SECTION 1: Identification

1.1 Product identifier
VELSIFLEX® 328
Mixture of Diethylene Glycol Dibenzoate (DEGDB) and Dipropylene Glycol Dibenzoate (DPGDB)

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

1.2.1 Relevant identified uses
Industrial applications: Plasticizing agent.

1.2.2 Uses advised against
No specific uses advised against have been identified.

1.3 Details of the supplier of the safety data sheet
Velsicol Chemical LLC
10400 W. Higgins Road, Suite 303
Rosemont, Illinois 60018 USA
Phone: (847) 813-7888
Fax: (847) 768-3227
Email: customerservice@velsicol.com

1.4 Emergency telephone number
Outside the continental U.S.A. call CHEMTREC 1-800-424-9300 (24 hours)
In the continental U.S.A. call CHEMTREC 1-800-424-9300 (24 hours)

SECTION 2: Hazard(s) identification

2.1 Hazard classification and Hazard statement(s)
Not classified as hazardous substance.
Inhalation and skin contact are expected to be the primary routes of occupational exposure to VELSIFLEX® 328. This material is not expected to cause significant adverse human health effects when used in accordance with good industrial hygiene and safety practices are followed. Repeated or prolonged exposure is not known to aggravate any existing medical condition.

2.2 Precautionary statements
Avoid release to the environment
Dispose of contents/container in accordance with local/regional/ national/international regulations

2.3 Signal Word
No signal Word

2.4 Pictograms
No Pictogram

2.3 Other hazards
None known
SECTION 3: Composition/information on ingredients:

3.1 Substances
Not applicable

3.2 Mixtures

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Common name and synonyms</th>
<th>CAS number</th>
<th>% by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylene glycol dibenzoate</td>
<td>oxydiethylene dibenzoate, DEGDB</td>
<td>120-55-8</td>
<td>Proprietary</td>
</tr>
<tr>
<td>Dipropylene glycol dibenzoate</td>
<td>oxydipropyl dibenzoate, DPGDB</td>
<td>27138-31-4</td>
<td>Proprietary</td>
</tr>
</tbody>
</table>

SECTION 4: First-aid measures

4.1 Description of first aid measures

4.1.1 General information:
Inhalation and skin contact are expected to be the primary routes of occupational exposure to VELSIFLEX® 328. This material is not expected to cause significant adverse human health effects when used in accordance with good industrial hygiene and safety practices are followed.

Chronic health effects: None known.
Carcinogenic status: Not listed or regulated by IARC, NTP, OSHA, or ACGIH.
Reproductive effects: None Expected.

See Section 11 for toxicological information.

4.1.2 Following inhalation:
If inhaled, remove to fresh air. If breathing is difficult, give oxygen. Seek medical attention if symptoms occur.

4.1.3 Following skin contact:
Flush the area with plenty of water. Remove material from clothing. Wash clothing before reuse.

4.1.4 Following eye contact:
Flush with plenty of water. Seek medical attention if irritation persists.

4.1.5 Following ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Get medical attention. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

4.1.6 Self-protection of the first aider:
Wear protective gloves/protective clothing/eye protection/face protection if possible. Do not get in eyes, on skin, or on clothing. Contaminated work clothing should not be allowed out of the workplace. Get medical attention immediately.

4.1.7 Notes for the doctor: Not available.

4.2 Most important symptoms and effects, both acute and delayed
High airborne concentrations of vapors resulting from heating, misting or spraying may cause irritation of the respiratory tract and mucous membranes.
4.3 Indication of any immediate medical attention and special treatments needed
None known

SECTION 5: Fire-fighting measures

5.1 Extinguishing media
Flammability Properties: Non-flammable liquid. Closed container may rupture (due to build up in pressure) when exposed to extreme heat.

Suitable extinguishing media: dry chemicals, CO2, water spray or foam.

Unsuitable extinguishing media: Do not use water jet

5.2 Special hazards arising from the substance or mixture
Products of combustion are carbon oxides (CO, CO2).

5.3 Advice for fire fighters
Firefighters and others who may be exposed to products of combustion should wear full firefighting turn out gear and self-contained breathing apparatus. Firefighting equipment should be thoroughly decontaminated after use.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel
Wearing of suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing;
Removal of ignition sources, provision of sufficient ventilation;
Evacuate the danger area or to consult an expert.

6.1.2. For emergency personnel
Wearing of suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing;
Ventilate the area involved.

6.2 Environmental precautions
Do not allow to enter sewers / surface or ground water.
In case of spillage to water course or public sewers inform responsible authorities.

6.3 Methods and materials for containment and clearing up
Small Spill - Absorb with an inert material and place in an appropriate waste disposal container.
Large Spill - Stop the leak if possible. Remove all ignition sources. Ventilate the area involved. Absorb with an inert material and put the spilled material in an appropriate waste disposal container.

