

1 Identification

· **Product identifier**

· **Trade name:** *Virent BioForm™ Xylenes*

· **Relevant identified uses of the substance or mixture and uses advised against**
No further relevant information available.

· **Application of the substance / the mixture**

This material is only to be used for research and development, under the direct supervision of a technically qualified person. The toxicological properties have not been thoroughly investigated.

· **Details of the supplier of the safety data sheet**

· **Manufacturer/Supplier:**

*Virent, Inc.
3571 Anderson Street
Madison, WI USA 53704*

· **Information department:** *Product safety department: dave_runnels@virent.com*

· **Emergency telephone number:**

*For Chemical Emergency, Spill, Leak, Fire, Exposure or Accident, Call CHEMTREC (Day or Night)
CHEMTREC: NORTH AMERICA: 800-424-9300
CHEMTREC: INTERNATIONAL: CALL 703-527-3887 (collect calls accepted)*

2 Hazard(s) identification

· **Classification of the substance or mixture**



GHS02 Flame

Flam. Liq. 3 H226 Flammable liquid and vapor.



GHS08 Health hazard

STOT RE 2 H373 May cause damage to organs through prolonged or repeated exposure.

Asp. Tox. 1 H304 May be fatal if swallowed and enters airways.



GHS07

Acute Tox. 4 H312 Harmful in contact with skin.

Acute Tox. 4 H332 Harmful if inhaled.

Skin Irrit. 2 H315 Causes skin irritation.

Eye Irrit. 2A H319 Causes serious eye irritation.

STOT SE 3 H335 May cause respiratory irritation.

· **Label elements**

· **GHS label elements** *The product is classified and labeled according to the Globally Harmonized System (GHS).*

· **Hazard pictograms**



GHS02



GHS07



GHS08

· **Signal word** *Danger*

Trade name: Virent BioForm™ Xylenes

(Contd. of page 1)

· **Hazard-determining components of labeling:**

o-xylene
m-xylene
p-xylene

· **Hazard statements**

H226 *Flammable liquid and vapor.*
H312+H332 *Harmful in contact with skin or if inhaled.*
H315 *Causes skin irritation.*
H319 *Causes serious eye irritation.*
H335 *May cause respiratory irritation.*
H373 *May cause damage to organs through prolonged or repeated exposure.*
H304 *May be fatal if swallowed and enters airways.*

· **Precautionary statements**

P210 *Keep away from heat/sparks/open flames/hot surfaces. - No smoking.*
P241 *Use explosion-proof electrical/ventilating/lighting/equipment.*
P260 *Do not breathe dust/fume/gas/mist/vapors/spray.*
P280 *Wear protective gloves / eye protection / face protection.*
P280 *Wear protective gloves.*
P280 *Wear protective gloves / protective clothing.*
P280 *Wear eye protection / face protection.*
P240 *Ground/bond container and receiving equipment.*
P242 *Use only non-sparking tools.*
P243 *Take precautionary measures against static discharge.*
P264 *Wash thoroughly after handling.*
P271 *Use only outdoors or in a well-ventilated area.*
P301+P310 *If swallowed: Immediately call a poison center/doctor.*
P303+P361+P353 *IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.*
P305+P351+P338 *If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.*
P321 *Specific treatment (see on this label).*
P304+P340 *IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.*
P312 *Call a poison center/doctor if you feel unwell.*
P332+P313 *If skin irritation occurs: Get medical advice/attention.*
P337+P313 *If eye irritation persists: Get medical advice/attention.*
P314 *Get medical advice/attention if you feel unwell.*
P331 *Do NOT induce vomiting.*
P370+P378 *In case of fire: Use for extinction: CO2, powder or water spray.*
P362+P364 *Take off contaminated clothing and wash it before reuse.*
P405 *Store locked up.*
P403+P233 *Store in a well-ventilated place. Keep container tightly closed.*
P403+P235 *Store in a well-ventilated place. Keep cool.*
P501 *Dispose of contents/container in accordance with local/regional/national/international regulations.*

· **Classification system:**

· **NFPA ratings (scale 0 - 4)**



Health = 1
Fire = 3
Reactivity = 0

(Contd. on page 3)

Trade name: Virent BioForm™ Xylenes

(Contd. of page 2)

· **HMIS-ratings (scale 0 - 4)**

HEALTH	1	Health = 1
FIRE	3	Fire = 3
REACTIVITY	0	Reactivity = 0

- **Hazards Not Otherwise Classified** None
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

3 Composition/information on ingredients

- **Chemical characterization:** Mixtures
- **Description:** Mixture of the substances listed below with nonhazardous additions.

