING (SEE SECTION 8). DO NOT RE-USE CONTAINER.

INFORMATION ABOUT PROTECTION AGAINST EXPLOSIONS AND FIRES: NO DATA AVAILABLE

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES STORAGE
REQUIREMENTS TO BE MET BY STOREROOMS AND RECEPTACLES: STORE AT 2-8°C IN LYOPHILIZED FORM. KEEP CONTAINER TIGHTLY CLOSED AND SEALED UNTIL READY FOR USE. STORE DESICCATED. FURTHER INFORMATION ABOUT STORAGE CONDITIONS: KEEP RECEPTACLE TIGHTLY SEALED.

SECTION 8. EX posure Controls/Personal Protection

CONTAINS NO SUBSTANCES WITH OCCUPATIONAL EXPOSURE LIMIT VALUES

PERSONAL PROTECTIVE EQUIPMENT

GENERAL PROTECTIVE AND HYGIENIC MEASURES
KEEP AWAY FROM FOODSTUFFS, BEVERAGES AND FEED
WASH HANDS BEFORE BREAKS AND AT THE END OF WORK
IMMEDIATELY REMOVE ALL SOILED AND CONTAMINATED CLOTHING
AVOID CONTACT WITH THE EYES AND SKIN

BREATHING EQUIPMENT
SHORT TERM FILTER DEVICE: USE TYPE N95 OR TYPE P1 DUST MASKS
DO NOT BREATHE. USE MECHANICAL EXHAUST SYSTEM

PROTECTION OF HANDS

PROTECTIVE GLOVES.
THE GLOVE MATERIAL HAS TO BE IMPERMEABLE AND RESISTANT TO THE PRODUCT/SUBSTANCE/PREPARATION. AS THE PRODUCT IS A PREPARATION OF SEVERAL SUBSTANCES, THE RESISTANCE OF THE GLOVE MATERIAL CANNOT BE CALCULATED IN ADVANCE AND THEREFORE HAS TO BE CHECKED PRIOR TO APPLICATION. NO RECOMMENDATION CAN BE GIVEN FOR THE GLOVE MATERIAL FOR THIS PRODUCT. SELECT GLOVE MATERIALS BASE ON PENETRATION TIMES, RATES OF DIFFUSION AND DEGRADATION OF MATERIAL.

MATERIAL OF GLOVES
THE SELECTION OF SUITABLE GLOVES DEPENDS NOT ONLY ON THE MATERIAL BUT ON QUALITY OF MATERIAL AND VARIES FROM MANUFACTURER TO MANUFACTURER.

PENETRATION TIME OF GLOVE MATERIAL
THE EXACT BREAK TROUGH TIME HAS TO BE FOUND OUT BY THE MANUFACTURER OF THE PROTECTIVE GLOVES AND HAS TO BE OBSERVED.

FOR THE PERMANENT CONTACT OF A MAXIMUM OF 15 MINUTES, GLOVES MADE OF THE FOLLOWING MATERIALS ARE SUITABLE:
NEOPRENE GLOVES

EYE PROTECTION: TIGHTLY SEALED GOGGLES

BODY PROTECTION: PROTECTIVE WORK CLOTHING

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES
GENERAL INFORMATION
FORM: SOLID (LYOPHILIZED POWDER)
CHANGE IN CONDITION
MELTING POINT/MELTING RANGE: NO DATA AVAILABLE
BOILING POINT/BOILING RANGE: NO DATA AVAILABLE
FLASH POINT: NO DATA AVAILABLE
SELF-IGNITING: NO DATA AVAILABLE
DANGER OF EXPLOSION: NO DATA AVAILABLE
DENSITY: NO DATA AVAILABLE
SOLUBILITY IN/MISCIBILITY WITH WATER: FULLY MISCIBLE

SECTION 10. STABILITY AND REACTIVITY

REACTIVITY
CHEMICAL STABILITY
STABLE UNDER RECOMMENDED STORAGE CONDITIONS.

THERMAL DECOMPOSITION/CONDITIONS TO BE AVOIDED: STRONG OXIDIZING AGENTS AND STRONG ACIDS

POSSIBILITY OF HAZARDOUS REACTIONS: NO DATA AVAILABLE

HAZARDOUS DECOMPOSITION PRODUCTS: HAZARDOUS DECOMPOSITION PRODUCTS FORMED UNDER FIRE CONDITIONS: NITROGEN OXIDES, CARBON OXIDES

SECTION 11. TOXICOLOGICAL INFORMATION
INFORMATION ON TOXICOLOGICAL EFFECTS
TO THE BEST OF OUR KNOWLEDGE, THE CHEMICAL, PHYSICAL AND TOXICOLOGICAL PROPERTIES OF THIS PRODUCT HAVE NOT BEEN THOROUGHLY INVESTIGATED.

ACUTE TOXICITY
LD50 ORAL –MOUSE- 350 mg/kg

IRRITATION AND CORROSION
EYES –RABBIT- MODERATE EYE IRRITATION -24 h

SENSITIZATION
NO DATA AVAILABLE
NO COMPONENT OF THIS PRODUCT PRESENT AT LEVELS GREATER THAN OR EQUAL TO 0.1% IS IDENTIFIED AS PROBABLE, POSSIBLE OR CONFIRMED HUMAN CARCINOGEN BY IARC, ACGIH, NTP OR OSHA

POTENTIAL HEALTH EFFECTS
INHALATION MAY BE HARMFUL IF INHALED. CAUSES RESPIRATORY IRRITATION.
SKIN MAY BE HARMFUL IF ABSORBED THROUGH SKIN. CAUSES SKIN IRRITATION.
EYES CAUSES EYE IRRITATION.
INGESTION TOXIC IF SWALLOWED.

SECTION 12. ECOLOGICAL INFORMATION
NO DATA AVAILABLE

SECTION 13. DISPOSAL CONSIDERATIONS
WASTE TREATMENT METHODS
CONTACT A LICENSED PROFESSIONAL WASTE DISPOSAL SERVICE TO DISPOSE OF THIS MATERIAL. DISPOSAL OF THIS PRODUCT, SOLUTIONS AND ANY BY-PRODUCTS SHOULD AT ALL TIMES COMPLY WITH THE REQUIREMENTS OF ENVIRONMENTAL PROTECTION AND WASTE DISPOSAL LEGISLATION AND ANY REGIONAL LOCAL AUTHORITY REQUIREMENTS. AVOID DISPERAL OF SPILLED MATERIAL AND RUNOFF AND CONTACT WITH SOIL, WATERWAYS, DRAINS AND SEWERS. OBSERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.

DISPOSE OF CONTAMINATED PACKAGING AS UNUSED PRODUCT

SECTION 14. TRANSPORT INFORMATION
DOT CLASSIFICATION: THIS PRODUCT IS CONSIDERED TO BE NON-HAZARDOUS FOR TRANSPORT.

IATA-DGR CLASSIFICATION: THIS PRODUCT IS CONSIDERED TO BE NON-HAZARDOUS FOR TRANSPORT.

IMDG CLASSIFICATION: THIS PRODUCT IS CONSIDERED TO BE NON-HAZARDOUS FOR TRANSPORT.

SECTION 15. REGULATORY INFORMATION
OSHA HAZARDS
TOXIC BY INGESTION, IRRITANT

DSL STATUS
ALL COMPONENTS OF THIS PRODUCT ARE ON THE CANADIAN DSL LIST.

UNITED STATES REGULATORY INFORMATION
SARA (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986-USA)
NONE OF THE INGREDIENTS IS LISTED.

SARA (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986-USA)
SECTION 313:
THIS MATERIAL DOES NOT CONTAIN ANY CHEMICAL COMPONENTS WITH KNOWN CAS NUMBERS THAT EXCEED THE THRESHOLD (DE MINIMIS) REPORTING LEVELS ESTABLISHED BY SARA TITLE III, SECTION 313.

SARA 311/312 HAZARDS
ACUTE HEALTH HAZARDS

PA AND NJ RIGHT TO KNOW COMPONENTS
DIGUANIDINIUM CARBONATE CAS #: 593-85-1
ADENOSINE 5’-TRIPHOSPHATE DISODIUM SALT CAS#: 42373-41-1

CALIFORNIA PROP. 65 COMPONENTS
THIS PRODUCT DOES NOT CONTAIN ANY CHEMICALS KNOWN TO STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS, OR ANY OTHER REPRODUCTIVE HARM.

CANADA REGULATORY INFORMATION
WHMIS CLASSIFICATION: NOT CONTROLLED UNDER WHMIS.

EU REGULATORY INFORMATION
THIS PRODUCT IS NOT CLASSIFIED ACCORDING TO EU LEGISLATION.

SECTION 16. OTHER INFORMATION
THIS INFORMATION IS BASED ON OUR PRESENT KNOWLEDGE. HOWEVER, THIS SHALL NOT CONSTITUTE A GUARANTEE FOR ANY SPECIFIC PRODUCT FEATURES AND SHALL NOT ESTABLISH A LEGALLY VALID CONTRACTUAL RELATIONSHIP. THE ABOVE INFORMATION IS BELIEVED TO BE CORRECT, BE ALL INCLUSIVE AND SHALL BE USED ONLY AS A GUIDE. CYTOSKELETON INC. SHALL NOT BE HELD LIABLE FOR ANY DAMAGE RESULTING FROM CONTACT WITH THE ABOVE PRODUCT.

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SECTION 1. CHEMICAL IDENTIFICATION

CATALOG/PRODUCT#: FAD02

NAME: F-ACTIN DEPOLYMERIZING BUFFER (UREA)

USE: LABORATORY CHEMICALS

MANUFACTURER/SUPPLIER:

CYTOSKELETON INC.
1830 S. Acoma St.
Denver, CO 80223
PHONE: 303-322-2254
FAX: 303-322-2257

24H EMERGENCY TOLL-FREE NUMBER: CALL INFOTRAC DAY OR NIGHT
WITHIN USA AND CANADA: 1-800-535-5053
OUTSIDE USA AND CANADA: +1 352-323-3500 (COLLECT CALLS ACCEPTED)

SECTION 2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

OSHA HAZARDS
THIS PRODUCT IS NOT CONSIDERED HAZARDOUS

GHS CLASSIFICATION
THIS PRODUCT IS NOT CONSIDERED HAZARDOUS

GHS LABEL ELEMENTS, INCLUDING PRECAUTIONARY STATEMENTS

PICTOGRAM  NONE
SIGNAL WORD  NONE

HAZARD STATEMENTS
NONE

PRECAUTIONARY STATEMENTS
NONE

NOT EXPECTED TO PRODUCE SIGNIFICANT ADVERSE HEALTH EFFECTS WHEN THE RECOMMENDED INSTRUCTIONS FOR USE ARE FOLLOWED.

NO KNOWN SIGNIFICANT EFFECTS OR CRITICAL HAZARDS. HANDLING AND/OR PROCESSING OF THIS MATERIAL MAY GENERATE A DUST WHICH CAN CAUSE
MECHANICAL IRRITATION OF THE EYES, SKIN, NOSE AND THROAT. AVOID PROLONGED CONTACT WITH EYES, SKIN AND CLOTHING.

NFPA RATINGS (SCALE 0-4)
FIRE = 0
HEALTH = 0
REACTIVITY = 0

HMIS RATINGS
HEALTH = 0
FIRE = 0
REACTIVITY = 0

POTENTIAL HEALTH EFFECTS

INHALATION MAY BE HARMFUL IF INHALED. MAY CAUSE RESPIRATORY IRRITATION.
SKIN MAY BE HARMFUL IF ABSORBED THROUGH SKIN. MAY CAUSE SKIN IRRITATION.
EYES MAY CAUSE EYE IRRITATION.
INGESTION MAY BE HARMFUL IF SWALLOWED.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

FORMULA: CH₄N₂O
MOLECULAR WEIGHT: 60.06 g/mol

UREA
CAS #: 57-13-6
EC #: 200-315-5

SECTION 4. FIRST-AID MEASURES

AFTER INHALATION: SUPPLY FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION.
AFTER SKIN CONTACT: IMMEDIATELY WASH SKIN WITH SOAP AND RINSE WITH COPIOUS AMOUNTS OF WATER
AFTER EYE CONTACT: RINSE OPENED EYE FOR AT LEAST 15 MINUTES UNDER RUNNING WATER.
AFTER SWALLOWING: WASH OUT MOUTH WITH WATER PROVIDED PERSON IS CONSCIOUS.

WASH CONTAMINATED CLOTHING BEFORE RE-USE.

SECTION 5. FIREFIGHTING MEASURES

EXTINGUISHING MEDIA

SUITEABLE EXTINGUISHING AGENTS: CARBON DIOXIDE, ALCOHOL-RESISTANT FOAM, DRY CHEMICAL OR WATER SPRAY.

ADVICE FOR FIREFIGHTERS

PROTECTIVE EQUIPMENT: WEAR SELF-CONTAINED BREATHING APPARATUS FOR FIRE FIGHTING IF NECESSARY
SECTION 6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES: AVOID DUST FORMATION AND AVOID BREATHING VAPORS, MIST OR GAS. WEAR PROTECTIVE CLOTHING, RESPIRATOR, CHEMICAL SAFETY GOGGLES, GLOVES.
ENVIRONMENTAL PRECAUTIONS: DILUTE WITH PLENTY OF WATER. DO NOT ALLOW TO ENTER SEWERS/SURFACE OR GROUND WATER.
METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP: IN POWDER FORM, SWEEP UP AND SHOVEL. AFTER RECONSTITUTION, ABSORB WITH LIQUID-BINDING MATERIAL (SAND, DIATOMITE, ACID BINDERS, UNIVERSAL BINDERS, SAWDUST). DISPOSE CONTAMINATED MATERIAL AS WASTE ACCORDING TO SECTION 13. ENSURE ADEQUATE VENTILATION.
REFERENCE TO OTHER SECTIONS: SEE SECTION 8 FOR INFORMATION ON PERSONAL PROTECTION EQUIPMENT. SEE SECTION 13 FOR DISPOSAL INFORMATION.

