MATERIAL SAFETY DATA SHEET

M-MLV Reverse Transcriptase

1. 10X reaction buffer: 100mM Tris-HCl, 400mM KCl, 20mM $MgCl_2$
2. Dilution buffer: 20mM Tris-HCl, 100mM KCl, 0.5ml EDTA, 1mM DTT, 0.5%Tween 20, 0.5% Igepal CA-630
3. dNTP

Section 1 – Safety Data for Tris
Synonyms: tris hydroxymethylaminoethane, trisamine
Molecular formula: $NH_2C(CH_2OH)_3$
CAS No: 00077-86-1
EC No:

Physical Data
Appearance: white crystals
Melting point: 172C
Boiling point:
Specific gravity:
Vapour pressure:
Flash point:
Explosion limits:
Autoignition temperature:

Stability
Stable

Toxicology
Possible irritant

Personal Protection
Safety glasses, suitable ventilation

This information was last updated on November 11th, 1997. Although we have tried to make it as accurate and useful as possible, we can take no responsibility for its use or misuse. We welcome corrections, updates and suggestions for improvements.

Section 2 – Safety Data for Hydrochloric Acid
Synonyms:muriatic acid, chlorohydric acid
Molecular formula: HCl
CAS No: 7647-01-0
EC No:

Physical Data
Appearance: clear colourless or slightly yellow liquid with pungent odour. Fuming.
Melting point: -25 C
Boiling point: 109 C
Specific gravity: 1.19
Vapour pressure:
Flash point:
Explosion limits:
Autoignition temperature:

Stability
Stable. Avoid heat, flames. Incompatible with most common metals, amines, metal oxides, acetic anhydride, propiolactone, vinyl acetate, mercuric sulphate, calcium phosphide, formaldehyde, alkalies, carbonates, strong bases, sulphuric acid, chlorosulphonic acid.

Toxicology
Extremely corrosive. Inhalation of vapour can cause serious injury. Ingestion may be fatal. Liquid can cause severe damage to skin and eyes. TLV 5 ppm.

Personal Protection
Safety glasses or face mask, gloves. Effective ventilation.

This information was last updated on November 12th, 1997. Although we have tried to make it as accurate and useful as possible, we can take no responsibility for its use or misuse. We welcome corrections, updates and suggestions for improvements.

Section 3 – Safety Data for Potassium Chloride
Synonyms: potassium muriate
Molecular formula: K Cl
CAS No: 7447407
EC No:

Physical Data
Appearance: white crystals or powder
Melting point: 776 C
Boiling point: sublimes at 1500 C
Vapour density:
Vapour pressure:
Specific gravity: 1.99 g/cm3
Flash point:
Explosion limits:
Autoignition temperature:
Solubility in water: 34.7 g/100g at 20 C

Stability
Stable.

Toxicology
Presents a low toxicological hazard. ORL-RAT LD50 2.43 g/kg

Personal Protection
Adequate ventilation.

This information was last updated on February 9, 1998. We have tried to make it as accurate and useful as possible, but can take no responsibility for its use, misuse, or accuracy. We have not verified this information, and cannot guarantee that it is up-to-date.

Section 4 – Safety Data for Magnesium Chloride
Synonyms:
Molecular formula:Mg Cl2 6H2O
CAS No: 7791-18-6
EC No:

Physical data
Appearance: white deliquescent crystals
Melting point: 118C
Boiling point:
Specific gravity: 1.56
Vapour pressure:

Flash point:
Explosion limits:
Autoignition temperature:

Stability
Stable. Substances to be avoided include most common metals, strong oxising agents. Protect from moisture

Toxicology
Possible irritant.

Personal Protection
Safety glasses. Suitable ventilation.

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Section 5 – Safety Data for EDTA
Synonyms: ethylenediaminetetraacetic acid, ethylenedinitrilotetraacetic acid
Molecular formula: (HOCOCH2)2NCH2CH2N(CH2COOH)2
CAS No: 00060-00-4
EC No:

Physical Data
Appearance: white crystals
Melting point:
Boiling point:
Specific gravity: 0.86
Vapour pressure:
Flash point:
Explosion limits:
Autoignition temperature:

Stability
Stable. Substances to be avoided include aluminium, copper, nickel.

Toxicology
Possible irritant.

Personal Protection
Safety glasses, suitable ventilation.