· **Components:**

95-47-6	<i>o</i> -xylene ⚠ Flam. Liq. 3, H226; ⚠ Acute Tox. 4, H312; Acute Tox. 4, H332; Skin Irrit. 2, H315	15-30%
108-38-3	<i>m</i> -xylene ⚠ Flam. Liq. 3, H226; ⚠ Acute Tox. 4, H312; Acute Tox. 4, H332; Skin Irrit. 2, H315	45-65%
106-42-3	<i>p</i> -xylene ⚠ Flam. Liq. 3, H226; ⚠ Acute Tox. 4, H312; Acute Tox. 4, H332; Skin Irrit. 2, H315	15-30%
100-41-4	ethylbenzene ⚠ Flam. Liq. 2, H225; ⚠ Carc. 2, H351; ⚠ Acute Tox. 4, H332	<1%

4 First-aid measures

- **Description of first aid measures**
- **General information:**
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
- **After inhalation:**
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
- **After eye contact:** Rinse opened eye for several minutes under running water.
- **After swallowing:** If symptoms persist consult doctor.
- **Information for doctor:**
- **Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:**
CO₂, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **Special hazards arising from the substance or mixture** No further relevant information available.

(Contd. on page 4)

Trade name: Virent BioForm™ Xylenes

(Contd. of page 3)

- **Advice for firefighters**
- **Protective equipment:** Mouth respiratory protective device.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures** Not required.
- **Environmental precautions:** Dilute with plenty of 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 item 13.
 Ensure adequate ventilation.
- **Reference to other sections**
 See Section 7 for information on safe handling.
 See Section 8 for information on personal protection equipment.
 See Section 13 for disposal information.

7 Handling and storage

- **Handling:**
- **Precautions for safe handling**
 Ensure good ventilation/exhaustion at the workplace.
 Prevent formation of aerosols.
- **Information about protection against explosions and fires:** No special measures required.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** No special requirements.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:** Keep receptacle tightly sealed.
- **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Control parameters**

· Components with limit values that require monitoring at the workplace:

95-47-6 o-xylene (15-30%)

PEL Long-term value: 435 mg/m³, 100 ppm

REL Short-term value: 655 mg/m³, 150 ppm

Long-term value: 435 mg/m³, 100 ppm

TLV Short-term value: 651 mg/m³, 150 ppm

Long-term value: 434 mg/m³, 100 ppm

BEI

108-38-3 m-xylene (45-65%)

PEL Long-term value: 435 mg/m³, 100 ppm

REL Short-term value: 655 mg/m³, 150 ppm

Long-term value: 435 mg/m³, 100 ppm

(Contd. on page 5)

Trade name: Virent BioForm™ Xylenes

(Contd. of page 4)

TLV	Short-term value: 651 mg/m ³ , 150 ppm Long-term value: 434 mg/m ³ , 100 ppm BEI
106-42-3 p-xylene (15-30%)	
PEL	Long-term value: 435 mg/m ³ , 100 ppm
REL	Short-term value: 655 mg/m ³ , 150 ppm Long-term value: 435 mg/m ³ , 100 ppm
TLV	Short-term value: 651 mg/m ³ , 150 ppm Long-term value: 434 mg/m ³ , 100 ppm BEI
· Ingredients with biological limit values:	
95-47-6 o-xylene (15-30%)	
BEI	1.5 g/g creatinine Medium: urine Time: end of shift Parameter: Methylhippuric acids
108-38-3 m-xylene (45-65%)	
BEI	1.5 g/g creatinine Medium: urine Time: end of shift Parameter: Methylhippuric acids
106-42-3 p-xylene (15-30%)	
BEI	1.5 g/g creatinine Medium: urine Time: end of shift Parameter: Methylhippuric acids

· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**

· **Personal protective equipment:**

· **General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing.

Wash hands before breaks and at the end of work.

Avoid contact with the skin.

Avoid contact with the eyes and skin.

· **Breathing equipment:**

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

· **Protection of hands:**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

(Contd. on page 6)

Trade name: Virent BioForm™ Xylenes

(Contd. of page 5)

· Material of gloves

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

· 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.

· **Eye protection:** Goggles recommended during refilling.