SECTION 7. HANDLING AND STORAGE

HANDLING
PRECAUTIONS FOR SAFE HANDLING: ENSURE GOOD VENTILATION/EXHAUSTION AT THE WORKPLACE. WEAR APPROPRIATE PROTECTIVE CLOTHING (SEE SECTION 8). DO NOT RE-USE CONTAINER.
INFORMATION ABOUT PROTECTION AGAINST EXPLOSIONS AND FIRES: NOT IGNITABLE

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES
STORAGE
REQUIREMENTS TO BE MET BY STOREROOMS AND RECEPACLES: STORE AT 2-8°C. KEEP CONTAINER TIGHTLY CLOSED AND SEALED UNTIL READY FOR USE. STORE DESICCATED.
FURTHER INFORMATION ABOUT STORAGE CONDITIONS: KEEP RECEPACLE TIGHTLY SEALED IN A DRY AND WELL-VENTILATED PLACE.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

COMPONENTS WITH WORKPLACE CONTROL PARAMETERS

UREA
CAS #: 57-13-6
VALUE: TWA
CONTROL PARAMETERS: 10 mg/m³
BASIS: USA. WORKPLACE ENVIRONMENTAL EXPOSURE LEVELS (WEEL)

PERSONAL PROTECTIVE EQUIPMENT
GENERAL PROTECTIVE AND HYGIENIC MEASURES
KEEP AWAY FROM FOODSTUFFS, BEVERAGES AND FEED
WASH HANDS BEFORE BREAKS AND AT THE END OF WORK
IMMEDIATELY REMOVE ALL SOILED AND CONTAMINATED CLOTHING
AVOID CONTACT WITH THE EYES AND SKIN
BREATHING EQUIPMENT
Respiratory protection is not required. For short term filter device to protect from nuisance levels of dust, use type N95 or type P1 dust masks.

PROTECTION OF HANDS
PROTECTIVE GLOVES.
The glove material has to be impermeable and resistant to the product/substance/preparation. The resistance of the glove material cannot be calculated in advance and therefore has to be checked prior to application. No recommendation can be given for the glove material for this product. Select glove materials base on penetration times, rates of diffusion and degradation of material.

MATERIAL OF GLOVES
The selection of suitable gloves depends not only on the material but on quality of material and varies from manufacturer to manufacturer.

PENETRATION TIME OF GLOVE MATERIAL
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

For the permanent contact of a maximum of 15 minutes, gloves made of the following materials are suitable:
Neoprene gloves

EYE PROTECTION: Tightly sealed goggles

BODY PROTECTION: Protective work clothing

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

GENERAL INFORMATION

Form: Solid (lyophilized powder)
Color: White
pH: 7.5-9.5 at 480 g/l at 25°C (77°F)
Melting point/melting range: 132-135°C (270-275°F)
Boiling point/boiling range: N/A
Flash point: N/A
Ignition temperature: N/A
Lower explosive limit: N/A
Upper explosive limit: N/A
Vapor pressure: 0.009 hPa (0.007 mmHg) at 20°C (68°F)
Density: 1.335 g/ml at 25°C (77°F)
Solubility in/miscibility with water: Fully miscible at 480 g/l at 20°C (68°F)
SECTION 10. STABILITY AND REACTIVITY

REACTIVITY
CHEMICAL STABILITY
STABLE UNDER RECOMMENDED STORAGE CONDITIONS.

THERMAL DECOMPOSITION/CONDITIONS TO BE AVOIDED: AVOID STRONG OXIDIZING AGENTS

POSSIBILITY OF HAZARDOUS REACTIONS: NO DATA AVAILABLE

HAZARDOUS DECOMPOSITION PRODUCTS: HAZARDOUS DECOMPOSITION PRODUCTS FORMED UNDER FIRE CONDITIONS: CARBON OXIDES, NITROGEN OXIDES

SECTION 11. TOXICOLOGICAL INFORMATION
INFORMATION ON TOXICOLOGICAL EFFECTS

TO THE BEST OF OUR KNOWLEDGE, THE CHEMICAL, PHYSICAL AND TOXICOLOGICAL PROPERTIES OF THIS PRODUCT HAVE NOT BEEN THOROUGHLY INVESTIGATED.

ACUTE TOXICITY:
LD50 ORAL -RAT- 8,471 mg/kg

SKIN CORROSION/IRRITATION:
SKIN -RABBIT- NO SKIN IRRITATION

SERIOUS EYE DAMAGE/EYE IRRITATION:
EYES -RABBIT- NO EYE IRRITATION

RESPIRATORY OR SKIN SENSITIZATION:
NO DATA AVAILABLE

GERM CELL MUTAGENICITY:
GENOTOXICITY IN VITRO -MOUSE- LYMPHOCYTE DNA DAMAGE

GENOTOXICIT IN VIVO -MOUSE- ORAL CYTOGENETIC ANALYSIS

CARCINOGENICITY
NO COMPONENT OF THIS PRODUCT PRESENT AT LEVELS GREATER THAN OR EQUAL TO 0.1% IS IDENTIFIED AS PROBABLE, POSSIBLE OR CONFIRMED HUMAN CARCINOGEN BY IARC, ACGIH, NTP OR OSHA

REPRODUCTIVE TOXICITY:
NO DATA AVAILABLE
SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (GLOBALLY HARMONIZED SYSTEM):
NO DATA AVAILABLE

SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE (GLOBALLY HARMONIZED SYSTEM):
NO DATA AVAILABLE

ASPIRATION HAZARD
NO DATA AVAILABLE

POTENTIAL HEALTH EFFECTS

INHALATION MAY BE HARMFUL IF INHALED. MAY CAUSE RESPIRATORY TRACT IRRITATION.

SKIN MAY BE HARMFUL IF ABSORBED THROUGH SKIN. MAY CAUSE SKIN IRRITATION.

EYES MAY CAUSE EYE IRRITATION.

INGESTION MAY BE HARMFUL IF SWALLOWED.

SECTION 12. ECOLOGICAL INFORMATION

TOXICITY

TOXICITY TO FISH: LC50 - POECILIA RETICULATA (GUPPY) - 17,500 mg/l - 96 h
TOXICITY TO DAPHNIA AND OTHER AQUATIC INVERTEBRATES: EC50 - DAPHNIA MAGNA (WATER FLEA) - 3,910 mg/l - 48 h

PERSISTENCE AND DEGRADABILITY
NO DATA AVAILABLE

BIOACCUMULATIVE POTENTIAL
NO DATA AVAILABLE

MOBILITY IN SOIL
NO DATA AVAILABLE

PBT AND vPvB ASSESSMENT
NO DATA AVAILABLE

SECTION 13. DISPOSAL CONSIDERATIONS

WASTE TREATMENT METHODS
CONTACT A LICENSED PROFESSIONAL WASTE DISPOSAL SERVICE TO DISPOSE OF THIS MATERIAL. DISPOSAL OF THIS PRODUCT, SOLUTIONS AND ANY BY-PRODUCTS SHOULD AT ALL TIMES COMPLY WITH THE REQUIREMENTS OF ENVIRONMENTAL PROTECTION AND WASTE DISPOSAL LEGISLATION AND ANY REGIONAL LOCAL AUTHORITY REQUIREMENTS. AVOID DISPERSAL OF SPILLED MATERIAL AND RUNOFF AND CONTACT WITH SOIL, WATERWAYS, DRAINS AND SEWERS. OBSERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.
DISPOSE OF CONTAMINATED PACKAGING AS UNUSED PRODUCT

SECTION 14. TRANSPORT INFORMATION

DOT CLASSIFICATION: THIS PRODUCT IS CONSIDERED TO BE NON-HAZARDOUS FOR TRANSPORT.

IMDG CLASSIFICATION: THIS PRODUCT IS CONSIDERED TO BE NON-HAZARDOUS FOR TRANSPORT.

IATA-DGR CLASSIFICATION: THIS PRODUCT IS CONSIDERED TO BE NON-HAZARDOUS FOR TRANSPORT.

SECTION 15. REGULATORY INFORMATION

OSHA HAZARDS
NO KNOWN OSHA HAZARDS

DSL STATUS
ALL COMPONENTS OF THIS PRODUCT ARE ON THE CANADIAN DSL LIST

NONE OF THE INGREDIENTS IS LISTED.

SARA 313 COMPONENTS:
THIS MATERIAL DOES NOT CONTAIN ANY CHEMICAL COMPONENTS WITH KNOWN CAS NUMBERS THAT EXCEED THE THRESHOLD (DE MINIMIS) REPORTING LEVELS ESTABLISHED BY SARA, TITLE III, SECTION 313.

SARA 311/312 HAZARDS
NO SARA HAZARDS

PA AND NJ RIGHT TO KNOW COMPONENTS
UREA CAS #: 57-13-6

CALIFORNIA PROP. 65 COMPONENTS
THIS PRODUCT DOES NOT CONTAIN ANY CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR ANY OTHER REPRODUCTIVE HARM.

SECTION 16. OTHER INFORMATION
THIS INFORMATION IS BASED ON OUR PRESENT KNOWLEDGE. HOWEVER, THIS SHALL NOT CONSTITUTE A GUARANTEE FOR ANY SPECIFIC PRODUCT FEATURES
AND SHALL NOT ESTABLISH A LEGALLY VALID CONTRACTUAL RELATIONSHIP. THE ABOVE INFORMATION IS BELIEVED TO BE CORRECT, BE ALL INCLUSIVE AND SHALL BE USED ONLY AS A GUIDE. CYTOSKELETON INC. SHALL NOT BE HELD LIABLE FOR ANY DAMAGE RESULTING FROM CONTACT WITH THE ABOVE PRODUCT.

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SECTION 1. CHEMICAL IDENTIFICATION

CATALOG/PRODUCT#: FAE01

NAME: F-ACTIN ENHANCING SOLUTION (PHALLOIDIN ISOLATED FROM *Amanita phalloides*)

USE: LABORATORY CHEMICALS

MANUFACTURER/SUPPLIER:

CYTOSKELETON INC.
1830 S. Acoma St.
Denver, CO 80223
PHONE: 303-322-2254
FAX: 303-322-2257

EMERGENCY CONTACT:
24H EMERGENCY TOLL-FREE NUMBER: CALL INFOTRAC DAY OR NIGHT
WITHIN USA AND CANADA: 1-800-535-5053
OUTSIDE USA AND CANADA: +1 352-323-3500 (COLLECT CALLS ACCEPTED)

SECTION 2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

OSHA HAZARDS
HIGHLY TOXIC BY INHALATION, HIGHLY TOXIC BY INGESTION, HIGHLY TOXIC BY SKIN ABSORPTION

TARGET ORGANS
LIVER, KIDNEY

GHS CLASSIFICATION
ACUTE TOXICITY, ORAL (CATEGORY 2)
ACUTE TOXICITY, INHALATION (CATEGORY 2)
ACUTE TOXICITY, DERMAL (CATEGORY 2)

GHS LABEL ELEMENTS, INCLUDING PRECAUTIONARY STATEMENTS

PICTOGRAM

SIGNAL WORD DANGER

HAZARD STATEMENTS
H300 TOXIC IF SWALLOWED
H310 + H330 TOXIC IF IN CONTACT WITH SKIN OR IF INHALED

PRECAUTIONARY STATEMENTS
P260 DO NOT BREATHE DUST / FUME / GAS / MIST / VAPORS / SPRAY
P262 DO NOT GET IN EYES OR ON SKIN OR CLOTHING
P270 DO NOT EAT, DRINK, OR SMOKE WHEN USING THIS PRODUCT
P271 USE ONLY INDOORS OR IN A WELL-VENTILATED AREA
P280 WEAR PROTECTIVE GLOVES / PROTECTIVE CLOTHING
P284 WEAR RESPIRATORY PROTECTION
P302 + P350 IF ON SKIN: GENTLY WASH WITH PLENTY OF SOAP AND WATER
P304 + P340 IF INHALED, REMOVE TO FRESH AIR
P301 + P310 IF SWALLOWED: IMMEDIATELY CALL A POISON CENTER OR PHYSICIAN
P361 REMOVE/TAKE OFF IMMEDIATELY ALL CONTAMINATED CLOTHING
P363 WASH CONTAMINATED CLOTHING BEFORE REUSE
P501 DISPOSE OF CONTENTS IN AN APPROVED WASTE SITE

NFPA RATINGS (SCALE 0-4)
FIRE = 0
HEALTH = 4
REACTIVITY = 0

HMIS RATINGS
HEALTH = 3
FIRE = 0
REACTIVITY = 0

POTENTIAL HEALTH EFFECTS
INHALATION MAY BE FATAL IF INHALED. MAY CAUSE RESPIRATORY TRACT IRRITATION
SKIN MAY BE FATAL IF ABSORBED THROUGH SKIN. MAY CAUSE SKIN IRRITATION
EYES MAY CAUSE EYE IRRITATION
INGESTION MAY BE FATAL IF SWALLOWED

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

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<th>EC#</th>
<th>INDEX#</th>
<th>CONCENTRATION</th>
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<tr>
<td>17466-45-4</td>
<td>241-484-5</td>
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PHALLOIDIN FROM Amanita phalloides

MOLECULAR WEIGHT: 788.87 g/mol
SECTION 4. FIRST-AID MEASURES

GENERAL ADVICE: CONSULT A PHYSICIAN. SHOW THIS MSDS TO THE DOCTOR. MOVE OUT OF DANGEROUS AREA. 

AFTER INHALATION: SUPPLY FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. CONSULT PHYSICIAN. 

AFTER SKIN CONTACT: IMMEDIATELY WASH SKIN WITH SOAP AND RINSE WITH COPIOUS AMOUNTS OF WATER. TRANSPORT VICTIM IMMEDIATELY TO HOSPITAL. CONSULT A PHYSICIAN. 

AFTER EYE CONTACT: RINSE OPENED EYE FOR AT LEAST 15 MINUTES UNDER RUNNING WATER. THEN CONSULT PHYSICIAN. 

AFTER SWALLOWING: WASH OUT MOUTH WITH WATER PROVIDED PERSON IS CONSCIOUS. CALL FOR PHYSICIAN. 

WASH CONTAMINATED CLOTHING BEFORE REUSE. 

SECTION 5. FIREFIGHTING MEASURES

CONDITIONS OF FLAMMABILITY 
NOT FLAMMABLE OR COMBUSTIBLE 

EXTINGUISHING MEDIA 

SUDDABLE EXTINGUISHING AGENTS: CARBON DIOXIDE, EXTINGUISHING POWDER, ALCOHOL RESISTANT FOAM, OR WATER SPRAY. 