Section 6 – Safety Data for dTT
Name: dl-dithiothreitol electrophoresis
Mf: c4h10o2s2
Ec no: 248-531-9
Synonyms:
2,3-butanediol, 1,4-dimercapto-, dl-threo- * 2,3-butanediol, 1,4-Dimercapto-, (r*,r*)- (+-)- (9ci) * cleland's reagent * dl-threo- 1,4-Dimercapto-2,3-butanediol * (r*,r*)-(+-)-1,4-dimercapto-2,3-Butanediol * dithiothreitol * dl-dithiothreitol * dl-1,4- Dithiothreitol * rac-dithiothreitol *

Hazards Identification
Label precautionary statements
Irritant
Irritating to eyes, respiratory system and skin.
Unpleasant odor.
Target organ(s):
Central nervous system
In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable

protective clothing.

First Aid Measures
In case of contact, immediately wash skin with soap and copious amounts of water.
In case of contact, immediately flush eyes with copious amounts of water for at least 15 minutes.
If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.
If swallowed, wash out mouth with water provided person is conscious call a physician.
Discard contaminated clothing and shoes.

Fire Fighting Measures
Extinguishing media carbon dioxide, dry chemical powder or appropriate foam.
Special firefighting procedures wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
Use water spray to cool fire-exposed containers.
Unusual fire and explosions hazards emits toxic fumes under fire conditions.

Physical and Chemical Properties
Appearance and odor
Solid.
Physical properties
Melting point: 42 c to 44 c
Flashpoint >230f
>110c

Section 7 – Safety Data for Tween20

Ingredients/Identity Information
Proprietary: no
Ingredient: polysorbate 20; (polyoxyethylenesorbitan monolaurate tween 20)
Ingredient sequence number: 01
Niosh (rtecs) number: tr7400000
Cas number: 9005-64-5
Osha pel: not applicable
Acgih tlv: not applicable

Physical/Chemical Characteristics
Appearance and odor: viscous light yellow liquid.
Specific gravity: 1.095

Fire and Explosion Hazard Data
Flash point: >230f,>110c
Extinguishing media: water spray. Co2, dry chemical powder/appropriate
Foam.
Special fire fighting proc: wear niosh/msha approved scba and full
Protective equipment (fp n).
Unusual fire and expl hazrds: emits toxic fumes under fire conditions.

Reactivity Data
Stability: yes
Cond to avoid (stability): none specified by manufacturer.
Materials to avoid: strong oxidizing agents.
Hazardous decomp products: co, co2.
Hazardous poly occur: no
Conditions to avoid (poly): not relevant

Health Hazard Data
Ld50-lc50 mixture: none specified by manufacturer.
Route of entry - inhalation: yes
Route of entry - skin: yes
Route of entry - ingestion: yes
Health haz acute and chronic: acute: may be harmful by inhalation,
Ingestion, or skin absorp. May cause irrit. Chronic: none specified by

Manufacturer. The chemical, physical, and toxicological properties have not
Been thoroughly investigated.
Carcinogenicity - ntp: no
Carcinogenicity - iarc: no
Carcinogenicity - osha: no
Explanation carcinogenicity: not relevant
Signs/symptoms of overexp: see health hazards.
Med cond aggravated by exp: none specified by manufacturer.
Emergency/first aid proc: inhal: remove to fresh air. If not brthg give
Artf resp. If brthg is difficult, give o2. Ingest: wash out mouth with
Water provided pers is conscious. Call md. Eyes: immed flush with potable
Water for at least 15 minutes. See md. Skin: flush with copious amounts of
Water. Call md (fp n).

Precautions for Safe Handling and Use
Steps if matl released/spill: wear niosh/msha respirator, chemical workers
Goggles, rubber boots and heavy rubber gloves. Cover with dry lime or soda
Ash, pick up, keep in a closed container and hold for waste disposal.
Neutralizing agent: soda ash or dry lime.
Waste disposal method: dissolve or mix the matl with a combustible solv &
Burn in a chemical incinerator equipped with an afterburner & scrubber.
Observe all federal, state and local environmental regulations.
Precautions-handling/storing: do not breathe vap. Do not get in eyes/on
Skin/on clthg. Avoid prlng/rptd expos. Wash thoro after hndlg. Keep tightly
Clsd. Store in cool,dry place.
Other precautions: none specified by manufacturer.

Control Measures
Respiratory protection: niosh/msha approved respirator.
Ventilation: mechanical exhaust required.
Protective gloves: chemical resistant gloves.
Eye protection: chemical workers goggles (fp n).
Other protective equipment: safety shower & eye bath.
Work hygienic practices: wash thoroughly after handling.
Suppl. Safety & health data: none specified by manufacturer.

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Section 8 – Safety Data for Igepal CA-630
Name: Igepal CA 630

Label Precautionary Statements
Harmful
Harmful if swallowed.
Risk of serious damage to eyes.
In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing. Do not breathe vapor.

