MATERIAL SAFETY DATA SHEET

Product Identity:
ZAP - ACRYLIC (Liquid)

SECTION I.  Identification

Manufacturer
Dental Ventures of America Inc.
1787 Pomona Rd, Suite C
Corona, CA. 92880

Emergency Telephone Number:
Infotrack (800) 535 - 5053

Product Information Number:
(951) 270 - 0606

ORIGINATED: OCT.2012

SECTION II.  Composition/Information on Ingredients

Product Identifier: Product Name: Zap-Acrylic Liquid
Based on methyl methacrylate:
- CAS-No. 80-62-6
- EU Index No. 607-035-00-6
- REACH No. 01-2119452498-28
- EINECS-No. 201-297-1

Relevant identified uses of the substance or mixture and uses advised against
For use in dental applications.

SECTION III.  Hazardous Ingredients/Identify Information

Classification of the substance or mixture
This substance is classified as hazardous according to GHS Regulation EC1272/2008
Physical H225  Flammable Liquids Hazard category 2
Health H315  Irritation of skin Hazard category 2
H317 Skin sensitisation Hazard category 1B
H335 Specific Target Organ Toxicity Hazard category 3

Single exposure (inhalation)
Label elements in Accordance with Regulation EC 1272/2008 Signal word Danger
GHS Pictogram

Hazard Statement
- H225 Highly flammable liquid or vapor
- H315 Causes skin irritation
- H317 May cause an allergic skin reaction
- H335 May cause respiratory irritation

Precautionary Statement
(Prevention) P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking
P261 Avoid breathing dust/fume/gas/mist/vapors/spray
P280 Wear protective gloves/protective clothing/eye protection/face protection

(Response) P303+361+353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower

(Disposal) P501 Dispose of contents/container in accordance with local regulation

Hazardous components for labelling
Methyl methacrylate

file: mdsd 10.22.12 pg.1-7 Zap - Acrylic Liquid
SECTION III. Hazards Ingredients Identification (Continued)

In Accordance with Directive 67/548/EC or Directive 1999/45/EC
Labelling in accordance with EC Directives Requires labelling
Hazardous components for labelling Methyl methacrylate
Hazard Symbols

F Highly flammable
Xi Irritant
Risk-Phrases

R11 Highly flammable
R36/37/38 Irritating to eyes, respiratory system and skin
R43 May cause sensitisation by skin contact

Safety-Phrases
S9 Keep container in a well-ventilated place
S16 Keep away from sources of ignition
S24/25 Avoid any inhalation, contact with skin and eyes.
Wear suitable protective clothing and gloves
S29 Do not empty into drains
S46 If swallowed, seek medical advice immediately and show this container or label
S60 This material and its container must be disposed of as hazardous waste

Other hazards:
Polymerisation with heat evolution may occur in the presence of radical forming substances (e.g. peroxides), reducing substances, and/or heavy metal ions.

In Accordance with Regulation EC 1272/2008

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>CAS NO.</th>
<th>CONTENT</th>
<th>HAZARD/CATEGORY/STATEMENT</th>
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<tbody>
<tr>
<td>Methyl Methacrylate</td>
<td>80-62-6</td>
<td>&gt;96%</td>
<td>Flam. Liq./2/H225</td>
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<tr>
<td></td>
<td>607-035-00-6</td>
<td></td>
<td>Skin Irrit./2/H315</td>
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<td>01-2119452498-28</td>
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<td>Skin Sens./1/H317</td>
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<td>201-29701</td>
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<tr>
<td>1,4-Butanediol</td>
<td>2082-81-7</td>
<td>&lt;4.0%</td>
<td>Skin Sens./1/H317</td>
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<tr>
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<td>STOT SE (inhalation)/3/H335</td>
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<tr>
<td>Dimethacrylate</td>
<td>Pre-registered</td>
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In Accordance with Directive 67/548/EC or Directive 1999/45/EC

<table>
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<th>HAZARD SYMBOL - R-PHRASE</th>
<th>CONTENT</th>
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<tbody>
<tr>
<td>Methyl Methacrylate</td>
<td>80-62-6</td>
<td>FXi – 11,36/37/38, 43</td>
<td>&gt;96%</td>
</tr>
<tr>
<td>1,4-Butanediol</td>
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<td>Xi – 36/37/38, 43</td>
<td>&lt;4.0%</td>
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<tr>
<td>Dimethacrylate</td>
<td>2082-81-7</td>
<td></td>
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</tbody>
</table>
### SECTION IV. First Aid Measures

**General advice**
Medical treatment is necessary if symptoms occur which are obviously caused by skin or eye contact with the product, or by vapour inhalation. Remove soiled soaked clothing immediately.

