Safety Data Sheet
acc. to OSHA HCS

Printing date 03/25/2020 Reviewed on 03/25/2020

1 Identification

· **Product identifier**

· **Trade name: HTC-300 High Temperature Carbon Ink**
· **Application of the substance / the mixture** Screen printing ink

· **Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Kayaku Advanced Materials, Inc.
200 Flanders Road
Westborough, MA 01581
Tel: (617) 965-5511
Fax: (617) 965-5818

· **Information department:**
Product Safety
Email: productsafety@kayakuAM.com
· **Emergency telephone number:**
Kayaku Advanced Materials : 617-965-5511
Chemtrec USA Emergency : 800-424-9300
Chemtrec International Emergency : 703-527-3887

2 Hazard(s) identification

· **Classification of the substance or mixture**

GHS08 Health hazard

Carc. 2 H351 Suspected of causing cancer. Route of exposure: Inhalation.

GHS07

Skin Irrit. 2 H315 Causes skin irritation.
Eye Irrit. 2A H319 Causes serious eye irritation.
Skin Sens. 1 H317 May cause an allergic skin reaction.

Aquatic Chronic 3 H412 Harmful to aquatic life with long lasting effects.

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

GHS07 GHS08

· **Signal word** Warning

· **Hazard-determining components of labeling:**
Proprietary Resin
Carbon black
· **Hazard statements**
H315 Causes skin irritation.

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H319 Causes serious eye irritation.
H317 May cause an allergic skin reaction.
H351 Suspected of causing cancer. Route of exposure: Inhalation.
H412 Harmful to aquatic life with long lasting effects.

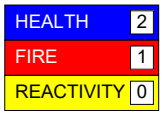
· **Precautionary statements**

P261	*Avoid breathing dust/fume/gas/mist/vapors/spray*
P273	*Avoid release to the environment.*
P280	*Wear protective gloves/protective clothing/eye protection/face protection.*
P301+P310	*If swallowed: Immediately call a poison center/doctor.*
P302+P352	*If on skin: Wash with plenty of soap and water.*
P304+P341	*If inhaled: If breathing is difficult, remove person to fresh air and keep comfortable for breathing.*
P305+P351+P338	*If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.*
P333+P313	*If skin irritation or rash occurs: Get medical advice/attention.*
P337+P313	*If eye irritation persists: Get medical advice/attention.*
P403+P233	*Store in a well-ventilated place. Keep container tightly closed.*
P501	*Dispose of contents/container in accordance with local/regional/national/international regulations.*

· **Classification system:**
· **NFPA ratings (scale 0 - 4)**

Health = 2
Fire = 1
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**



Health = 2
Fire = 1
Reactivity = 0

· **Other hazards**
· **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.*

· **Dangerous components:**		
112-15-2	*Diethylene glycol monoethyl ether acetate* *Eye Irrit. 2A, H319*	*60-80%*
	Proprietary Resin *Aquatic Chronic 2, H411; Acute Tox. 4, H312; Skin Irrit. 2, H315; Eye Irrit. 2A, H319; Skin Sens. 1, H317*	*10-25%*
1333-86-4	*Carbon black* *Carc. 2, H351*	*5-15%*
100-41-4	*Ethylbenzene* *Flam. Liq. 2, H225; Carc. 2, H351; STOT RE 2, H373; Asp. Tox. 1, H304; Acute Tox. 4, H332*	*<1%*

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· **Additional Components:**			
7782-42-5	Graphite		5-15%
108-65-6	1-Methoxy-2-propanol acetate	Flam. Liq. 3, H226; STOT SE 3, H336	<1%

4 First-aid measures

· **Description of first aid measures**
· **General information:** Immediately remove any clothing soiled by the product.
· **After inhalation:**
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
· **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
· **After eye contact:**
Wash eyes immediately with a large amount of water or normal saline, occasionally lifting upper and lower eye lids until no evidence of chemical remains (about 20 minutes). Remove contact lenses if present and easy to remove. Seek immediate medical attention.
· **After swallowing:**
Do not induce vomiting unless instructed to do so by a physician. Wash out mouth with water and keep person at rest. Seek immediate medical attention.
· **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** Treat symptomatically.