9 Physical and chemical properties

· Information on basic physical and chemical properties
· General Information
· Appearance:

Form:	Liquid
Color:	Clear
Odor:	Aromatic
Odour threshold:	Not determined.

· **pH-value:** Not determined.

· Change in condition

Melting point/Melting range:	Not determined.
Boiling point/Boiling range:	130 °C (266 °F)

· **Flash point:** ≤ 21 °C (≤ 70 °F)

· **Flammability (solid, gaseous):** Not applicable.

· **Ignition temperature:** 465 °C (869 °F)

· **Decomposition temperature:** Not determined.

· **Auto igniting:** Product is not selfigniting.

· **Danger of explosion:** Product is not explosive. However, formation of explosive air/vapor mixtures are possible.

· Explosion limits:

Lower:	1.7 Vol %
Upper:	7.6 Vol %

· **Vapor pressure at 20 °C (68 °F):** 8.2 hPa (6 mm Hg)

· **Density at 20 °C (68 °F):** 0.87 g/cm³ (7.26 lbs/gal)

· **Relative density** Not determined.

· **Vapour density** Not determined.

· **Evaporation rate** Not determined.

· Solubility in / Miscibility with

Water: Not Determined

· **Partition coefficient (n-octanol/water):** Not determined.

· Viscosity:

Dynamic at 20 °C (68 °F):	0.6 mPas
Kinematic:	Not determined.

(Contd. on page 7)

Trade name: Virent BioForm™ Xylenes

(Contd. of page 6)

- **Solvent content:**
 - Organic solvents:** 100.0 %
Not tested
 - VOC content:** 100.0 %
870.0 g/l / 7.26 lb/gl
- **Other information** No further relevant information available.

10 Stability and reactivity

- **Reactivity**
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:** No dangerous decomposition products known.

11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:**

- **LD/LC50 values that are relevant for classification:**

95-47-6 o-xylene

Dermal	LD50	1100 mg/kg (ATE)
Inhalative	LC50/4 h	11 mg/l (ATE)

108-38-3 m-xylene

Oral	LD50	5000 mg/kg (rat)
Dermal	LD50	14100 mg/kg (rabbit)
Inhalative	LC50/4 h	11 mg/l (ATE)

106-42-3 p-xylene

Oral	LD50	5000 mg/kg (rat)
Dermal	LD50	1100 mg/kg (ATE)
Inhalative	LC50/4 h	11 mg/l (ATE)

- **Primary irritant effect:**
 - **on the skin:** Irritant to skin and mucous membranes.
 - **on the eye:** No irritating effect.
- **Sensitization:** No sensitizing effects known.
- **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Harmful
Irritant
- **Carcinogenic categories**

- **IARC (International Agency for Research on Cancer)**

95-47-6	o-xylene	3
108-38-3	m-xylene	3
106-42-3	p-xylene	3

(Contd. on page 8)

Trade name: Virent BioForm™ Xylenes

(Contd. of page 7)

100-41-4 ethylbenzene

2B

· NTP (National Toxicology Program)

None of the ingredients is listed.

· OSHA-Ca (Occupational Safety & Health Administration)

None of the ingredients is listed.

12 Ecological information

- **Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **Persistence and degradability** No further relevant information available.
- **Behavior in environmental systems:**
- **Bioaccumulative potential** No further relevant information available.
- **Mobility in soil** No further relevant information available.
- **Additional ecological information:**
- **General notes:** Generally not hazardous for water
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **Other adverse effects** No further relevant information available.

13 Disposal considerations

- **Waste treatment methods**
- **Recommendation:**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.
- **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport information

- | | |
|-------------------------------------|---------------------|
| · UN-Number | |
| · DOT, ADR, IATA | UN1307 |
| · ADN, IMDG | Void |
| · UN proper shipping name | |
| · DOT | Xylenes |
| · ADR | 1307 Xylenes |
| · ADN, IMDG | Void |
| · IATA | XYLENES |
| · Transport hazard class(es) | |
| · DOT | |
| · Class | 3 Flammable liquids |
| · ADR, ADN, IMDG, IATA | |
| · Class | Void |

(Contd. on page 9)

Trade name: Virent BioForm™ Xylenes

(Contd. of page 8)

- | | |
|--|-----------------|
| · Packing group | |
| · DOT, IATA | III |
| · ADR, IMDG | Void |
| · Environmental hazards: | |
| · Marine pollutant: | No |
| · Special precautions for user | Not applicable. |
| · Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code | Not applicable. |
| · UN "Model Regulation": | UN1307, Xylenes |

15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
- Sara

· **Section 355 (extremely hazardous substances):**

None of the ingredients is listed.