**Inhalation**
Move casualty to fresh air and keep them calm. Seek medical attention.

**Skin contact**
Wash off immediately with soap and water. If skin irritation occurs, seek medical attention.

**Eye contact**
Holding eyelids open, immediately rinse thoroughly with plenty of water. Seek medical advice.

**Ingestion**
Do not induce vomiting. Immediately rinse thoroughly with plenty of water. Seek medical advice.

**Most important symptoms and effects, both acute and delayed.** Causes skin and eye irritation. Skin sensitisation.

**Indication of any immediate medical attention and special treatment needed - None.**

### SECTION V. Fire-Fighting Measures

**Extinguishing media**
Suitable extinguishing media: Foam, dry powder, carbon dioxide

Unsuitable extinguishing media: Water

**Special hazards arising from the substance or mixture**
None

**Advice for firefighters**
Wear self-contained breathing apparatus and full protective clothing

### SECTION VI. Accidental Release Measures

**Personal precautions, protective equipment and emergency procedures**
Take care for adequate ventilation. Use personal protective clothing. Keep away from sources of ignition. Use breathing apparatus if exposed to vapour/dust/mist/aerosol.

**Environmental procedures**
Do not allow to enter drains/surface water/ground water/sewerage systems. If entry occurs IMMEDIATELY alert. The Environment Agency or other equivalent appropriate body.

**Methods and material for containment and cleaning up**
Larger volumes: remove mechanically (by pumping). Use explosion-proof equipment. Smaller volumes and/or residues: contain with absorbent material (e.g. sand, diatomaceous earth, acid absorbent, universal absorbent or sawdust). Dispose of in accordance with local regulations.

**Reference to other sections**
For personal protection see section 8. For disposal considerations see section 13.

### SECTION VII. Handling and Storage

**Precautions for safe handling**
Ensure the area is well ventilated. Keep container tightly closed. Keep away from heat, sparks and open flame – no smoking. Take precautionary measures against static discharge. In the event of fire, use explosion-proof equipment only. Cool the endangered containers with water. When heated above the flashpoint and/or during spraying (atomising), ignitable mixtures may form in air.

**Conditions of safe storage, including any incompatibilities**
Keep only in the original container and do not allow temperature to exceed 30°C. Protect from light. Fill the container by approx. 90% only as oxygen (air) is required for stabilisation. With large storage containers, ensure oxygen supply is sufficient to allow stability. Can polymerise with intense heat release.

### SECTION VIII. Exposure Controls / Personal Protection

**Control parameters**
Components or products of decomposition according to point 10, with limit values related to the place of work which require monitoring.

**Methyl Methacrylate**
CAS No. 80-62-6

WEL (8hrs) 208mg/m3 50 ppm

WEL (15mins) 416 mg/m3 100 ppm

**Exposure controls**

**Monitoring Data**
For monitoring procedures and technical data refer to, for instance, The National Institute for Health and Safety (NIOSH) – Manual of Analytical Methods, method 2537.
Derived No-Effect Level (DNEL)

CRITICAL COMPONENT: Methyl Methacrylate

ROUTES OF EXPOSURE (LONG-TERM): Inhalation/Dermal/Oral

DNEL:
- Methyl Methacrylate: 210mg/m³, 74.3mg/m³

Predicted No-Effect Concentration (PNEC):
- Methyl Methacrylate: Water/soil/air, 0.94mg/l

General protective measures: Do not inhale vapours. Avoid contact with eyes and skin.

Personal Protection Equipment

Hygiene measures: Store work clothes separately. Remove soiled or soaked clothing immediately. Follow the usual good standards of occupational hygiene. Clean skin thoroughly after handling. Apply skin cream.

Respiratory protection: If ventilation is insufficient, breathing apparatus to be used in case of high concentrations, short term: filter appliance, filter A.

Hand protection: Butyl rubber gloves (0.7mm), break through time 60 minutes (EN 374:2004). In practice, due to variable exposure conditions, this information can only be used as an aid to selection of a suitable chemical protection glove. This information does not substitute suitability tests by the end user. A suitable glove type should be selected for each work environment. Gloves should be replaced regularly, especially after extended contact with the substance.

Eye protection: Wear approved, tightly fitting safety goggles.