5 Fire-fighting measures

· **Extinguishing media**
· **Suitable extinguishing agents:**
Alcohol resistant foam
Fire-extinguishing powder
ABC powder
· **For safety reasons unsuitable extinguishing agents:** Water with full jet
· **Special hazards arising from the substance or mixture** No further relevant information available.
· **Advice for firefighters**
· **Protective equipment:** Wear SCBA.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation
Keep away from ignition sources
· **Environmental precautions:**
Inform respective authorities in case of seepage into water course or sewage system.
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).
Ensure adequate ventilation.

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· **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.
· **Protective Action Criteria for Chemicals**

· **PAC-1:**		
112-15-2	Diethylene glycol monoethyl ether acetate	16 mg/m3
	Proprietary Resin	90 mg/m3
1333-86-4	Carbon black	9 mg/m3
108-65-6	1-Methoxy-2-propanol acetate	50 ppm
1330-20-7	Xylene	130 ppm
123-86-4	n-Butyl acetate	5 ppm
100-41-4	Ethylbenzene	33 ppm

· **PAC-2:**		
112-15-2	Diethylene glycol monoethyl ether acetate	170 mg/m3
	Proprietary Resin	990 mg/m3
1333-86-4	Carbon black	99 mg/m3
108-65-6	1-Methoxy-2-propanol acetate	1,000 ppm
1330-20-7	Xylene	920* ppm
123-86-4	n-Butyl acetate	200 ppm
100-41-4	Ethylbenzene	1100* ppm

· **PAC-3:**		
112-15-2	Diethylene glycol monoethyl ether acetate	1,000 mg/m3
	Proprietary Resin	5,900 mg/m3
1333-86-4	Carbon black	590 mg/m3
108-65-6	1-Methoxy-2-propanol acetate	5000* ppm
1330-20-7	Xylene	2500* ppm
123-86-4	n-Butyl acetate	3000* ppm
100-41-4	Ethylbenzene	1800* ppm

7 Handling and storage

· **Handling:**
· **Precautions for safe handling**
Ensure good ventilation/exhaust at the workplace.
Prevent formation of aerosols.
· **Information about protection against explosions and fires:**
Keep ignition sources away - Do not smoke.
Protect against electrostatic charges.

· **Conditions for safe storage, including any incompatibilities**
· **Storage:**
· **Requirements to be met by storerooms and containers:** No special requirements.
· **Information about storage in one common storage facility:**
Do not store together with alkalis (caustic solutions).
Do not store together with oxidizing and acidic materials.

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· **Further information about storage conditions:**
Keep container well-sealed in cool, dry location.
Protect from heat and direct sunlight.
Store receptacle in a well ventilated area.
· **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:**
The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit.
At this time, the other constituents have no known exposure limits.

1333-86-4 Carbon black	
PEL	Long-term value: 3.5 mg/m³
REL	Long-term value: 3.5* mg/m³ *0.1 in presence of PAHs;See Pocket Guide Apps.A+C
TLV	Long-term value: 3* mg/m³ *inhalable fraction

100-41-4 Ethylbenzene	
PEL	Long-term value: 435 mg/m³, 100 ppm
REL	Short-term value: 545 mg/m³, 125 ppm Long-term value: 435 mg/m³, 100 ppm
TLV	Long-term value: 87 mg/m³, 20 ppm BEI

· **Ingredients with biological limit values:**	
100-41-4 Ethylbenzene	
BEI	0.7 g/g creatinine Medium: urine Time: end of shift at end of workweek Parameter: Sum of mandelic acid and phenylglyoxylic acid (nonspecific, semi-quantitative) - Medium: end-exhaled air Time: not critical Parameter: Ethyl benzene (semi-quantitative)

· **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 food and beverages.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
· **Respiratory equipment:**
In case of low exposure, use cartridge respirator. In case of intensive or longer exposure, use SCBA.