First Aid Measures
If swallowed, wash out mouth with water provided person is conscious. Call a physician.
In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated
Clothing and shoes. Call a physician.
If inhaled, remove to fresh air. If breathing becomes
Difficult, call a physician.
In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Fire Fighting Measures
Extinguishing media
Water spray.
Carbon dioxide, dry chemical powder or appropriate foam.
Special firefighting procedures
Wear self-contained breathing apparatus and protective
Clothing to prevent contact with skin and eyes.

Physical and Chemical Properties
Appearance and odor
Liquid.

Section 9 – Safety Data for dNTP

Identification of Product
*product: adenosine 5'-triphosphate (crystalline or solution)
Cas #: 51963-61-2
Formula: $c_{10}H_{14}N_5O_{13}P_3$
Molecular weight: 507.2 (for free acid)
Synonym: ATP
Catalog #: 27-1006-01,-02,-03 and 27-2056-01
Thymidine 5'-triphosphate (lyophilized or solution)
Cas #: 18423-43-3
Formula: $c_{10}H_{17}N_2O_{14}P_3$
Molecular weight: 482.2 (for free acid)
Synonym: TTP OR dTTP
Catalog #: 27-1880-01,-02,-03,-04, 27-2080-01 and 27-5800-01
2'-deoxyadenosine 5'-triphosphate (crystalline or cas #: 1927-31-7 solution)
Formula: $c_{10}H_{14}N_5O_{12}P_3$
Molecular weight: 499.2 (for free acid)
Synonym: dATP
Catalog #: 27-1850-01,-02,-03,-04, 27-2050-01 and 27-5500-01
2'-deoxycytidine 5'-triphosphate (lyophilized or cas #: 102783-51-7 solution)
Formula: $C_9H_{16}N_3O_{13}P_3Na_2$
Molecular weight: 533.1 (for sodium salt)
Synonym: dCTP
Catalog #: 27-1860-01,-02,-03,-04, 27-2060-01 and 27-5600-0127-1860
2'-deoxyguanosine 5'-triphosphate (lyophilized or cas #: 93919-41-6 solution)
Formula: $C_{10}H_{16}N_5O_{13}P_3$
Molecular weight: 507.2 (for free acid)
Synonym: dGTP
Catalog #: 27-1870-01,-02,-03,-04, 27-2070-01 and 27-5700-01
2'-deoxyuridine 5'-triphosphate (lyophilized or cas #: 102814-08-4 solution)
Formula: $C_9H_{15}N_2O_{14}P_3$
Molecular weight: 468.1 (for free acid)
Synonym: dUTP
Catalog #: 27-1890-01,-02,-03,-04 and 27-2040-01
*chemical family: nucleotides, sodium salt

Hazardous Ingredients
*material: as supplied, this product has no known hazardous ingredients.

Physical Data
*appearance: solution or crystal
*smell: n/a
*water solubility: soluble
*organic solvent solubility: n/a
*evaporation rate: n/a
*Ph: n/a
*boiling point: n/a
*density: n/a
*vapor pressure: n/a
*melting point: n/a
*vapor density: n/a
*specific gravity: n/a

Fire and Explosion Hazard Data
*fire hazard: none
*flash point: n/a
*fire extinguishing media: use extinguishing media appropriate for surrounding fire.

*special fire extinguishing procedures: wear self contained breathing apparatus and protective clothing to prevent contact with skin and eyes. Fire or excessive heat may cause production of hazardous decomposition products of oxides involving carbon, phosphorus and nitrogen.

Toxicity and Health Data
*toxicity: not established. The toxicological properties of this material have not been investigated. Exercise appropriate procedures to prevent contact with skin and eyes, and to prevent inhalation.
*acute health hazard: none known
*chronic health hazard: none known

Health Hazards
*inhalation: room ventilation should be adequate
*skin contact: wash exposed area with water. If irritation occurs seek medical advice.
*eye contact: immediately wash eyes with copious amounts of water for at least 20 minutes. Seek medical attention immediately.
*ingestion: if conscious, drink water or milk. Seek medical advice.

Reactivity Data
*reactivity: stable under ordinary conditions of use and storage
*incompatible: unknown
*decomposition: as with any organic material, combustion will produce oxides of carbon, nitrogen, and phosphorus.
*hazardous polymerization: will not occur.

Spill and Disposal Procedures
*spill: wear suitable protective clothing and eye protection. Clean area with water.
*disposal: should be safe to sewer yet dispose in accordance with all applicable federal, state, and local environmental regulations.

Protection Information
*gloves: wear protective gloves to prevent skin contact.
*eye protection: wear splash-proof goggles
*ventilation: room ventilation is adequate.

Section x. Handling and storage information
*shipping#: dot# n/a iata# n/a
*storage: -20^0 C