6.4 References to other sections
See sections 8 and 13 for further advice.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Protective measures: Do not handle until all safety precautions have been read and understood; Wear suitable protective clothing, gloves and eye/face protection.

Measures to prevent aerosol and dust generation: Provide ventilation if necessary to minimize exposure. Do not breathe dust/fumes/gas/mist/vapours/spray.

Measures to protect the environment: Avoid release to the environment.

Advice on general occupational hygiene: Handle in accordance with good industrial hygiene and safety practices. These practices include avoiding unnecessary exposure and removal of material from eyes, skin, and clothing. Keep away from sources of ignition.

7.2 Conditions for safe storage, including any incompatibilities
Store in well ventilated area away from sources of ignition; Keep container tightly closed. Storage Temperatures: 38 °F to 150 °F; and shelf life: 2 years.

7.3 Specific end uses(s)
Plasticizer products will soften plastic materials and as a result they should not be transported in piping systems constructed from these materials.

SECTION 8. Exposure controls/personal protection

8.1 Control parameters
No national limits have been set for Occupational Exposure Limit values.

8.2 Exposure controls
Ventilation must be adequate to maintain the ambient workplace atmosphere.

8.2.1 Appropriate engineering controls:
Always provide effective general and, when necessary, local exhaust ventilation to draw spray, aerosol, fume, mist and vapor away from workers to prevent routine inhalation.

8.2.2 Personal protective equipment:
Do not eat, drink, or smoke whilst working. Keep away from foodstuffs, beverages and feed. Remove all contaminated clothing. Wash hands before breaks and at the end of work.

Respiratory protection
Respiratory protection is not needed with proper ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. Use respirator in accordance with manufacturer's use limitations.

Hand Protection
It is a good industrial hygiene practice to minimize skin contact.

Eye and face protection
Safety glasses should be worn when handling this substance.

Skin protection
It is a good industrial hygiene practice to minimize skin contact.

8.3 Environmental exposure controls:
Avoid release to the environment.
SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties
Appearance: Clear colorless to light yellow Liquid, free of particulates
Odour: Mild ester-like
Odour threshold: Not available
pH: Not available
Bulk Density: 9.6 lbs./gal (1150.3 kg/m3) @ 25°C
Melting/Freezing point: May start to solidify at < 16°C (60.8°F)
Pour point: -20°C
Boiling point: 235°C @ 5 mm Hg
Flashpoint: >149°C (TCC), DEGDB: 199°C, DPGDB: 192°C (closed cup)
Evaporation rate: Lower than 1, based on data for DPGDB
Flammability: Not flammable
Vapor pressure: 2.29 E-07 mmHg at 25°C
Vapour density: Weighted average: 6.65 (Air = 1)
Relative density: 1.14 - 1.15 at 25°C
Refractive index: 1.536 at 25°C
Solubility in water: very slightly soluble
Solubility in other solvents: Easily soluble in methanol, diethyl ether, and acetone.
Surface tension: Not available
Partition coefficient: 3-4
Volatile by weight: <3% AS D2369
Auto ignition temperature: Not < 400°C (752°F) at 760 mm Hg (DPGDB)
Decomposition temperature: Not available
Viscosity: 80 cps @ 25°C, Brookfield
Explosive properties: Not considered to be explosive
Oxidising properties: Not considered to be oxidising
Dissociation Constant: Not available
Molecular Weight: 328

9.2 Other information
Some of the number specified are typical values and do not represent a specification.

SECTION 10: Stability and reactivity

10.1 Reactivity
Not a reactive substance and no reactive hazards are expected.

10.2 Chemical stability
The product is stable.

10.3 Possibility of hazardous reactions
No hazardous reactions expected under normal conditions of use. Can decompose at elevated temperatures.

10.4 Conditions to avoid
Excessive heat and ignition sources.

10.5 Incompatible materials
Slightly reactive to reactive with oxidizing agents, acids, and alkalis.

10.6 Hazardous decomposition products
Carbon dioxide, carbon monoxide and hydrocarbons.
SECTION 11: Toxicological information

11.1 Information on toxicological effects

Velsicol Chemical LLC has not conducted toxicity tests on VELSIFLEX® 328. However, toxicity data are available on the components of this material.

Acute toxicity
This material is not classified as acute toxic for all exposure route listed above.

DPGDB: The acute median lethal oral doses (LD50) to male and female rats were calculated to be: 5072 mg/kg bodyweight (males), 3295 mg/kg bodyweight (females), and 3914 mg/kg bodyweight (both sexes).
DEGDB: The acute median lethal oral doses (LD50) to male and female rats were calculated to be: 4843 mg/kg bodyweight (males), 3535 mg/kg bodyweight (females), and 4190 mg/kg bodyweight (both sexes).