ADVICE FOR FIREFIGHTERS 
PROTECTIVE EQUIPMENT: MOUNT RESPIRATORY PROTECTIVE DEVICE PREVENT CONTACT WITH SKIN AND EYES 
HAZARDOUS COMBUSTION PRODUCTS: HAZARDOUS DECOMBUSTION PRODUCTS FORMED UNDER FIRE CONDITIONS - CARBON OXIDES, NITROGEN OXIDES (N0x), SULPHUR OXIDES 

SECTION 6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES: WEAR PROTECTIVE CLOTHING, RESPIRATOR, CHEMICAL SAFETY GOGGLES, GLOVES. AVOID DUST FORMATION AND AVOID BREATHING DUST. ENSURE ADEQUATE VENTILATION. AVOID BREATHING VAPORS, MIST, OR GAS. 

ENVIRONMENTAL PRECAUTIONS: PREVENT FURTHER LEAKAGE OR SPILLAGE. DO NOT ALLOW TO ENTER DRAINS, SEWERS/SURFACE OR GROUND WATER. 
METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP: PICK UP AND ARRANGE DISPOSAL WITHOUT CREATING DUST. KEEP IN SUITABLE, CLOSED CONTAINERS FOR DISPOSAL. DISPOSE CONTAMINATED MATERIAL AS WASTE ACCORDING TO SECTION 13. ENSURE ADEQUATE VENTILATION. 
REFERENCE TO OTHER SECTIONS: SEE SECTION 8 FOR INFORMATION ON PERSONAL PROTECTION EQUIPMENT. SEE SECTION 13 FOR DISPOSAL INFORMATION. 

SECTION 7. HANDLING AND STORAGE

HANDLING
PRECAUTIONS FOR SAFE HANDLING: AVOID CONTACT WITH SKIN AND EYES. AVOID FORMATION OF DUST AND AEROSOLS. ENSURE GOOD VENTILATION/EXHAUSTION AT THE WORKPLACE. WEAR APPROPRIATE PROTECTIVE CLOTHING (SEE SECTION 8). DO NOT RE-USE CONTAINER. EMPLOY NORMAL MEASURES FOR PREVENTIVE FIRE PROTECTION.

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES STORAGE
REQUIREMENTS TO BE MET BY STOREROOMS AND RECEPTACLES: STORE AT -20°C. KEEP CONTAINER TIGHTLY CLOSED AND SEALED UNTIL READY FOR USE. STORE DESICCATED.
FURTHER INFORMATION ABOUT STORAGE CONDITIONS: KEEP RECEPTACLE TIGHTLY SEALED IN A DRY, WELL-VENTILATED PLACE

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION
CONTAINS NO SUBSTANCES WITH OCCUPATIONAL LIMIT VALUES

PERSONAL PROTECTIVE EQUIPMENT
GENERAL PROTECTIVE AND HYGIENIC MEASURES
KEEP AWAY FROM FOODSTUFFS, BEVERAGES AND FEED
WASH HANDS BEFORE BREAKS AND AT THE END OF WORK
IMMEDIATELY REMOVE ALL SOILED AND CONTAMINATED CLOTHING
AVOID CONTACT WITH THE EYES AND SKIN

BREATHING EQUIPMENT
WHERE RISK ASSESSMENT SHOWS AIR-PURIFYING RESPIRATORS ARE APPROPRIATE, USE A FULL-FACE PARTICLE RESPIRATOR TYPE N100 (US) OR TYPE P3 (EN 143) RESPIRATOR CARTRIDGES AS A BACKUP TO ENGINEERING CONTROLS. IF THE RESPIRATOR IS THE SOLE MEANS OF PROTECTION, USE A FULL-FACE SUPPLIED AIR RESPIRATOR. USE RESPIRATORS AND COMPONENTS TESTED AND APPROVED UNDER APPROPRIATE GOVERNMENT STANDARDS SUCH AS NIOSH (US) OR CEN (EU).

PROTECTION OF HANDS
PROTECTIVE GLOVES.
THE GLOVE MATERIAL HAS TO BE IMPERMEABLE AND RESISTANT TO THE PRODUCT/SUBSTANCE/PREPARATION. THE RESISTANCE OF THE GLOVE MATERIAL CANNOT BE CALCULATED IN ADVANCE AND THEREFORE HAS TO BE CHECKED PRIOR TO APPLICATION. NO RECOMMENDATION CAN BE GIVEN FOR THE GLOVE MATERIAL FOR THIS PRODUCT. SELECT GLOVE MATERIALS BASE ON PENETRATION TIMES, RATES OF DIFFUSION AND DEGRADATION OF MATERIAL.

MATERIAL OF GLOVES
THE SELECTION OF SUITABLE GLOVES DEPENDS NOT ONLY ON THE MATERIAL BUT ON QUALITY OF MATERIAL AND VARIES FROM MANUFACTURER TO MANUFACTURER.

PENETRATION TIME OF GLOVE MATERIAL
THE EXACT BREAK TROUGH TIME HAS TO BE FOUND OUT BY THE MANUFACTURER OF THE PROTECTIVE GLOVES AND HAS TO BE OBSERVED.
FOR THE PERMANENT CONTACT OF A MAXIMUM OF 15 MINUTES, GLOVES MADE OF THE FOLLOWING MATERIALS ARE SUITABLE:
NEOPRENE GLOVES

EYE PROTECTION: FACE SHIELD AND TIGHTLY SEALED GOGGLES

BODY PROTECTION: PROTECTIVE WORK CLOTHING

HYGIENE MEASURES: AVOID CONTACT WITH SKIN, EYES AND CLOTHING. WASH HANDS BEFORE BREAKS AND IMMEDIATELY AFTER HANDLING THE PRODUCT.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES
GENERAL INFORMATION
FORM: SOLID (LYOPHILIZED POWDER)
pH: NO DATA AVAILABLE
MELTING POINT/MELTING RANGE: NO DATA AVAILABLE
BOILING POINT/BOILING RANGE: NO DATA AVAILABLE
FLASH POINT: NO DATA AVAILABLE
SELF-IGNITING: NO DATA AVAILABLE
DANGER OF EXPLOSION: NO DATA AVAILABLE
DENSITY: NO DATA AVAILABLE
SOLUBILITY IN/MISCIBILITY WITH WATER: NO DATA AVAILABLE

SECTION 10. STABILITY AND REACTIVITY

REACTIVITY
CHEMICAL STABILITY
STABLE WHEN STORED AS DIRECTED

THERMAL DECOMPOSITION/CONDITIONS TO BE AVOIDED: STRONG OXIDIZING AGENTS

POSSIBILITY OF HAZARDOUS REACTIONS: NO DATA AVAILABLE

HAZARDOUS DECOMPOSITION PRODUCTS: HAZARDOUS DECOMPOSITION PRODUCTS FORMED UNDER FIRE CONDITIONS: CARBON OXIDES, NITROGEN OXIDES (NOx), SULPHUR OXIDES

SECTION 11. TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS
TO THE BEST OF OUR KNOWLEDGE, THE TOXICOLOGICAL PROPERTIES OF THIS PRODUCT HAVE NOT BEEN THOROUGHLY INVESTIGATED.

SIGNS AND SYMPTOMS OF EXPOSURE
THE PATHOLOGICAL FINDING IN FATALITIES FROM MUSHROOM POISONING ARE FATTY DEGENERATION OF THE LIVER, KIDNEYS, HEART AND SKELETAL MUSCLES

POTENTIAL HEALTH EFFECTS
INHALATION  MAY BE FATAL IF INHALED. MAY CAUSE RESPIRATORY TRACT IRRITATION
SKIN  MAY BE FATAL IF ABSORBED THROUGH SKIN. MAY CAUSE SKIN IRRITATION
EYES  MAY CAUSE EYE IRRITATION
INGESTION  MAY BE FATAL IF SWALLOWED

TARGET ORGANS: LIVER, KIDNEY

CHRONIC EXPOSURE

IARC:  NO COMPONENT OF THIS PRODUCT PRESENT AT LEVELS GREATER THAN OR EQUAL TO 0.1% IS IDENTIFIED AS PROBABLE, POSSIBLE OR CONFIRMED HUMAN CARCINOGEN BY IARC
ACGIH:  NO COMPONENT OF THIS PRODUCT PRESENT AT LEVELS GREATER THAN OR EQUAL TO 0.1% IS IDENTIFIED AS PROBABLE, POSSIBLE OR CONFIRMED HUMAN CARCINOGEN BY ACGIH
NTP:  NO COMPONENT OF THIS PRODUCT PRESENT AT LEVELS GREATER THAN OR EQUAL TO 0.1% IS IDENTIFIED AS PROBABLE, POSSIBLE OR CONFIRMED HUMAN CARCINOGEN BY NTP
OSHA:  NO COMPONENT OF THIS PRODUCT PRESENT AT LEVELS GREATER THAN OR EQUAL TO 0.1% IS IDENTIFIED AS PROBABLE, POSSIBLE OR CONFIRMED HUMAN CARCINOGEN BY OSHA

SECTION 12. ECOLOGICAL INFORMATION

NO DATA AVAILABLE

SECTION 13. DISPOSAL CONSIDERATIONS

WASTE TREATMENT METHODS
CONTACT A LICENSED PROFESSIONAL WASTE DISPOSAL SERVICE TO DISPOSE OF THIS MATERIAL. DISPOSAL OF THIS PRODUCT, SOLUTIONS AND ANY BY-PRODUCTS SHOULD AT ALL TIMES COMPLY WITH THE REQUIREMENTS OF ENVIRONMENTAL PROTECTION AND WASTE DISPOSAL LEGISLATION AND ANY REGIONAL LOCAL AUTHORITY REQUIREMENTS. AVOID DISPERAL OF SPILLED MATERIAL AND RUNOFF AND CONTACT WITH SOIL, WATERWAYS, DRAINS AND SEWERS. OBSERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.

PRODUCT
BURN IN A CHEMICAL INCINERATOR EQUIPPED WITH AN AFTERBURNER AND SCRUBBER.
CONTAMINATED PACKAGING
DISPOSE OF AS UNUSED PRODUCT.

SECTION 14. TRANSPORT INFORMATION

THIS PRODUCT IS SUBJECT TO THE DE MINIMIS EXCEPTIONS FOR DANGEROUS GOODS/HAZARDOUS MATERIALS IN ACCORDANCE WITH THE FOLLOWING REGULATIONS: IATA 2.6.10, ADR 3.5.1.4, AND U.S. DOT 49 CFR 173.4b.

IN CURRENT PACKAGING SIZE, NOT A HAZARDOUS SUBSTANCE BY DOT, IATA, AND IMDG

SUBSTANCES WITH AN LD50 VALUE \leq 300 \text{ mg/kg (ORAL)} OR \leq 1000 \text{ mg/kg (DERMAL)} OR AN LC50 VALUE \leq 4000 \text{ ml/m3 (INHALATION OF DUSTS OR MISTS)}. AMOUNT SHIPPED DOES NOT MEET CLASSIFICATION FOR HAZARD CLASS IF LESS THAN 1 GRAM WEIGHT OF PRODUCT WITHOUT CONTAINER. IF OVER 1 GRAM, THEN THE FOLLOWING APPLY.

DOT CLASSIFICATION: UN # 3462, CLASS 6.1, PACKING GROUP II
SHIPPING NAME: TOXINS, EXTRACTED FROM LIVING SOURCES, SOLID, N.O.S. PHALLOIDIN FROM *Amanita phalloides*

IATA CLASSIFICATION: UN # 3462, CLASS 6.1, PACKING GROUP II
SHIPPING NAME: TOXINS, EXTRACTED FROM LIVING SOURCES, SOLID, N.O.S. PHALLOIDIN FROM *Amanita phalloides*

IMDG CLASSIFICATION: UN # 3462, CLASS 6.1, PACKING GROUP II
SHIPPING NAME: TOXINS, EXTRACTED FROM LIVING SOURCES, SOLID, N.O.S. PHALLOIDIN FROM *Amanita phalloides*

SECTION 15. REGULATORY INFORMATION

OSHA HAZARDS
HIGHLY TOXIC BY INHALATION, HIGHLY TOXIC BY INGESTION, HIGHLY TOXIC BY SKIN ABSORPTION

DSL STATUS
THIS PRODUCT CONTAINS THE FOLLOWING COMPONENTS THAT ARE NOT ON THE CANADIAN DSL NOR NDSL LISTS

PHALLOIDIN, *Amanita phalloides*

UNITED STATES REGULATORY INFORMATION

SARA (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986-USA) SECTIONS 302/313
NO CHEMICALS IN THIS MATERIAL ARE SUBJECT TO THE REPORTING REQUIREMENTS OF SARA TITLE III, SECTION 302.

THIS MATERIAL DOES NOT CONTAIN ANY CHEMICAL COMPONENTS WITH KNOWN CAS NUMBERS THAT EXCEED THE THRESHOLD (DE MINIMIS) REPORTING LEVELS ESTABLISHED BY SARA TITLE III, SECTION 313

SARA 311/312
ACUTE HEALTH HAZARD

MASSACHUSETTS RIGHT TO KNOW COMPONENTS
NO COMPONENTS ARE SUBJECT TO THE MASSACHUSETTS RIGHT TO KNOW ACT

PENNSYLVANIA RIGHT TO KNOW COMPONENTS
PHALLOIDIN, Amanita phalloides    CAS # 17466-45-4

NEW JERSEY RIGHT TO KNOW COMPONENTS
PHALLOIDIN, Amanita phalloides    CAS # 17466-45-4

CALIFORNIA PROP. 65 COMPONENTS
THIS PRODUCT DOES NOT CONTAIN ANY CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS, OR ANY OTHER REPRODUCTIVE HARM.

CANADA REGULATORY INFORMATION
WHMIS CLASSIFICATION: NOT CONTROLLED UNDER WHMIS.

SECTION 16. OTHER INFORMATION

THIS INFORMATION IS BASED ON OUR PRESENT KNOWLEDGE. HOWEVER, THIS SHALL NOT CONSTITUTE A GUARANTEE FOR ANY SPECIFIC PRODUCT FEATURES AND SHALL NOT ESTABLISH A LEGALLY VALID CONTRACTUAL RELATIONSHIP. THE ABOVE INFORMATION IS BELIEVED TO BE CORRECT, BE ALL INCLUSIVE AND SHALL BE USED ONLY AS A GUIDE. CYTOSKELETON INC. SHALL NOT BE HELD LIABLE FOR ANY DAMAGE RESULTING FROM CONTACT WITH THE ABOVE PRODUCT.