SECTION IX. Physical and Chemical Properties

- Form: Liquid
- Colour: Colourless
- Odour: Ester-like
- Melting Temperature: -48ºC
- Boiling Temperature: 100.3ºC @ 1.013hPa
- Flashpoint: 10ºC (method DIN 51755 - closed cup)
- Ignition Temperature: 430ºC (method DIN 51794)
- Lower Explosion Limit: 2.1% vol. @ 10.5ºC
- Upper Explosion Limit: 12.5% vol.
- Vapour Pressure: 47hPa @ 20ºC
- Relative Density: 0.94g/cm³ @ 20ºC
- Relative Vapour Density: >1 @ 20ºC (related to air)
- Solubility in Water: 1.6g/l @ 20ºC, difficult to mix
- Solubility (Qualitative): Miscible with most organic solvents
- pH Value: Not applicable
- Partition Co-efficient: logPow 1.38 (measured, n-Octanol/water)
- Viscosity (Dynamic): 0.6mPa·s @ 20ºC (method Brookfield)

SECTION X. Stability and Reactivity

- Reactivity: Refer to sections 2.3 and 10.2
- Chemical stability: Stable under normal temperature conditions and when used as directed. No decomposition occurs when used as directed.
- Possibility of hazardous reactions: Refer to section 2.3.
SECTION X. Stability and Reactivity Continued

Conditions to avoid
The substance is normally supplied in a stabilized form. If the permissible storage period/storage temperature is exceeded, the product may polymerize with heat generation. Avoid excessive heat for long periods of time. Avoid heat, flames and other sources of ignition.

Incompatible materials
Free radical initiators, Reducing agents, Tertiary amines, Heavy metals, Peroxides, Oxidizing agents, Mineral acids and Strong acids/alkalis

Hazardous decomposition products Oxides of carbon. No decomposition occurs when used as directed.

SECTION XI. Toxicology Information

Information on toxicological effects

Metabolism
The substance is rapidly metabolized

Acute Oral Toxicity
LD50 rat >5000mg/kg LD50 mouse =5200mg/kg LD50 rabbit >5000mg/kg

Acute Inhalation Toxicity
LC50 rat, 4h 29.8mg/l LC50 mouse, 3h 33mg/l

Acute Dermal Toxicity
LD50 rabbit >5000mg/kg

Caustic Burning/Skin Irritation
Rabbit, 24h (OECD 405) Not irritating-slightly irritating. If skin contact is prolonged and/or frequent, irritations cannot be excluded. Skin Irritant Category 2 (UN-GHS)

Serious Eye Damage/Irritation
Rabbit, 24h

Respiratory/Skin Sensitisation
Guinea pig (OECD 406) Sensitizing Repeated exposure may cause skin dryness or cracking. In humans, various types of allergic reactions have been observed (symptoms: headache, eye irritations, skin affection) Skin Irritant Category 1B (UN-GHS)

Aspiration Hazard
No evidence for hazardous properties (structure-activity relationship)

Germ Cell Mutagenicity
+ve as well as –ve results in in vitro mutagenicity/genotoxicity tests. No experimental evidence of genotoxicity in vivo is available. In general, not mutagenic according to international criteria

Carcinogenicity
Non-carcinogenic in inhalation and feeding studies performed in rats, mice and dogs

Reprotoxicity/Teratogenicity
No indication of toxic effects in experimental models. Human Health Hazard CMR:no Assessment

Specific Target Organ Toxicity
Respiratory tract irritation Hazard Category 3

single exposure

Specific Target Organ Toxicity
no evidence for hazardous properties/ repeated exposure rat, inhalation, 25-400ppm NOAEL, 25ppm/Findings: damage to nasal mucous membrane 400ppm Rat, dilute ingestion, 6-2000ppm NOAEL, 2000ppm

Findings: no toxic effect

General Information Avoid contact with skin and eyes and inhalation of substance vapours

SECTION XII. Ecological Information

Aquatic Environment
Hazardous to the aquatic environment Acute Aquatic Toxicity Category 3

Aquatoxicity, fish
LC50 Oncorhynchus mykiss, 96h >79mg/l
LC50 Lepomis macrochirus, 72h 264mg/l
LC50 Lepomis macrochirus, 96h 191mg/l

Aquatoxicity, invertebrates
EC50 Daphnia magna, 48h (OECD 202) 69mg/l
Daphnia magna, 21d flow through (OECD 202) NOEC, 37mg/l

Aquatoxicity, aquatic plants
EC50 Selenastrum capricornutum, 72hr (OECD 201) >110mg/l
EC3 Scenedesmus quadricauda, 8d (DIN 38412:9) 37mg/l

Toxicity in Microorganisms
EC3 Pseudomonas putida, 16h 100mg/l. Persistence and degradability