DEGDB and DPGDB:
No deaths were seen in rats exposed to a 200 mg/L aerosphere in air for four hours. The acute lethal dermal dose to rats was demonstrated to be greater than 2000 mg/kg body weight.

Skin corrosion/irritation
DPGDB and DEGDB are not irritating to the skin and are not considered to be a primary skin irritant.

Serious eye damage/irritation
DPGDB and DEGDB are not irritants to the eye.

Respiratory/skin sensitisation
DPGDB and DEGDB did not produce evidence of skin sensitization (delayed contact hypersensitivity) in any of the animals tested.

Germ cell mutagenicity
DPGDB showed no evidence of mutagenic activity in this bacterial system.
DEGDB did not demonstrate mutagenic potential in this in vitro gene mutation assay.

Carcinogenicity
Not classified (No data available).

Reproductive toxicity
A dietary concentration of dipropylene glycol dibenzoate (DPGDB) at 10000 ppm should be considered as the No-Observed-Effect-Level (NOEL) for P (F0) and F1 parent animals. The No-Observed-Adverse-Effect-Level (NOAEL) for survival and growth of the offspring is considered to be 10000 ppm.

A dietary concentration of diethylene glycol dibenzoate (DEGDB) at 10000 ppm should be considered as the No Observed Adverse Effect Level (NOAEL) for P (F0) and F1 parent animals. The NOAEL for the developing offspring is considered to be 3300 ppm. The No Observed Effect Level (NOEL) for reproductive parameters is considered to be 10000 ppm.

STOT-single exposure
Not classified (No data available).

STOT-repeated exposure
The NOAEL was 1000 mg/kg bw/day for both DPGDB and DEGDB.

Aspiration hazard
Not classified (No data available).
SECTION 12: Ecological information

12.1. Toxicity
Velsicol Chemical LLC has not conducted toxicity tests on VELSI FLEX\textsuperscript{®} 328. However, toxicity data are available for similar material.

For both components:
No observed effect level: 1000 ppm, earthworm. EC50: > 10 mg/l, Bacteria (Pseudomonas putida)

DPGDB: The EL50 (Area under the curve 72 h) was 1.1 mg/L and the EL50 (Growth rate 0-72 h was 4.9 mg/L while the EL50 (Area under the curve 96 h) was 0.95 mg/L and the EL50 (Growth rate 0-96 h) was 3.6 mg/L.

12.2 Persistence and degradability
DPGDB and DEGDB are readily biodegradable and therefore is not Persistence.

12.3 Bioaccumulative potential
QSAR data suggests that DPGDB and DEGDB are not bio-accumulative.

12.4 Mobility in soil
No specific information available

12.5 Results of PBT and vPvB assessment
DPGDB and DEGDB are not PBT or vPvB based upon experimental data.

12.6 Other adverse effects
No information available.

SECTION 13: Disposal considerations
Recycle to process, if possible. Consult your local or regional authorities for disposal options.

SECTION 14: Transport information
This substance is not under control of ADR, IMDG, IATA and DOT.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
All chemical substances in this material are included on or exempted from listing on the following inventories: Australia (AICS), Canada (DSL), China (IECSC), Europe (ELNECS), Philippines (PICCS), & United States (TSCA)

15.2 Chemical Safety Assessment

HMIS Rating
Health: 1 Flammability: 1 Reactivity (Stability): 0 Personal Protection: X

NFPA Rating
Health: 1 Flammability: 1 Reactivity (Stability): 0 Specific Hazard: X

Key: 0=Insignificant; 1=Slight; 2=Moderate; 3=High; 4=Extreme. An asterisk appearing after the HMIS Health numerical rating denotes a chronic hazard.
SECTION 16: Other information

16.1 Indication of changes
This is the first SDS under OSHA Hazard Communication Standard (HCS) (29 CFR 1910.1200(g))
30 October 2013

Update section 15, added Chemical Safety Assessment
25 November 2014

Change VELSIFLEX™ to VELSIFLEX®
Updated Section 2.1, 3.1, 7.2
13 March 2015

Update address on Section 1: 6 June 2016

Update section 2 on Signal Word: No signal word
16 January 2017

Update section 2 to remove Aquatic Chronic, category 3 classification: May 16, 2018

16.2 Key literature references and sources for data
Information on Chemicals, ECHA website: http://echa.europa.eu/information-on-chemicals
Ariel WebInsight, 3E Company.com
Product Data Sheet and SDS information from manufacturer.

16.3 Classification for mixtures and used evaluation method according to Hazard Communication Standard (HCS)(29 CFR 1910.1200(g))


16.5 Further information
To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.