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MATERIAL SAFETY DATA SHEET

SECTION 1. CHEMICAL IDENTIFICATION

CATALOG/PRODUCT#: AKL99

NAME: ACTIN PROTEINS DERIVED FROM RABBIT SKELETAL MUSCLE

USE: LABORATORY CHEMICALS

MANUFACTURER/SUPPLIER:

CYTOSKELETON INC.
1830 S. Acoma St.
Denver, CO 80223
PHONE: 303-322-2254
FAX: 303-322-2257

24H EMERGENCY TOLL-FREE NUMBER: CALL INFOTRAC DAY OR NIGHT
WITHIN USA AND CANADA: 1-800-535-5053
OUTSIDE USA AND CANADA: +1 352-323-3500 (COLLECT CALLS ACCEPTED)

SECTION 2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

OSHA HAZARDS
THIS PRODUCT IS NOT CONSIDERED HAZARDOUS

GHS CLASSIFICATION
THIS PRODUCT IS NOT CONSIDERED HAZARDOUS

GHS LABEL ELEMENTS, INCLUDING PRECAUTIONARY STATEMENTS

PICTOGRAM NONE
SIGNAL WORD NONE

HAZARD STATEMENTS
NONE

PRECAUTIONARY STATEMENTS
NONE

NOT EXPECTED TO PRODUCE SIGNIFICANT ADVERSE HEALTH EFFECTS WHEN THE RECOMMENDED INSTRUCTIONS FOR USE ARE FOLLOWED.

NO KNOWN SIGNIFICANT EFFECTS OR CRITICAL HAZARDS. HANDLING AND/OR PROCESSING OF THIS MATERIAL MAY GENERATE A DUST WHICH CAN CAUSE
MECHANICAL IRRITATION OF THE EYES, SKIN, NOSE AND THROAT. AVOID PROLONGED CONTACT WITH EYES, SKIN AND CLOTHING.

NFPA RATINGS (SCALE 0-4)
FIRE = 0
HEALTH = 0
REACTIVITY = 0

HMIS RATINGS
HEALTH = 0
FIRE = 0
REACTIVITY = 0

POTENTIAL HEALTH EFFECTS

INHALATION MAY BE HARMFUL IF INHALED. MAY CAUSE RESPIRATORY IRRITATION.
SKIN MAY BE HARMFUL IF ABSORBED THROUGH SKIN. MAY CAUSE SKIN IRRITATION.
EYES MAY CAUSE EYE IRRITATION.
INGESTION MAY BE HARMFUL IF SWALLOWED.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

COMPRISED OF:

PROTEIN          CAS#: NONE          >95%
                 EINECS#: NONE
SUCROSE          CAS#: 57-50-1       <1%
                 EINECS#: 200-334-9
TRIS BASE        CAS#: 77-86-1       <1%
                 EINECS#: 201-064-4
DEXTRAN          CAS#: 9004-54-0      <1%
                 EINECS#: 232-677-5
CALCIUM CHLORIDE CAS#: 10035-04-8    <1%
                 EINECS#: 233-140-8
ADENOSINE 5’-TRIPHOSPHATE DISODIUM SALT (ATP) CAS#: 42373-41-1 <1%
                 EINECS#: UNLISTED

SECTION 4. FIRST-AID MEASURES

AFTER INHALATION: SUPPLY FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. CONSULT PHYSICIAN IN CASE OF COMPLAINTS
AFTER SKIN CONTACT: IMMEDIATELY WASH SKIN WITH SOAP AND RINSE WITH COPIOUS AMOUNTS OF WATER
AFTER EYE CONTACT: RINSE OPENED EYE FOR AT LEAST 15 MINUTES UNDER RUNNING WATER. THEN CONSULT PHYSICIAN
AFTER SWALLOWING: WASH OUT MOUTH WITH WATER PROVIDED PERSON IS CONSCIOUS. CALL FOR PHYSICIAN

WASH CONTAMINATED CLOTHING BEFORE REUSE.
SECTION 5. FIREFIGHTING MEASURES

EXTINGUISHING MEDIA

SUITABLE EXTINGUISHING AGENTS: CARBON DIOXIDE, EXTINGUISHING POWDER, ALCOHOL-RESISTENT FOAM OR WATER SPRAY.

ADVICE FOR FIREFIGHTERS

PROTECTIVE EQUIPMENT: MOUNT RESPIRATORY PROTECTIVE DEVICE
PREVENT CONTACT WITH SKIN AND EYES

SECTION 6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES: WEAR PROTECTIVE CLOTHING, RESPIRATOR, CHEMICAL SAFETY GOGGLES, GLOVES. AVOID DUST FORMATION. AVOID BREATHING VAPORS, MIST OR GAS.

ENVIRONMENTAL PRECAUTIONS: DILUTE WITH PLENTY OF WATER. DO NOT ALLOW TO ENTER SEWERS/SURFACE OR GROUND WATER.

METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP: ABSORB WITH LIQUID-BINDING MATERIAL (SAND, DIATOMITE, ACID BINDERS, UNIVERSAL BINDERS, SAWDUST). DISPOSE CONTAMINATED MATERIAL AS WASTE ACCORDING TO SECTION 13. ENSURE ADEQUATE VENTILATION.

REFERENCE TO OTHER SECTIONS: SEE SECTION 8 FOR INFORMATION ON PERSONAL PROTECTION EQUIPMENT. SEE SECTION 13 FOR DISPOSAL INFORMATION.

SECTION 7. HANDLING AND STORAGE

HANDLING

PRECAUTIONS FOR SAFE HANDLING: ENSURE GOOD VENTILATION/EXHAUSTION AT THE WORKPLACE. WEAR APPROPRIATE PROTECTIVE CLOTHING (SEE SECTION 8). DO NOT RE-USE CONTAINER.

INFORMATION ABOUT PROTECTION AGAINST EXPLOSIONS AND FIRES: NOT IGNITABLE

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES STORAGE

REQUIREMENTS TO BE MET BY STOREROOMS AND RECEPTACLES: STORE AT 2-8°C. KEEP CONTAINER TIGHTLY CLOSED AND SEALED UNTIL READY FOR USE. STORE DESICCATED.

FURTHER INFORMATION ABOUT STORAGE CONDITIONS: KEEP RECEPTACLE TIGHTLY SEALED.

SECTION 8. EXPOSURE CONTROLS/Personal Protection

CONTAINS NO SUBSTANCES WITH OCCUPATIONAL EXPOSURE LIMIT VALUES

PERSONAL PROTECTIVE EQUIPMENT

GENERAL PROTECTIVE AND HYGIENIC MEASURES
KEEP AWAY FROM FOODSTUFFS, BEVERAGES AND FEED
WASH HANDS BEFORE BREAKS AND AT THE END OF WORK
IMMEDIATELY REMOVE ALL SOILED AND CONTAMINATED CLOTHING
AVOID CONTACT WITH THE EYES AND SKIN

BREATHING EQUIPMENT
SHORT TERM FILTER DEVICE: USE TYPE N95 OR TYPE P1 DUST MASKS
DO NOT BREATHE. USE MECHANICAL EXHAUST SYSTEM

PROTECTION OF HANDS
PROTECTIVE GLOVES.
THE GLOVE MATERIAL HAS TO BE IMPERMEABLE AND RESISTANT TO THE
PRODUCT/SUBSTANCE/PREPARATION. AS THE PRODUCT IS A PREPARATION OF
SEVERAL SUBSTANCES, THE RESISTANCE OF THE GLOVE MATERIAL CANNOT BE
CALCULATED IN ADVANCE AND THEREFORE HAS TO BE CHECKED PRIOR TO
APPLICATION. NO RECOMMENDATION CAN BE GIVEN FOR THE GLOVE
MATERIAL FOR THIS PRODUCT. SELECT GLOVE MATERIALS BASE ON
PENETRATION TIMES, RATES OF DIFFUSION AND DEGRADATION OF MATERIAL.

MATERIAL OF GLOVES
THE SELECTION OF SUITABLE GLOVES DEPENDS NOT ONLY ON THE MATERIAL
BUT ON QUALITY OF MATERIAL AND VARIES FROM MANUFACTURER TO
MANUFACTURER.

PENETRATION TIME OF GLOVE MATERIAL
THE EXACT BREAK TROUGH TIME HAS TO BE FOUND OUT BY THE
MANUFACTURER OF THE PROTECTIVE GLOVES AND HAS TO BE OBSERVED.

FOR THE PERMANENT CONTACT OF A MAXIMUM OF 15 MINUTES, GLOVES
MADE OF THE FOLLOWING MATERIALS ARE SUITABLE:
NEOPRENE GLOVES

EYE PROTECTION: TIGHTLY SEALED GOGGLES

BODY PROTECTION: PROTECTIVE WORK CLOTHING

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES
GENERAL INFORMATION
FORM: SOLID (LYOPHILIZED POWDER)
CHANGE IN CONDITION
MELTING POINT/MELTING RANGE: NO DATA AVAILABLE
BOILING POINT/BOILING RANGE: NO DATA AVAILABLE
FLASH POINT: NO DATA AVAILABLE
SELF-IGNITING: NO DATA AVAILABLE
DANGER OF EXPLOSION: PRODUCT IS NOT EXPLOSIVE.
DENSITY: NO DATA AVAILABLE
SOLUBILITY IN/MISCIBILITY WITH WATER: FULLY MISCIBLE

SECTION 10. STABILITY AND REACTIVITY

REACTIVITY
CHEMICAL STABILITY
STABLE UNDER RECOMMENDED STORAGE CONDITIONS.

**THERMAL DECOMPOSITION/CONDITIONS TO BE AVOIDED:** STRONG OXIDIZING AGENTS

**POSSIBILITY OF HAZARDOUS REACTIONS:** NO DATA AVAILABLE

**HAZARDOUS DECOMPOSITION PRODUCTS:** NO DATA AVAILABLE

**SECTION 11. TOXICOLOGICAL INFORMATION**

**INFORMATION ON TOXICOLOGICAL EFFECTS**

TO THE BEST OF OUR KNOWLEDGE, THE TOXICOLOGICAL PROPERTIES OF THIS PRODUCT HAVE NOT BEEN THOROUGHLY INVESTIGATED.

NO KNOWN SIGNIFICANT EFFECTS OR CRITICAL HAZARDS.

NO DATA AVAILABLE FOR ACUTE TOXICITY, SKIN CORROSION/IRRITATION, SERIOUS EYE DAMAGE/EYE IRRITATION, RESPIRATORY OR SKIN SENSITIZATION, GERM CELL MUTAGENICITY, SPECIFIC TARGET ORGAN TOXICITY-SINGLE EXPOSURE, SPECIFIC TARGET ORGAN TOXICITY-REPEATED EXPOSURE OR ASPIRATION HAZARD

NO COMPONENT OF THIS PRODUCT PRESENT AT LEVELS GREATER THAN OR EQUAL TO 0.1% IS IDENTIFIED AS PROBABLE, POSSIBLE OR CONFIRMED HUMAN CARCINOGEN BY IARC, ACGIH, NTP OR OSHA

**POTENTIAL HEALTH EFFECTS**

**INHALATION** MAY BE HARMFUL IF INHALED. MAY CAUSE RESPIRATORY IRRITATION.

**SKIN** MAY BE HARMFUL IF ABSORBED THROUGH SKIN. MAY CAUSE SKIN IRRITATION.

**EYES** MAY CAUSE EYE IRRITATION.

**INGESTION** MAY BE HARMFUL IF SWALLOWED.

**SECTION 12. ECOLOGICAL INFORMATION**

NO DATA AVAILABLE

**SECTION 13. DISPOSAL CONSIDERATIONS**

**WASTE TREATMENT METHODS**

CONTACT A LICENSED PROFESSIONAL WASTE DISPOSAL SERVICE TO DISPOSE OF THIS MATERIAL. DISPOSAL OF THIS PRODUCT, SOLUTIONS AND ANY BY-PRODUCTS SHOULD AT ALL TIMES COMPLY WITH THE REQUIREMENTS OF ENVIRONMENTAL PROTECTION AND WASTE DISPOSAL LEGISLATION AND ANY REGIONAL LOCAL AUTHORITY REQUIREMENTS. AVOID DISPERSAL OF SPILLED MATERIAL AND RUNOFF AND CONTACT WITH SOIL, WATERWAYS, DRAINS AND
SEWERS. OBSERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.

DISPOSE OF CONTAMINATED PACKAGING AS UNUSED PRODUCT

WITHIN THE PRESENT KNOWLEDGE OF THE SUPPLIER, THIS PRODUCT IS NOT REGARDED AS HAZARDOUS WASTE, AS DEFINED BY EU DIRECTIVE 91/689/EC.

SECTION 14. TRANSPORT INFORMATION

DOT CLASSIFICATION: THIS PRODUCT IS CONSIDERED TO BE NON-HAZARDOUS FOR TRANSPORT.

IATA-DGR CLASSIFICATION: THIS PRODUCT IS CONSIDERED TO BE NON-HAZARDOUS FOR TRANSPORT.

IMDG CLASSIFICATION: THIS PRODUCT IS CONSIDERED TO BE NON-HAZARDOUS FOR TRANSPORT.

SECTION 15. REGULATORY INFORMATION

OSHA HAZARDS
NO KNOWN OSHA HAZARDS

UNITED STATES REGULATORY INFORMATION


NONE OF THE INGREDIENTS IS LISTED.

SARA (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986-USA) SECTION 313:

THIS MATERIAL DOES NOT CONTAIN ANY CHEMICAL COMPONENTS WITH KNOWN CAS NUMBERS THAT EXCEED THE THRESHOLD (DE MINIMIS) REPORTING LEVELS ESTABLISHED BY SARA TITLE III, SECTION 313.

SARA 311/312 HAZARDS
NO SARA HAZARDS

PA AND NJ RIGHT TO KNOW COMPONENTS
NONE LISTED

CALIFORNIA PROP. 65 COMPONENTS
THIS PRODUCT DOES NOT CONTAIN ANY CHEMICALS KNOWN TO STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS, OR ANY OTHER REPRODUCTIVE HARM.