· **Section 313 (Specific toxic chemical listings):**

All ingredients are listed.

· **TSCA (Toxic Substances Control Act):**

All ingredients are listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**

100-41-4	ethylbenzene
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· **Chemicals known to cause reproductive toxicity for females:**

Sample not tested

· **Chemicals known to cause reproductive toxicity for males:**

Sample not tested

· **Chemicals known to cause developmental toxicity:**

Sample not tested

· **Carcinogenicity categories**

· **EPA (Environmental Protection Agency)**

95-47-6	o-xylene	I
108-38-3	m-xylene	I
106-42-3	p-xylene	I
100-41-4	ethylbenzene	D

· **TLV (Threshold Limit Value established by ACGIH)**

95-47-6	o-xylene	A4
108-38-3	m-xylene	A4
106-42-3	p-xylene	A4
100-41-4	ethylbenzene	A3

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

Sample not tested

(Contd. on page 10)

Trade name: Virent BioForm™ Xylenes

(Contd. of page 9)

- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms**



GHS02 GHS07 GHS08

- **Signal word** *Danger*

- **Hazard-determining components of labeling:**

o-xylene
m-xylene
p-xylene

- **Hazard statements**

H226 *Flammable liquid and vapor.*
 H312+H332 *Harmful in contact with skin or if inhaled.*
 H315 *Causes skin irritation.*
 H319 *Causes serious eye irritation.*
 H335 *May cause respiratory irritation.*
 H373 *May cause damage to organs through prolonged or repeated exposure.*
 H304 *May be fatal if swallowed and enters airways.*

- **Precautionary statements**

P210 *Keep away from heat/sparks/open flames/hot surfaces. - No smoking.*
 P241 *Use explosion-proof electrical/ventilating/lighting/equipment.*
 P260 *Do not breathe dust/fume/gas/mist/vapors/spray.*
 P280 *Wear protective gloves / eye protection / face protection.*
 P280 *Wear protective gloves.*
 P280 *Wear protective gloves / protective clothing.*
 P280 *Wear eye protection / face protection.*
 P240 *Ground/bond container and receiving equipment.*
 P242 *Use only non-sparking tools.*
 P243 *Take precautionary measures against static discharge.*
 P264 *Wash thoroughly after handling.*
 P271 *Use only outdoors or in a well-ventilated area.*
 P301+P310 *If swallowed: Immediately call a poison center/doctor.*
 P303+P361+P353 *IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.*
 P305+P351+P338 *If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.*
 P321 *Specific treatment (see on this label).*
 P304+P340 *IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.*
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 P332+P313 *If skin irritation occurs: Get medical advice/attention.*
 P337+P313 *If eye irritation persists: Get medical advice/attention.*
 P314 *Get medical advice/attention if you feel unwell.*
 P331 *Do NOT induce vomiting.*
 P370+P378 *In case of fire: Use for extinction: CO2, powder or water spray.*
 P362+P364 *Take off contaminated clothing and wash it before reuse.*
 P405 *Store locked up.*
 P403+P233 *Store in a well-ventilated place. Keep container tightly closed.*
 P403+P235 *Store in a well-ventilated place. Keep cool.*
 P501 *Dispose of contents/container in accordance with local/regional/national/international regulations.*

(Contd. on page 11)



Safety Data Sheet

acc. to OSHA HCS

Printing date 05/06/2015

Reviewed on 05/06/2015

Trade name: Virent BioForm™ Xylenes

(Contd. of page 10)

· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

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.

· **Date of preparation / last revision** 05/06/2015 / -

· **Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

ACGIH: American Conference of Governmental Industrial Hygienists

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

VOC: Volatile Organic Compounds (USA, EU)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

Flam. Liq. 2: Flammable liquids, Hazard Category 2

Flam. Liq. 3: Flammable liquids, Hazard Category 3

Acute Tox. 4: Acute toxicity, Hazard Category 4

Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2

Eye Irrit. 2A: Serious eye damage/eye irritation, Hazard Category 2A

Carc. 2: Carcinogenicity, Hazard Category 2

STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3

STOT RE 2: Specific target organ toxicity - Repeated exposure, Hazard Category 2

Asp. Tox. 1: Aspiration hazard, Hazard Category 1