Persistence and Degradability
No evidence for hazardous properties

Biodegradability
Readily degradable, 14d, 28d (OECD 301, 301C) 94%

Bioaccumulative potential
Bioaccumulation No evidence for hazardous properties

Mobility in soil
Mobility The substance has poor water solubility. No evidence for hazardous properties

Results of PBT and vPvB assessment
Persistent, Bioaccumulative or Toxic No (REACH, Annex VIII)

Other adverse effects
Do not allow to enter soil, waterways or waste water
SECTION XIII. Disposal Considerations

Waste methods
Substance  Waste is hazardous and to be treated as controlled waste. Product must be disposed of as special waste after consultation with local waste authorities and the disposal company in a suitable and licensed facility.

Packaging  Contaminated packaging should be emptied optimally and after appropriate professional cleaning may be taken for re-use. Packaging that cannot be cleaned should be disposed of professionally. Do not puncture or incinerate, even when empty. Contaminated rags and the like must be discarded into designated a fireproof bucket.

List of Waste, LOW  Chemicals and gases in containers, 16 05 16 05 06 Laboratory chemicals, consisting of or containing dangerous substances, including mixtures of laboratory chemicals.
16 05 08 Discarded organic chemicals consisting of or containing dangerous substances.

Always check the given waste code according to the actual conditions of manufacturing, formulation or use in your facility.

SECTION XIV. Transportation Information

UN number  UN 1247  Hazard Class 3, flammable liquids  Packing Group II

UN proper shipping name
Land Transport ADR/GGVSEB UN/Germany  UN 1247  METHYL METHACRYLATE MONOMER MONOMER, STABILIZED, Class 3, Group II, Tunnel restriction code D/E Hazard no. 339

Land Transport RID/GGVSEB  UN 1247  METHYL METHACRYLATE MONOMER MONOMER, STABILIZED, Class 3, Group II Hazard no. 339

Inland Waterway Transport ADNR/GGVSEB  UN 1247  UN 1247 METHYL METHACRYLATE MONOMER MONOMER STABILIZED, Class 3, Group II

Shipment by Sea IMDG/GGVSee  UN 1247  UN 1247 METHYL METHACRYLATE MONOMER MONOMER STABILIZED, Class 3, Group II
Em  S F-E, S-D

Marine pollutant No

Air Transport ICAO/IATA  UN 1247  METHYL METHACRYLATE MONOMER MONOMER, STABILIZED, Class 3, Group II

Transport hazard class(es), Packing group, Environmental hazards, Special precautions for user, please see previous sections.

Transport in bulk according to the IBC code:

For transport approval see regulatory information  MARPOL 73/78, Annex II – Regulations for Control of Pollution by Noxious Liquid Substances in Bulk, SOLAS Chapter VII – Carriage of Dangerous Goods
SECTION XV. Regulatory Information

Safety, health and environmental regulations/legislation specific for the substance or mixture
National Legislation

Occupational Restrictions
Note for juveniles.
Note for pregnant women and nursing mothers
EC Directive 92/85/EEC
Status of Registration
REACH (EU) registered/pre-registered
TSCA (USA) listed or exempt
DSL (CDN) listed or exempt
AICS (AUS) listed or exempt
METI (J) listed or exempt
ECL (KOR) listed or exempt
PICCS (RP) listed or exempt
IECSC (CN) listed or exempt
HSNO (NZ) listed or exempt Code: HSR001195

Chemical safety assessment
Labelling in accordance with GefStoffV/EC Methyl Methacrylate
Hazard symbols
F Highly flammable
Xi Irritant
H-statements from Section 3
H225 Highly flammable liquid and vapour
H315 Causes skin irritation
H317 May cause an allergic skin reaction
H335 May cause respiratory irritation
R-phrases from Section 3
R11 Highly flammable
R36/37/38 Irritating to eyes, respiratory system and skin
R43 May cause sensitisation by skin contact

SECTION XVI. Other

The substance is normally supplied in a stabilised form.
If the permissible storage period and/or storage temperature is noticeably exceeded, the substance may polymerise with heat evolution.
The instructions given here are valid only for the substance as supplied, not for derivatives resulting from its use.
References
Quoted manuals and standards
IMO
OECD-SIDS
SIAR
NIH
NIOSH
UNECE

The data herein relates to the product named and is based upon information that Dental Ventures of America, Inc. believes to be reliable and accurate. No warranty expressed or implied is intended. Users of this product have the responsibility to determine the suitability of use and to adopt all necessary precautions to ensure the safety and protection of property and persons involved in said use. This information is offered solely for your consideration and interpretation.