CANADA REGULATORY INFORMATION
WHMIS CLASSIFICATION: NOT CONTROLLED UNDER WHMIS.
EU REGULATORY INFORMATION
THIS PRODUCT IS NOT CLASSIFIED ACCORDING TO EU LEGISLATION.

SECTION 16. OTHER INFORMATION

THIS INFORMATION IS BASED ON OUR PRESENT KNOWLEDGE. HOWEVER, THIS SHALL NOT CONSTITUTE A GUARANTEE FOR ANY SPECIFIC PRODUCT FEATURES AND SHALL NOT ESTABLISH A LEGALLY VALID CONTRACTUAL RELATIONSHIP. THE ABOVE INFORMATION IS BELIEVED TO BE CORRECT, BE ALL INCLUSIVE AND SHALL BE USED ONLY AS A GUIDE. CYTOSKELETON INC. SHALL NOT BE HELD LIABLE FOR ANY DAMAGE RESULTING FROM CONTACT WITH THE ABOVE PRODUCT.

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MATERIAL SAFETY DATA SHEET

SECTION 1. CHEMICAL IDENTIFICATION

CATALOG/PRODUCT#: AAN01

NAME: ANTI-ACTIN RABBIT POLYCLONAL ANTIBODY

USE: LABORATORY CHEMICALS

MANUFACTURER/SUPPLIER:

CYTOSKELETON INC.
1830 S. Acoma St.
Denver, CO 80223
PHONE: 303-322-2254
FAX: 303-322-2257

24H EMERGENCY TOLL-FREE NUMBER: CALL INFOTRAC DAY OR NIGHT
WITHIN USA AND CANADA: 1-800-535-5053
OUTSIDE USA AND CANADA: +1 352-323-3500 (COLLECT CALLS ACCEPTED)

SECTION 2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

OSHA HAZARDS
THIS PRODUCT IS NOT CONSIDERED HAZARDOUS

GHS CLASSIFICATION
THIS PRODUCT IS NOT CONSIDERED HAZARDOUS

GHS LABEL ELEMENTS, INCLUDING PRECAUTIONARY STATEMENTS

PICTOGRAM     NONE
SIGNAL WORD   NONE

HAZARD STATEMENTS
NONE

PRECAUTIONARY STATEMENTS
NONE

NOT EXPECTED TO PRODUCE SIGNIFICANT ADVERSE HEALTH EFFECTS WHEN
THE RECOMMENDED INSTRUCTIONS FOR USE ARE FOLLOWED.

NO KNOWN SIGNIFICANT EFFECTS OR CRITICAL HAZARDS. HANDLING AND/OR
PROCESSING OF THIS MATERIAL MAY GENERATE A DUST WHICH CAN CAUSE
MECHANICAL IRRITATION OF THE EYES, SKIN, NOSE AND THROAT. AVOID PROLONGED CONTACT WITH EYES, SKIN AND CLOTHING.

**NFPA RATINGS (SCALE 0-4)**
FIRE = 0  
HEALTH = 0  
REACTIVITY = 0

**HMIS RATINGS**
HEALTH = 0  
FIRE = 0  
REACTIVITY = 0

**POTENTIAL HEALTH EFFECTS**

**INHALATION** MAY BE HARMFUL IF INHALED. MAY CAUSE RESPIRATORY IRRITATION.

**SKIN** MAY BE HARMFUL IF ABSORBED THROUGH SKIN. MAY CAUSE SKIN IRRITATION.

**EYES** MAY CAUSE EYE IRRITATION.

**INGESTION** MAY BE HARMFUL IF SWALLOWED.

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

**COMPRISED OF:**

- **PROTEIN**  
  CAS#: NONE  
  EINECS#: NONE  
  >95%

- **SUCROSE**  
  CAS#: 57-50-1  
  EINECS#: 200-334-9  
  5%

- **PIPES**  
  (Piperazine-N, N-Bis(2-Ethanesulfonic Acid), Sesquisodium Salt)  
  CAS#: 100037-69-2  
  EINECS#: UNLISTED  
  <1%

- **DEXTRAN**  
  CAS#: 9004-54-0  
  EINECS#: 232-677-5  
  1%

**SECTION 4. FIRST-AID MEASURES**

**AFTER INHALATION:** SUPPLY FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. CONSULT PHYSICIAN IN CASE OF COMPLAINTS

**AFTER SKIN CONTACT:** IMMEDIATELY WASH SKIN WITH SOAP AND RINSE WITH COPIOUS AMOUNTS OF WATER

**AFTER EYE CONTACT:** RINSE OPENED EYE FOR AT LEAST 15 MINUTES UNDER RUNNING WATER. THEN CONSULT PHYSICIAN

**AFTER SWALLOWING:** WASH OUT MOUTH WITH WATER PROVIDED PERSON IS CONSCIOUS. CALL FOR PHYSICIAN

WASH CONTAMINATED CLOTHING BEFORE REUSE.

**SECTION 5. FIREFIGHTING MEASURES**
EXTINGUISHING MEDIA
SUITEABLE EXTINGUISHING AGENTS: CARBON DIOXIDE, EXTINGUISHING POWDER, ALCOHOL-RESISTENT FOAM OR WATER SPRAY.

ADVICE FOR FIREFIGHTERS
PROTECTIVE EQUIPMENT: MOUNT RESPIRATORY PROTECTIVE DEVICE PREVENT CONTACT WITH SKIN AND EYES

SECTION 6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES: WEAR PROTECTIVE CLOTHING, RESPIRATOR, CHEMICAL SAFETY GOGGLES, GLOVES. AVOID DUST FORMATION. AVOID BREATHING VAPORS, MIST OR GAS.

ENVIRONMENTAL PRECAUTIONS: DILUTE WITH PLENTY OF WATER. DO NOT ALLOW TO ENTER SEWERS/SURFACE OR GROUND WATER.

METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP: ABSORB WITH LIQUID-BINDING MATERIAL (SAND, DIATOMITE, ACID BINDERS, UNIVERSAL BINDERS, SAWDUST). DISPOSE CONTAMINATED MATERIAL AS WASTE ACCORDING TO SECTION 13. ENSURE ADEQUATE VENTILATION.

REFERENCE TO OTHER SECTIONS: SEE SECTION 8 FOR INFORMATION ON PERSONAL PROTECTION EQUIPMENT. SEE SECTION 13 FOR DISPOSAL INFORMATION.

SECTION 7. HANDLING AND STORAGE

HANDLING
PRECAUTIONS FOR SAFE HANDLING: ENSURE GOOD VENTILATION/EXHAUSTION AT THE WORKPLACE. WEAR APPROPRIATE PROTECTIVE CLOTHING (SEE SECTION 8). DO NOT RE-USE CONTAINER.

INFORMATION ABOUT PROTECTION AGAINST EXPLOSIONS AND FIRES: NOT IGNITABLE

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES STORAGE REQUIREMENTS TO BE MET BY STOREROOMS AND RECEPTACLES: STORE AT 2-8°C. KEEP CONTAINER TIGHTLY CLOSED AND SEALED UNTIL READY FOR USE. STORE DESICCATED.

FURTHER INFORMATION ABOUT STORAGE CONDITIONS: KEEP RECEPTACLE TIGHTLY SEALED.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

CONTAINS NO SUBSTANCES WITH OCCUPATIONAL EXPOSURE LIMIT VALUES

PERSONAL PROTECTIVE EQUIPMENT
GENERAL PROTECTIVE AND HYGIENIC MEASURES
KEEP AWAY FROM FOODSTUFFS, BEVERAGES AND FEED WASH HANDS BEFORE BREAKS AND AT THE END OF WORK IMMEDIATELY REMOVE ALL SOILED AND CONTAMINATED CLOTHING AVOID CONTACT WITH THE EYES AND SKIN
BREATHING EQUIPMENT
SHORT TERM FILTER DEVICE: USE TYPE N95 OR TYPE P1 DUST MASKS
DO NOT BREATHE. USE MECHANICAL EXHAUST SYSTEM

PROTECTION OF HANDS
PROTECTIVE GLOVES.
THE GLOVE MATERIAL HAS TO BE IMPERMEABLE AND RESISTANT TO THE
PRODUCT/SUBSTANCE/PREPARATION. AS THE PRODUCT IS A PREPARATION OF
SEVERAL SUBSTANCES, THE RESISTANCE OF THE GLOVE MATERIAL CANNOT BE
CALCULATED IN ADVANCE AND THEREFORE HAS TO BE CHECKED PRIOR TO
APPLICATION. NO RECOMMENDATION CAN BE GIVEN FOR THE GLOVE
MATERIAL FOR THIS PRODUCT. SELECT GLOVE MATERIALS BASE ON
PENETRATION TIMES, RATES OF DIFFUSION AND DEGRADATION OF MATERIAL.

MATERIAL OF GLOVES
THE SELECTION OF SUITABLE GLOVES DEPENDS NOT ONLY ON THE MATERIAL
BUT ON QUALITY OF MATERIAL AND VARIES FROM MANUFACTURER TO
MANUFACTURER.

PENETRATION TIME OF GLOVE MATERIAL
THE EXACT BREAK THROUGH TIME HAS TO BE FOUND OUT BY THE
MANUFACTURER OF THE PROTECTIVE GLOVES AND HAS TO BE OBSERVED.

FOR THE PERMANENT CONTACT OF A MAXIMUM OF 15 MINUTES, GLOVES
MADE OF THE FOLLOWING MATERIALS ARE SUITABLE:
NEOPRENE GLOVES

EYE PROTECTION: TIGHTLY SEALED GOGGLES

BODY PROTECTION: PROTECTIVE WORK CLOTHING

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES
GENERAL INFORMATION
FORM: SOLID (LYOPHILIZED POWDER)
CHANGE IN CONDITION
MELTING POINT/MELTING RANGE: NO DATA AVAILABLE
BOILING POINT/BOILING RANGE: NO DATA AVAILABLE
FLASH POINT: NO DATA AVAILABLE
SELF-IGNITING: NO DATA AVAILABLE
DANGER OF EXPLOSION: PRODUCT IS NOT EXPLOSIVE.
DENSITY: NO DATA AVAILABLE
SOLUBILITY IN/MISCIBILITY WITH WATER: FULLY MISCIBLE

SECTION 10. STABILITY AND REACTIVITY

REACTIVITY
CHEMICAL STABILITY
STABLE UNDER RECOMMENDED STORAGE CONDITIONS.
THERMAL DECOMPOSITION/CONDITIONS TO BE AVOIDED: STRONG OXIDIZING AGENTS

POSSIBILITY OF HAZARDOUS REACTIONS: NO DATA AVAILABLE

HAZARDOUS DECOMPOSITION PRODUCTS: NO DATA AVAILABLE

SECTION 11. TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

TO THE BEST OF OUR KNOWLEDGE, THE TOXICOLOGICAL PROPERTIES OF THIS PRODUCT HAVE NOT BEEN THOROUGHLY INVESTIGATED.

NO KNOWN SIGNIFICANT EFFECTS OR CRITICAL HAZARDS.

NO DATA AVAILABLE FOR ACUTE TOXICITY, SKIN CORROSION/IRRITATION, SERIOUS EYE DAMAGE/EYE IRRITATION, RESPIRATORY OR SKIN SENSITIZATION, GERM CELL MUTAGENICITY, SPECIFIC TARGET ORGAN TOXICITY-SINGLE EXPOSURE, SPECIFIC TARGET ORGAN TOXICITY-REPEATED EXPOSURE OR ASPIRATION HAZARD

NO COMPONENT OF THIS PRODUCT PRESENT AT LEVELS GREATER THAN OR EQUAL TO 0.1% IS IDENTIFIED AS PROBABLE, POSSIBLE OR CONFIRMED HUMAN CARCINOGEN BY IARC, ACGIH, NTP OR OSHA

POTENTIAL HEALTH EFFECTS

INHALATION  MAY BE HARMFUL IF INHALED. MAY CAUSE RESPIRATORY IRRITATION.

SKIN  MAY BE HARMFUL IF ABSORBED THROUGH SKIN. MAY CAUSE SKIN IRRITATION.

EYES  MAY CAUSE EYE IRRITATION.

INGESTION MAY BE HARMFUL IF SWALLOWED.

SECTION 12. ECOLOGICAL INFORMATION

NO DATA AVAILABLE

SECTION 13. DISPOSAL CONSIDERATIONS

WASTE TREATMENT METHODS

CONTACT A LICENSED PROFESSIONAL WASTE DISPOSAL SERVICE TO DISPOSE OF THIS MATERIAL. DISPOSAL OF THIS PRODUCT, SOLUTIONS AND ANY BY-PRODUCTS SHOULD AT ALL TIMES COMPLY WITH THE REQUIREMENTS OF ENVIRONMENTAL PROTECTION AND WASTE DISPOSAL LEGISLATION AND ANY REGIONAL LOCAL AUTHORITY REQUIREMENTS. AVOID DISPERSAL OF SPILLED MATERIAL AND RUNOFF AND CONTACT WITH SOIL, WATERWAYS, DRAINS AND SEWERS. OBSERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.
DISPOSE OF CONTAMINATED PACKAGING AS UNUSED PRODUCT

WITHIN THE PRESENT KNOWLEDGE OF THE SUPPLIER, THIS PRODUCT IS NOT REGARDED AS HAZARDOUS WASTE, AS DEFINED BY EU DIRECTIVE 91/689/EC.

SECTION 14. TRANSPORT INFORMATION

DOT CLASSIFICATION: THIS PRODUCT IS CONSIDERED TO BE NON-HAZARDOUS FOR TRANSPORT.

IATA-DGR CLASSIFICATION: THIS PRODUCT IS CONSIDERED TO BE NON-HAZARDOUS FOR TRANSPORT.

IMDG CLASSIFICATION: THIS PRODUCT IS CONSIDERED TO BE NON-HAZARDOUS FOR TRANSPORT.

SECTION 15. REGULATORY INFORMATION

OSHA HAZARDS
NO KNOWN OSHA HAZARDS

UNITED STATES REGULATORY INFORMATION


NONE OF THE INGREDIENTS IS LISTED.

SARA (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986-USA) SECTION 313:

THIS MATERIAL DOES NOT CONTAIN ANY CHEMICAL COMPONENTS WITH KNOWN CAS NUMBERS THAT EXCEED THE THRESHOLD (DE MINIMIS) REPORTING LEVELS ESTABLISHED BY SARA TITLE III, SECTION 313.

SARA 311/312 HAZARDS
NO SARA HAZARDS

MA, PA AND NJ RIGHT TO KNOW COMPONENTS
NONE LISTED

CALIFORNIA PROP. 65 COMPONENTS
THIS PRODUCT DOES NOT CONTAIN ANY CHEMICALS KNOWN TO STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS, OR ANY OTHER REPRODUCTIVE HARM.

CANADA REGULATORY INFORMATION
WHMIS CLASSIFICATION: NOT CONTROLLED UNDER WHMIS.

EU REGULATORY INFORMATION
THIS PRODUCT IS NOT CLASSIFIED ACCORDING TO EU LEGISLATION.

SECTION 16. OTHER INFORMATION

THIS INFORMATION IS BASED ON OUR PRESENT KNOWLEDGE. HOWEVER, THIS SHALL NOT CONSTITUTE A GUARANTEE FOR ANY SPECIFIC PRODUCT FEATURES AND SHALL NOT ESTABLISH A LEGALLY VALID CONTRACTUAL RELATIONSHIP. THE ABOVE INFORMATION IS BELIEVED TO BE CORRECT, BE ALL INCLUSIVE AND SHALL BE USED ONLY AS A GUIDE. CYTOSKELETON INC. SHALL NOT BE HELD LIABLE FOR ANY DAMAGE RESULTING FROM CONTACT WITH THE ABOVE PRODUCT.

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MATERIAL SAFETY DATA SHEET

SECTION 1. CHEMICAL IDENTIFICATION

CATALOG/PRODUCT#: SDS01

NAME: SDS SAMPLE BUFFER

USE: LABORATORY CHEMICALS

MANUFACTURER/SUPPLIER:

CYTOSKELETON INC.
1830 S. Acoma St.
Denver, CO 80223
PHONE: 303-322-2254
FAX: 303-322-2257

24H EMERGENCY TOLL-FREE NUMBER: CALL INFOTRAC DAY OR NIGHT
WITHIN USA AND CANADA: 1-800-535-5053
OUTSIDE USA AND CANADA: +1 352-323-3500 (COLLECT CALLS ACCEPTED)

SECTION 2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

OSHA HAZARDS
TARGET ORGAN EFFECT, TOXIC BY INHALATION, TOXIC BY INGESTION, HIGHLY
TOXIC BY SKIN ABSORPTION, CORROSIVE

TARGET ORGANS
KIDNEY, LUNGS

GHS CLASSIFICATION
ACUTE TOXICITY, ORAL (CATEGORY 4)
ACUTE TOXICITY, INHALATION (CATEGORY 4)
ACUTE TOXICITY, DERMAL (CATEGORY 3)
SKIN IRRITATION (CATEGORY 2)
SERIOUS EYE DAMAGE (CATEGORY 1)
SKIN SENSITIZATION (CATEGORY 1)
ACUTE AQUATIC TOXICITY (CATEGORY 1)
CHRONIC AQUATIC TOXICITY (CATEGORY 1)

GHS LABEL ELEMENTS, INCLUDING PRECAUTIONARY STATEMENTS

PICTOGRAM:
SIGNAL WORD: DANGER

HAZARD STATEMENTS
H302 + H332 HARMFUL IF SWALLOWED OR INHALED
H311 TOXIC IN CONTACT WITH SKIN
H315 CAUSES SKIN IRRITATION
H317 MAY CAUSE AN ALLERGIC SKIN REACTION
H318 CAUSES SERIOUS EYE DAMAGE
H410 VERY TOXIC TO AQUATIC LIFE WITH LONG LASTING EFFECTS

PRECAUTIONARY STATEMENTS
P273 AVOID RELEASE TO THE ENVIRONMENT
P280 WEAR PROTECTIVE GLOVES/EYE PROTECTION/FACE PROTECTION
P305+P351+P338 IF IN EYES: RINSE CAUTIOUSLY WITH WATER FOR SEVERAL MINUTES. REMOVE CONTACT LENSES IF PRESENT AND EASY TO DO. CONTINUE RINSING.
P312 CALL A POISON CENTER OR PHYSICIAN IF YOU FEEL UNWELL.
P501 DISPOSE OF CONTENTS/CONTAINER TO AN APPROVED WASTE DISPOSAL PLANT.

NFPA RATINGS (SCALE 0-4)
FIRE = 0
HEALTH = 3
REACTIVITY = 0

HMIS RATINGS
HEALTH = 3
FIRE = 0
REACTIVITY = 0
CHRONIC HEALTH HAZARD = *

POTENTIAL HEALTH EFFECTS

INHALATION TOXIC IF INHALED. MATERIAL IS EXTREMELY DESTRUCTIVE TO THE TISSUE OF THE MUCOUS MEMBRANES AND UPPER RESPIRATORY TRACT.
SKIN MAY BE FATAL IF ABSORBED THROUGH SKIN. CAUSES SKIN BURNS.
EYES CAUSES EYE BURNS.
INGESTION TOXIC IF SWALLOWED.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

TRIS BASE CAS#: 77-86-1 <1%
EINECS#: 201-064-4
GLYCEROL CAS#: 56-81-5 40%
EINECS#: 200-289-5
SODIUM DODECYL SULPHATE CAS#: 151-21-3 10%
EINECS#: 205-788-1

2-MERCAPTOETHANOL CAS#: 60-24-2 5%
EINECS#: 200-464-6

TETRABROMOPHENOL BLUE CAS#: 115-39-9 0.02%
EINECS#: 204-086-2

WATER CAS#: 7732-18-5 45%
EINECS#: 231-791-2

SECTION 4. FIRST-AID MEASURES

GENERAL ADVICE: MOVE OUT OF DANGEROUS AREA. CONSULT A PHYSICIAN. SHOW THIS SAFETY DATA SHEET TO THE DOCTOR IN ATTENDANCE.

AFTER INHALATION: SUPPLY FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. CONSULT PHYSICIAN.
AFTER SKIN CONTACT: IMMEDIATELY WASH SKIN WITH SOAP AND RINSE WITH COPIOUS AMOUNTS OF WATER. TAKE VICTIM IMMEDIATELY TO HOSPITAL. CONSULT PHYSICIAN.
AFTER EYE CONTACT: RINSE OPENED EYE FOR AT LEAST 15 MINUTES UNDER RUNNING WATER. CONTINUE RINSING EYES DURING TRANSPORT TO HOSPITAL. CONSULT PHYSICIAN.
AFTER SWALLOWING: DO NOT INDUCE VOMITING. WASH OUT MOUTH WITH WATER PROVIDED PERSON IS CONSCIOUS. CONSULT PHYSICIAN.

WASH CONTAMINATED CLOTHING BEFORE REUSE.

SECTION 5. FIREFIGHTING MEASURES

CONDITIONS OF FLAMMABILITY
NOT FLAMMABLE OR COMBUSTIBLE

EXTINGUISHING MEDIA

SUITABLE EXTINGUISHING AGENTS: USE WATER SPRAY, ALCOHOL-RESISTANT FOAM, DRY CHEMICAL OR CARBON DIOXIDE
ADVICE FOR FIREFIGHTERS
PROTECTIVE EQUIPMENT: MOUNT RESPIRATORY PROTECTIVE DEVICE PREVENT CONTACT WITH SKIN AND EYES.
HAZARDOUS COMBUSTION PRODUCTS: HAZARDOUS DECOMPOSITION PRODUCTS FORMED UNDER FIRE CONDITIONS: CARBON OXIDES, NITROGEN OXIDES, SULPHUR OXIDES, HYDROGEN CHLORIDE GAS, SODIUM OXIDES

SECTION 6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES: WEAR PROTECTIVE CLOTHING, RESPIRATOR, CHEMICAL SAFETY GOGGLES, GLOVES. AVOID BREATHING VAPORS, MIST OR GAS. ENSURE ADEQUATE VENTILATION.
ENVIRONMENTAL PRECAUTIONS: DILUTE WITH PLENTY OF WATER. DO NOT ALLOW TO ENTER SEWERS/SURFACE OR GROUND WATER. PREVENT FURTHER
LEAKAGE IF SAFE TO DO SO. DISCHARGE INTO THE ENVIRONMENT MUST BE AVOIDED.

METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP: SOAK UP WITH INERT ABSORBENT MATERIAL AND DISPOSE OF AS HAZARDOUS WASTE, KEEP IN SUITABLE, CLOSED CONTAINERS FOR DISPOSAL.

REFERENCE TO OTHER SECTIONS: SEE SECTION 8 FOR INFORMATION ON PERSONAL PROTECTION EQUIPMENT. SEE SECTION 13 FOR DISPOSAL INFORMATION.

SECTION 7. HANDLING AND STORAGE

HANDLING
PRECAUTIONS FOR SAFE HANDLING: AVOID CONTACT WITH SKIN AND EYES. AVOID INHALATION OF VAPOR OR MIST. ENSURE GOOD VENTILATION/EXHAUSTION AT THE WORKPLACE. WEAR APPROPRIATE PROTECTIVE CLOTHING (SEE SECTION 8). DO NOT RE-USE CONTAINER.

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

STORAGE
REQUIREMENTS TO BE MET BY STOREROOMS AND RECEPTACLES: STORE AT 4°C. KEEP CONTAINER TIGHTLY CLOSED AND SEALED UNTIL READY FOR USE IN A DRY AND WELL-VENTILATED PLACE. CONTAINERS WHICH ARE OPENED MUST BE CAREFULLY RESEALED AND KEPT UPRIGHT TO PREVENT LEAKAGE.

FURTHER INFORMATION ABOUT STORAGE CONDITIONS: KEEP RECEPTACLE TIGHTLY SEALED.

SECTION 8. EXPOSURE CONTROLS/PERSOANL PROTECTION

COMPONENTS WITH WORKPLACE CONTROL PARAMETERS

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<th>COMPONENTS</th>
<th>CAS#</th>
<th>VALUE</th>
<th>CONTROL PARAMETERS</th>
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<tbody>
<tr>
<td>GLYCEROL</td>
<td>56-81-5</td>
<td>TWA</td>
<td>10 mg/m3</td>
<td>USA. OSHA-TABLE Z-1 LIMITS FOR AIR CONTAMINANTS-1910.1000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>5 mg/m3</td>
<td>USA. OSHA-TABLE Z-1 LIMITS FOR AIR CONTAMINANTS-1910.1000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>10 mg/m3</td>
<td>USA. ACGIH THRESHOLD LIMIT VALUES (TLV)</td>
</tr>
</tbody>
</table>

REMARKS: UPPER RESPIRATORY TRACT IRRITATION

TWA 15 mg/m3  USA. OCCUPATIONAL EXPOSURE LIMITS (OSHA) –TABLE Z-1 LIMITS FOR AIR CONTAMINANTS
TWA 5 mg/m3   USA. OCCUPATIONAL EXPOSURE LIMITS (OSHA) –TABLE Z-1 LIMITS FOR AIR CONTAMINANTS

SEE APPENDIX D – SUBSTANCES WITH NO ESTABLISHED RELS

2-MERCAPTOETHANOL 60-24-2 TWA 0.2 ppm USA. WORKPLACE ENVIRONMENTAL EXPOSURE LEVELS (WEEL)

REMARKS: SKIN

PERSONAL PROTECTIVE EQUIPMENT

GENERAL PROTECTIVE AND HYGIENIC MEASURES
KEEP AWAY FROM FOODSTUFFS, BEVERAGES AND FEED
WASH HANDS BEFORE BREAKS AND AT THE END OF WORK
IMMEDIATELY REMOVE ALL SOILED AND CONTAMINATED CLOTHING
AVOID CONTACT WITH THE EYES AND SKIN

BREATHING EQUIPMENT
WHERE RISK ASSESSMENT SHOWS AIR-PURIFYING RESPIRATORS ARE APPROPRIATE, USE A FULL-FACE RESPIRATOR WITH MULTI-PURPOSE COMBINATION OR TYPE ABEK RESPIRATOR CARTRIDGES AS A BACK-UP TO ENGINEERING CONTROLS. IF THE RESPIRATOR IS THE SOLE MEANS OF PROTECTION, USE A FULL-FACE SUPPLIED AIR RESPIRATOR.

PROTECTION OF HANDS
PROTECTIVE GLOVES.
THE GLOVE MATERIAL HAS TO BE IMPERMEABLE AND RESISTANT TO THE PRODUCT/SUBSTANCE/PREPARATION. AS THE PRODUCT IS A PREPARATION OF SEVERAL SUBSTANCES, THE RESISTANCE OF THE GLOVE MATERIAL CANNOT BE CALCULATED IN ADVANCE AND THEREFORE HAS TO BE CHECKED PRIOR TO APPLICATION. NO RECOMMENDATION CAN BE GIVEN FOR THE GLOVE MATERIAL FOR THIS PRODUCT. SELECT GLOVE MATERIALS BASE ON PENETRATION TIMES, RATES OF DIFFUSION AND DEGRADATION OF MATERIAL.

MATERIAL OF GLOVES
THE SELECTION OF SUITABLE GLOVES DEPENDS NOT ONLY ON THE MATERIAL BUT ON QUALITY OF MATERIAL AND VARIES FROM MANUFACTURER TO MANUFACTURER.

PENETRATION TIME OF GLOVE MATERIAL
THE EXACT BREAK THROUGH TIME HAS TO BE FOUND OUT BY THE MANUFACTURER OF THE PROTECTIVE GLOVES AND HAS TO BE OBSERVED.

FOR THE PERMANENT CONTACT OF A MAXIMUM OF 15 MINUTES, GLOVES MADE OF THE FOLLOWING MATERIALS ARE SUITABLE:
NEOPRENE GLOVES

EYE PROTECTION: TIGHTLY SEALED GOGGLES OR SAFETY GLASSES WITH SIDE-SHIELDS. ALSO USE FACESHIELD (8 INCH MINIMUM).

BODY PROTECTION: PROTECTIVE WORK CLOTHING

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

GENERAL INFORMATION
FORM: LIQUID

SAFETY DATA
pH: NO DATA AVAILABLE
MELTING POINT/MELTING RANGE: NO DATA AVAILABLE
BOILING POINT/BOILING RANGE: NO DATA AVAILABLE
FLASH POINT: NO DATA AVAILABLE
IGNITION TEMPERATURE: NO DATA AVAILABLE
AUTOIGNITION TEMPERATURE: NO DATA AVAILABLE
SECTION 10. STABILITY AND REACTIVITY

REACTIVITY
CHEMICAL STABILITY
STABLE UNDER RECOMMENDED STORAGE CONDITIONS.

THERMAL DECOMPOSITION/CONDITIONS TO BE AVOIDED: BASES, STRONG BASES, OXIDIZING AGENTS, STRONG REDUCING AGENTS, METALS

POSSIBILITY OF HAZARDOUS REACTIONS: NO DATA AVAILABLE

HAZARDOUS DECOMPOSITION PRODUCTS: HAZARDOUS DECOMPOSITION PRODUCTS FORMED UNDER FIRE CONDITIONS: CARBON OXIDES, NITROGEN OXIDES, SULPHUR OXIDES, HYDROGEN CHLORIDE GAS, SODIUM OXIDES

SECTION 11. TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

TO THE BEST OF OUR KNOWLEDGE, THE CHEMICAL, PHYSICAL AND TOXICOLOGICAL PROPERTIES OF THIS PRODUCT HAVE NOT BEEN THOROUGHLY INVESTIGATED.

ACUTE TOXICITY
LD50 ORAL: NO DATA AVAILABLE

INHALATION LC50
LC50 INHALATION: NO DATA AVAILABLE

DERMAL LD50
LD50 DERMAL: NO DATA AVAILABLE

SKIN IRRITATION AND CORROSION
NO DATA AVAILABLE

SERIOUS EYE DAMAGE/EYE IRRITATION
NO DATA AVAILABLE

RESPIRATORY OR SKIN SENSITIZATION
NO DATA AVAILABLE

GERM CELL MUTAGENICITY
NO DATA AVAILABLE
Carcinogenicity

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC, ACGIH, NTP or OSHA.

Reproductive Toxicity

No data available.

Teratogenicity

No data available.

Specific Target Organ Toxicity – Single Exposure (Globally Harmonized System)

No data available.

Specific Target Organ Toxicity – Repeated Exposure (Globally Harmonized System)

No data available.

Aspiration Hazard

No data available.

Potential Health Effects

Inhalation: Toxic if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.

Skin: May be fatal if absorbed through skin. Causes skin burns.

Eyes: Causes eye burns.

Ingestion: Toxic if swallowed.

Signs and Symptoms of Exposure

Burning sensation, cough, wheezing, laryngitis, shortness of breath, headache, weakness, nausea, unconsciousness.

Synergistic Effects

No data available.

Section 12. Ecological Information
TOXICITY
NO DATA AVAILABLE

PERSISTENCE AND DEGRADABILITY
NO DATA AVAILABLE

BIOACCUMULATIVE POTENTIAL
NO DATA AVAILABLE

MOBILITY IN SOIL
NO DATA AVAILABLE

PBT AND vPvB ASSESSMENT
NO DATA AVAILABLE

OTHER ADVERSE EFFECTS
AN ENVIRONMENTAL HAZARD CANNOT BE EXCLUDED IN THE EVENT OF UNPROFESSIONAL HANDLING OR DISPOSAL. VERY TOXIC TO AQUATIC LIFE

SECTION 13. DISPOSAL CONSIDERATIONS

WASTE TREATMENT METHODS
CONTACT A LICENSED PROFESSIONAL WASTE DISPOSAL SERVICE TO DISPOSE OF THIS MATERIAL. DISPOSAL OF THIS PRODUCT, SOLUTIONS AND ANY BY-PRODUCTS SHOULD AT ALL TIMES COMPLY WITH THE REQUIREMENTS OF ENVIRONMENTAL PROTECTION AND WASTE DISPOSAL LEGISLATION AND ANY REGIONAL LOCAL AUTHORITY REQUIREMENTS. AVOID DISPERSAL OF SPILLED MATERIAL AND RUNOFF AND CONTACT WITH SOIL, WATERWAYS, DRAINS AND SEWERS. OBSERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS. DISSOLVE OR MIX THE MATERIAL WITH A COMBUSTIBLE SOLVENT AND BURN IN A CHEMICAL INCINERATOR EQUIPPED WITH AN AFTERBURNER AND SCRUBBER.

DISPOSE OF CONTAMINATED PACKAGING AS UNUSED PRODUCT

SECTION 14. TRANSPORT INFORMATION

THIS PRODUCT IS SUBJECT TO THE DE MINIMIS EXCEPTIONS FOR DANGEROUS GOODS/HAZARDOUS MATERIALS IN ACCORDANCE WITH THE FOLLOWING REGULATIONS: IATA 2.6.10, ADR 3.5.1.4, AND U.S. DOT 49 CFR 173.4b.

DOT CLASSIFICATION: THIS PRODUCT IS CONSIDERED TO BE NON-HAZARDOUS FOR TRANSPORT.
IATA-DGR CLASSIFICATION: THIS PRODUCT IS CONSIDERED TO BE NON-HAZARDOUS FOR TRANSPORT.

IMDG CLASSIFICATION: THIS PRODUCT IS CONSIDERED TO BE NON-HAZARDOUS FOR TRANSPORT.

SECTION 15. REGULATORY INFORMATION

OSHA HAZARDS
TARGET ORGAN EFFECT, TOXIC BY INHALATION, TOXIC BY INGESTION, HIGHLY TOXIC BY SKIN ABSORPTION, CORROSIVE

UNITED STATES REGULATORY INFORMATION

NONE OF THE INGREDIENTS IS LISTED.

SARA (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986-USA) SECTION 313:
THIS MATERIAL DOES NOT CONTAIN ANY CHEMICAL COMPONENTS WITH KNOWN CAS NUMBERS THAT EXCEED THE THRESHOLD (DE MINIMIS) REPORTING LEVELS ESTABLISHED BY SARA TITLE III, SECTION 313.

SARA 311/312 HAZARDS
ACUTE HEALTH HAZARD, CHRONIC HEALTH HAZARD

MA RIGHT TO KNOW COMPONENTS
GLYCEROL CAS#: 56-81-5
2-MERCAPTOETHANOL CAS#: 60-24-2

PA AND NJ RIGHT TO KNOW COMPONENTS
WATER CAS#: 7732-18-5
SODIUM DODECYL SULPHATE CAS#: 151-21-3
GLYCEROL CAS#: 56-81-5
2-MERCAPTOETHANOL CAS#: 60-24-2

CALIFORNIA PROP. 65 COMPONENTS
THIS PRODUCT DOES NOT CONTAIN ANY CHEMICALS KNOWN TO STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS, OR ANY OTHER REPRODUCTIVE HARM.

SECTION 16. OTHER INFORMATION

THIS INFORMATION IS BASED ON OUR PRESENT KNOWLEDGE. HOWEVER, THIS SHALL NOT CONSTITUTE A GUARANTEE FOR ANY SPECIFIC PRODUCT FEATURES AND SHALL NOT ESTABLISH A LEGALLY VALID CONTRACTUAL RELATIONSHIP.
THE ABOVE INFORMATION IS BELIEVED TO BE CORRECT, BE ALL INCLUSIVE AND SHALL BE USED ONLY AS A GUIDE. CYTOSKELETON INC. SHALL NOT BE HELD LIABLE FOR ANY DAMAGE RESULTING FROM CONTACT WITH THE ABOVE PRODUCT.

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MATERIAL SAFETY DATA SHEET

SECTION 1. CHEMICAL IDENTIFICATION

CATALOG/PRODUCT#: DMSO

NAME: DIMETHYL SULFOXIDE (DMSO)

USE: LABORATORY CHEMICALS

MANUFACTURER/SUPPLIER:

CYTOSKELETON INC.
1830 S. Acoma St.
Denver, CO 80223
PHONE: 303-322-2254
FAX: 303-322-2257

24H EMERGENCY TOLL-FREE NUMBER: CALL INFOTRAC DAY OR NIGHT
WITHIN USA AND CANADA: 1-800-535-5053
OUTSIDE USA AND CANADA: +1 352-323-3500 (COLLECT CALLS ACCEPTED)

SECTION 2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

OSHA HAZARDS
COMBUSTIBLE LIQUID, TARGET ORGAN EFFECT

TARGET ORGANS
EYES, SKIN

GHS CLASSIFICATION
FLAMMABLE LIQUIDS (CATEGORY 4)

GHS LABEL ELEMENTS, INCLUDING PRECAUTIONARY STATEMENTS

PICTOGRAM: NONE
SIGNAL WORD: WARNING

HAZARD STATEMENTS
H227 COMBUSTIBLE LIQUID

PRECAUTIONARY STATEMENTS
NONE

NFPA RATINGS (SCALE 0-4)
FIRE = 2
HEALTH = 0
REACTIVITY = 0

HMIS RATINGS
HEALTH = 0
FIRE = 2
REACTIVITY = 0
CHRONIC HEALTH HAZARD = *

POTENTIAL HEALTH EFFECTS
INHALATION  MAY BE HARMFUL IF INHALED. MAY CAUSE RESPIRATORY IRRITATION.
SKIN  MAY BE HARMFUL IF ABSORBED THROUGH SKIN.  MAY CAUSE SKIN IRRITATION.
EYES  MAY CAUSE EYE IRRITATION.
INGESTION  MAY BE HARMFUL IF SWALLOWED.
AGGRAVATED  AVOID CONTACT WITH DMSO SOLUTIONS CONTAIN MEDICAL CONDITION TOXIC MATERIALS OR MATERIALS WITH UNKNOWN TOXICOLOGICAL PROPERTIES. DMSO IS READILY ABSORBED THROUGH SKIN AND MAY CARRY SUCH MATERIALS INTO THE BODY.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

DIMETHYL SULFOXIDE

FORMULA: C₂H₆OS
MOLECULAR WEIGHT: 78.13 g/mol

CAS #: 67-68-5
ECINEC #: 200-664-3

SECTION 4. FIRST-AID MEASURES

AFTER INHALATION: SUPPLY FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. CONSULT PHYSICIAN.
AFTER SKIN CONTACT: IMMEDIATELY WASH SKIN WITH SOAP AND RINSE WITH COPIOUS AMOUNTS OF WATER. CONSULT PHYSICIAN.
AFTER EYE CONTACT: RINSE OPENED EYE FOR AT LEAST 15 MINUTES UNDER RUNNING WATER. CONSULT PHYSICIAN.
AFTER SWALLOWING: DO NOT INDUCE VOMITING. WASH OUT MOUTH WITH WATER PROVIDED PERSON IS CONSCIOUS. CONSULT PHYSICIAN.

WASH CONTAMINATED CLOTHING BEFORE REUSE.

SECTION 5. FIREFIGHTING MEASURES

EXTINGUISHING MEDIA
SUITEABLE EXTINGUISHING AGENTS: FOR SMALL (INCIPIENT) FIRES, USE CARBON DIOXIDE, DRY CHEMICAL OR ALCOHOL-RESISTENT FOAM. FOR LARGE FIRES, APPLY WATER FROM AS FAR AS POSSIBLE. USE VERY LARGE QUANTITIES
(FLOODING) OF WATER APPLIED AS A MIST OR SPRAY; SOLID STREAMS OF WATER MAY BE INEFFECTIVE. COOL ALL AFFECTED CONTAINERS WITH FLOODING QUANTITIES OF WATER.

ADVICE FOR FIREFIGHTERS

PROTECTIVE EQUIPMENT: MOUNT RESPIRATORY PROTECTIVE DEVICE PREVENT CONTACT WITH SKIN AND EYES.

HAZARDOUS COMBUSTION PRODUCTS: HAZARDOUS DECOMPOSITION PRODUCTS FORMED UNDER FIRE CONDITIONS: CARBON OXIDES, SULPHUR OXIDES

SECTION 6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES: WEAR PROTECTIVE CLOTHING, RESPIRATOR, CHEMICAL SAFETY GOGGLES, GLOVES. REMOVE ALL SOURCES OF IGNITION. BEWARE OF VAPORS ACCUMULATING TO FORM EXPLOSIVE CONCENTRATIONS VAPORS CAN ACCUMULATE IN LOW AREAS. AVOID BREATHING VAPORS, MIST OR GAS.

ENVIRONMENTAL PRECAUTIONS: DILUTE WITH PLENTY OF WATER. DO NOT ALLOW TO ENTER SEWERS/SURFACE OR GROUND WATER. PREVENT FURTHER LEAKAGE IF SAFE TO DO SO.

METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP: CONTAIN SPILLAGE AND THEN COLLECT WITH AN ELECTRICALLY PROTECTED VACUUM CLEANER OR BY WET-BRUSHING AND PLACE IN CONTAINER FOR DISPOSAL ACCORDING TO LOCAL REGULATIONS (SEE SECTION 13). KEEP IN SUITABLE, CLOSED CONTAINERS FOR DISPOSAL.

REFERENCE TO OTHER SECTIONS: SEE SECTION 8 FOR INFORMATION ON PERSONAL PROTECTION EQUIPMENT. SEE SECTION 13 FOR DISPOSAL INFORMATION.

SECTION 7. HANDLING AND STORAGE

HANDLING

PRECAUTIONS FOR SAFE HANDLING: ENSURE GOOD VENTILATION/EXHAUSTION AT THE WORKPLACE. AVOID INHALATION OF VAPOR OR MIST. KEEP AWAY FROM SOURCES OF IGNITION – NO SMOKING. TAKE MEASURES TO PREVENT THE BUILD-UP OF ELECTROSTATIC CHARGE. WEAR APPROPRIATE PROTECTIVE CLOTHING (SEE SECTION 8). DO NOT RE-USE CONTAINER.

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES STORAGE

REQUIREMENTS TO BE MET BY STOREROOMS AND RECEPIACLES: STORE AT ROOM TEMPERATURE. KEEP CONTAINER TIGHTLY CLOSED AND SEALED UNTIL READY FOR USE IN A DRY AND WELL-VENTILATED PLACE. STORE UNDER INERT GAS. HYGROSCOPIC.

FURTHER INFORMATION ABOUT STORAGE CONDITIONS: KEEP RECEPIACLE TIGHTLY SEALED.

SECTION 8. EXPOSURE CONTROLS/PERSOANL PROTECTION

COMPONENTS WITH WORKPLACE CONTROL PARAMETERS
DIMETHYL SULFOXIDE
CAS #: 67-68-5
VALUE: TWA
CONTROL PARAMETERS: 250 ppm
BASIS: USA. WORKPLACE ENVIRONMENTAL EXPOSURE LEVELS (WEEL)

PERSONAL PROTECTIVE EQUIPMENT
GENERAL PROTECTIVE AND HYGIENIC MEASURES
KEEP AWAY FROM FOODSTUFFS, BEVERAGES AND FEED
WASH HANDS BEFORE BREAKS AND AT THE END OF WORK
IMMEDIATELY REMOVE ALL SOILED AND CONTAMINATED CLOTHING
AVOID CONTACT WITH THE EYES AND SKIN

BREATHING EQUIPMENT
WHERE RISK ASSESSMENT SHOWS AIR-PURIFYING RESPIRATORS ARE
APPROPRIATE, USE A FULL-FACE RESPIRATOR WITH MULTI-PURPOSE
COMBINATION OR TYPE ABEK RESPIRATOR CARTRIDGES AS A BACK-UP TO
ENGINEERING CONTROLS. IF THE RESPIRATOR IS THE SOLE MEANS OF
PROTECTION, USE A FULL-FACE SUPPLIED AIR RESPIRATOR.

PROTECTION OF HANDS
PROTECTIVE GLOVES.
THE GLOVE MATERIAL HAS TO BE IMPERMEABLE AND RESISTANT TO THE
PRODUCT/SUBSTANCE/PREPARATION. AS THE PRODUCT IS A PREPARATION OF
SEVERAL SUBSTANCES, THE RESISTANCE OF THE GLOVE MATERIAL CANNOT BE
CALCULATED IN ADVANCE AND THEREFORE HAS TO BE CHECKED PRIOR TO
APPLICATION. NO RECOMMENDATION CAN BE GIVEN FOR THE GLOVE
MATERIAL FOR THIS PRODUCT. SELECT GLOVE MATERIALS BASE ON
PENETRATION TIMES, RATES OF DIFFUSION AND DEGRADATION OF MATERIAL.

MATERIAL OF GLOVES
THE SELECTION OF SUITABLE GLOVES DEPENDS NOT ONLY ON THE MATERIAL
BUT ON QUALITY OF MATERIAL AND VARIES FROM MANUFACTURER TO
MANUFACTURER.

PENETRATION TIME OF GLOVE MATERIAL
THE EXACT BREAK TROUGH TIME HAS TO BE FOUND OUT BY THE
MANUFACTURER OF THE PROTECTIVE GLOVES AND HAS TO BE OBSERVED.

FOR THE PERMANENT CONTACT OF A MAXIMUM OF 15 MINUTES, GLOVES
MADE OF THE FOLLOWING MATERIALS ARE SUITABLE:
NEOPRENE GLOVES

EYE PROTECTION: TIGHTLY SEALED GOGGLES OR SAFETY GLASSES WITH SIDE-
SHIELDS

BODY PROTECTION: PROTECTIVE WORK CLOTHING

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES
INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

GENERAL INFORMATION

FORM: LIQUID, CLEAR

SAFETY DATA

pH: NO DATA AVAILABLE
MELTING POINT/MELTING RANGE: 16-19°C (61-66°F)
BOILING POINT/BOILING RANGE: 189°C (372°F)
FLASH POINT: 87°C (189°F) – CLOSED CUP
IGNITION TEMPERATURE: 301°C (574°F)
AUTOIGNITION TEMPERATURE: NO DATA AVAILABLE
LOWER EXPLOSION LIMIT: 3.5% (V)
UPPER EXPLOSION LIMIT: 42% (V)
VAPOR PRESSURE: 0.55 hPa (0.42 mmHg) AT 20°C (68°F)
DENSITY: 1.1 g/ml
SOLUBILITY IN/MISCIBILITY WITH WATER: FULLY MISCIBLE

SECTION 10. STABILITY AND REACTIVITY

REACTIVITY

CHEMICAL STABILITY
STABLE UNDER RECOMMENDED STORAGE CONDITIONS.

THERMAL DECOMPOSITION/CONDITIONS TO BE AVOIDED: HEAT, FLAMES, SPARKS, ACID CHLORIDES, PHOSPHORUS HALIDES, STRONG ACIDS, STRONG OXIDIZING AGENTS, STRONG REDUCING AGENTS

POSSIBILITY OF HAZARDOUS REACTIONS: NO DATA AVAILABLE

HAZARDOUS DECOMPOSITION PRODUCTS: HAZARDOUS DECOMPOSITION PRODUCTS FORMED UNDER FIRE CONDITIONS: CARBON OXIDES, SULPHUR OXIDES

SECTION 11. TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

TO THE BEST OF OUR KNOWLEDGE, THE CHEMICAL, PHYSICAL AND TOXICOLOGICAL PROPERTIES OF THIS PRODUCT HAVE NOT BEEN THOROUGHLY INVESTIGATED.

ACUTE TOXICITY
LD50 ORAL – RAT- 14,500 mg/kg

INHALATION LC50
LC50 INHALATION – RAT- 4 h -40250 ppm

DERMAL LD50
LD50 DERMAL – RABBIT- >5,000 mg/kg

SKIN IRRITATION AND CORROSION
SKIN –RABBIT- NO SKIN IRRITATION -4 h

SERIOUS EYE DAMAGE/EYE IRRITATION
EYES –RABBIT- MILD EYE IRRITATION

RESPIRATORY OR SKIN SENSITIZATION
NO DATA AVAILABLE

GERM CELL MUTAGENICITY

GENOTOXICITY IN VITRO –MOUSE- LYMPHOCYTE CYTOGENETIC ANALYSIS

GENOTOXICITY IN VITRO –MOUSE- LYMPHOCYTE MUTATION IN MAMMALIAN SOMATIC CELLS

GENOTOXICITY IN VIVO –RAT- INTRAPERITONEAL CYTOGENETIC ANALYSIS

GENOTOXICITY IN VIVO –MOUSE- INTRAPERITONEAL DNA DAMAGE

CARCINOGENICITY

CARCINOGENICITY –RAT- ORAL
TUMORIGENIC: EQUIVOCAL TUMORIGENIC AGENT BY RTECS CRITERIA. SKIN AND APPENDAGES: OTHER: TUMORS.

CARCINOGENICITY –MOUSE- ORAL
TUMORIGENIC: EQUIVOCAL TUMORIGENIC AGENT RTECS CRITERIA. LEUKEMIA SKIN AND APPENDAGE: OTHER: TUMORS.

NO COMPONENT OF THIS PRODUCT PRESENT AT LEVELS GREATER THAN OR EQUAL TO 0.1% IS IDENTIFIED AS PROBABLE, POSSIBLE OR CONFIRMED HUMAN CARCINOGEN BY IARC, ACGIH, NTP OR OSHA

REPRODUCTIVE TOXICITY

REPRODUCTIVE TOXICITY –RAT- INTRAPERITONEAL EFFECTS ON FERTILITY: ABORTION
REPRODUCTIVE TOXICITY –RAT- INTRAPERITONEAL EFFECTS ON FERTILITY: POST-IMPLANTATION MORTALITY (E.G., DEAD AND/OR RESORBED IMPLANTS PER TOTAL NUMBER OF IMPLANTS).
REPRODUCTIVE TOXICITY –RAT- SUBCUTANEOUS EFFECTS ON FERTILITY: POST-IMPLANTATION MORTALITY (E.G., DEAD AND/OR RESORBED IMPLANTS PER TOTAL NUMBER OF IMPLANTS). EFFECTS ON FERTILITY: LITTER SIZE (E.G., # FETUSES PER LITTER; MEASURED BEFORE BIRTH). REPRODUCTIVE TOXICITY –MOUSE- ORAL EFFECTS ON FERTILITY: PRE-IMPLANTATION MORTALITY (E.G., REDUCTION IN NUMBER OF IMPLANTS PER FEMALE; TOTAL NUMBER OF IMPLANTS PER CORPORA LUTEA). EFFECTS ON EMBRYO OR FETUS: FETOTOXICITY (EXCEPT
DEATH, E.G., STUNTED FETUS). SPECIFIC DEVELOPMENTAL ABNORMALITIES: MUSCULOSKELETAL SYSTEM

TERATOGENICITY

DEVELOPMENTAL TOXICITY – MOUSE- INTRAPERITONEAL EFFECTS ON EMBRYO OR FETUS: FETOTOXICITY (EXCEPT DEATH, E.G., STUNTED FETUS). SPECIFIC DEVELOPMENTAL ABNORMALITIES: MUSCULOSKELETAL SYSTEM.

SPECIFIC TARGET ORGAN TOXICITY – SINGLE EXPOSURE (GLOBALLY HARMONIZED SYSTEM)

NO DATA AVAILABLE

SPECIFIC TARGET ORGAN TOXICITY – REPEATED EXPOSURE (GLOBALLY HARMONIZED SYSTEM)

NO DATA AVAILABLE

ASPIRATION HAZARD

NO DATA AVAILABLE

POTENTIAL HEALTH EFFECTS

INHALATION MAY BE HARMFUL IF INHALED. MAY CAUSE RESPIRATORY IRRITATION.

SKIN MAY BE HARMFUL IF ABSORBED THROUGH SKIN. MAY CAUSE SKIN IRRITATION.

EYES MAY CAUSE EYE IRRITATION.

INGESTION MAY BE HARMFUL IF SWALLOWED.

AGGRAVATED AVOID CONTACT WITH DMSO SOLUTIONS CONTAIN MEDICAL CONDITION TOXIC MATERIALS OR MATERIALS WITH UNKNOWN TOXICOLOGICAL PROPERTIES. DMSO IS READILY ABSORBED THROUGH SKIN AND MAY CARRY SUCH MATERIALS INTO THE BODY.

SIGNS AND SYMPTOMS OF EXPOSURE

EFFECTS DUE TO INGESTION MAY INCLUDE: NAUSEA, FATIGUE, HEADACHE

SYNERGISTIC EFFECTS

NO DATA AVAILABLE

SECTION 12. ECOLOGICAL INFORMATION

TOXICITY
TOXICITY TO FISH
LC50 – PIMEPHALES PROMELAS (FATHEAD MINNOW) – 34,000 mg/l – 96 h
LC50 – ONCORHYNCHUS MYKISS (RAINBOW TROUT) – 35,000 mg/l -96 h

TOXICITY TO DAPHNIA AND OTHER AQUATIC INVERTEBRATES
EC50 – DAPHNIA PULEX (WATER FLEA) -27,500 mg/l

TOXICITY TO ALGAE
EC50 – LEPOMIS MACROCHIRUS (BLUEGILL) - >400,000 mg/l -96 h

PERSISTENCE AND DEGRADABILITY
NO DATA AVAILABLE

BIOACCUMULATIVE POTENTIAL
NO DATA AVAILABLE

MOBILITY IN SOIL
NO DATA AVAILABLE

PBT AND vPvB ASSESSMENT
NO DATA AVAILABLE

SECTION 13. DISPOSAL CONSIDERATIONS

WASTE TREATMENT METHODS
CONTACT A LICENSED PROFESSIONAL WASTE DISPOSAL SERVICE TO DISPOSE OF THIS MATERIAL. DISPOSAL OF THIS PRODUCT, SOLUTIONS AND ANY BY-PRODUCTS SHOULD AT ALL TIMES COMPLY WITH THE REQUIREMENTS OF ENVIRONMENTAL PROTECTION AND WASTE DISPOSAL LEGISLATION AND ANY REGIONAL LOCAL AUTHORITY REQUIREMENTS. AVOID DISPERAL OF SPILLED MATERIAL AND RUNOFF AND CONTACT WITH SOIL, WATERWAYS, DRAINS AND SEWERS. OBSERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.

DISPOSE OF CONTAMINATED PACKAGING AS UNUSED PRODUCT

SECTION 14. TRANSPORT INFORMATION

THIS PRODUCT IS SUBJECT TO THE DE MINIMIS EXCEPTIONS FOR DANGEROUS GOODS/HAZARDOUS MATERIALS IN ACCORDANCE WITH THE FOLLOWING REGULATIONS: IATA 2.6.10, ADR 3.5.1.4, AND U.S. DOT 49 CFR 173.4b.

DOT CLASSIFICATION: THIS PRODUCT IS CONSIDERED TO BE NON-HAZARDOUS FOR TRANSPORT.

IATA-DGR CLASSIFICATION: THIS PRODUCT IS CONSIDERED TO BE NON-HAZARDOUS FOR TRANSPORT.
IMDG CLASSIFICATION: THIS PRODUCT IS CONSIDERED TO BE NON-HAZARDOUS FOR TRANSPORT.

SECTION 15. REGULATORY INFORMATION

OSHA HAZARDS
COMBUSTIBLE LIQUID, TARGET ORGAN EFFECT

UNITED STATES REGULATORY INFORMATION

SARA (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986-USA)
NONE OF THE INGREDIENTS IS LISTED.

SARA (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986-USA)
SECTION 313:
THIS MATERIAL DOES NOT CONTAIN ANY CHEMICAL COMPONENTS WITH KNOWN CAS NUMBERS THAT EXCEED THE THRESHOLD (DE MINIMIS) REPORTING LEVELS ESTABLISHED BY SARA TITLE III, SECTION 313.

SARA 311/312 HAZARDS
FIRE HAZARD, CHRONIC HEALTH HAZARD

PA AND NJ RIGHT TO KNOW COMPONENTS
DIMETHYL SULFOXIDE CAS #: 67-68-5

CALIFORNIA PROP. 65 COMPONENTS
THIS PRODUCT DOES NOT CONTAIN ANY CHEMICALS KNOWN TO STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS, OR ANY OTHER REPRODUCTIVE HARM.

CANADA REGULATORY INFORMATION
WHMIS CLASSIFICATION: NOT CONTROLLED UNDER WHMIS.

EU REGULATORY INFORMATION
THIS PRODUCT IS NOT CLASSIFIED ACCORDING TO EU LEGISLATION.

SECTION 16. OTHER INFORMATION

THIS INFORMATION IS BASED ON OUR PRESENT KNOWLEDGE. HOWEVER, THIS SHALL NOTconstitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship. THE ABOVE INFORMATION IS BELIEVED TO BE CORRECT, BE ALL INCLUSIVE AND SHALL BE USED ONLY AS A GUIDE. CYTOSKELETON INC. SHALL NOT BE HELD LIABLE FOR ANY DAMAGE RESULTING FROM CONTACT WITH THE ABOVE PRODUCT.