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· **Protection of hands:**

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
· **Material of gloves** *Nitrile rubber, NBR*
· **Penetration time of glove material** *Contact glove manufacture for break-through time.*
· **Eye protection:**

Tightly sealed goggles

9 Physical and chemical properties

· **Information on basic physical and chemical properties**	
· **General Information**	
· **Appearance:**	
Form:	*Paste*
Color:	*Black*
· **Odor:**	*Sweet*
· **Odor threshold:**	*Not determined.*
· **pH-value:**	*Not determined.*
· **Change in condition**	
Melting point/Melting range:	*Undetermined.*
Boiling point/Boiling range:	*Undetermined.*
· **Flash point:**	*98 °C (208.4 °F)*
· **Flammability (solid, gaseous):**	*Not applicable.*
· **Decomposition temperature:**	*Not determined.*
· **Auto igniting:**	*Product is not selfigniting.*
· **Danger of explosion:**	*Product does not present an explosion hazard.*
· **Explosion limits:**	
Lower:	*Not determined.*
Upper:	*Not determined.*
· **Vapor pressure:**	*Not determined.*
· **Density:**	*See other information*
· **Relative density**	*Not determined.*
· **Vapor density**	*Not determined.*
· **Evaporation rate**	*1.6-2.3 (BuAc=1)*
· **Solubility in / Miscibility with**	
Water:	*Water miscible No*
· **Partition coefficient (n-octanol/water):**	*Not determined.*

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· **Viscosity:**	
Dynamic:	Not determined.
Kinematic:	Not determined.
· **Solvent content:**	
Organic solvents:	1.5 %
VOC content:	1.5 %
Solids content:	34 - 38 %
· **Other information**	No further relevant information available.

10 Stability and reactivity

· **Reactivity** No further relevant information available.
· **Chemical stability** Stable
· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
· **Possibility of hazardous reactions** No dangerous reactions known.
· **Conditions to avoid**
Heat, flames and sparks. Extremes of temperature and direct sunlight.
Contact with incompatible materials.
· **Incompatible materials:** Strong Oxidizing Agents, Strong Acids, Strong Bases
· **Hazardous decomposition products:** Carbon monoxide and carbon dioxide

11 Toxicological information

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

· **LD/LC50 values that are relevant for classification:**		
Proprietary Resin		
Oral	LD50	30000 mg/kg (Rat)
Dermal	LD50	>1200 mg/kg (Rat)

· **Primary irritant effect:**
· **on the skin:** Irritant to skin and mucous membranes.
· **on the eye:** Irritating effect.
· **Sensitization:** Sensitization possible through skin contact.
· **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Irritant

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**		
1333-86-4	Carbon black	2B
1330-20-7	Xylene	3
100-41-4	Ethylbenzene	2B

· **NTP (National Toxicology Program)**
None of the ingredients are listed.

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· **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients are 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.*
· **Ecotoxical effects:**
· **Remark:** *Harmful to fish*
· **Additional ecological information:**
· **General notes:**
Water hazard class 2 (Self-assessment): hazardous for water
Do not allow product to reach ground water, water course or sewage system.
Danger to drinking water if even small quantities leak into the ground.
Harmful to aquatic organisms
· **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 as regular garbage/trash. Do not allow product to reach sewage system.
Disposal must be made in accordance with Federal, State, and Local regulations.

· **Uncleaned packagings:**
· **Recommendation:** *Disposal must be made in accordance with Federal, State, and Local regulations.*

14 Transport information

· **UN-Number**	
· **DOT, ADR, ADN, IMDG, IATA**	*Not Regulated*
· **UN proper shipping name**	
· **ADR, ADN, IMDG, IATA**	*Not Regulated*
· **Transport hazard class(es)**	
· **DOT, ADR, ADN, IMDG, IATA**	
· **Class**	*Not Regulated*
· **Packing group**	
· **DOT, ADR, IMDG, IATA**	*Not Regulated*

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· **Environmental hazards:**	Not applicable.
· **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":**	Not Regulated

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 are listed.

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

112-15-2	Diethylene glycol monoethyl ether acetate
1330-20-7	Xylene
100-41-4	Ethylbenzene

· **TSCA (Toxic Substances Control Act):** All ingredients are listed or comply with TSCA regulations.
· **Proposition 65**

· **Chemicals known to cause cancer:**

1333-86-4	Carbon black
100-41-4	Ethylbenzene

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

None of the ingredients are listed.

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

None of the ingredients are listed.

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

None of the ingredients are listed.

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**

1330-20-7	Xylene	I
100-41-4	Ethylbenzene	D

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

1333-86-4	Carbon black	A4
1330-20-7	Xylene	A4
100-41-4	Ethylbenzene	A3

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

1333-86-4	Carbon black

· **New Jersey State Right To Know List**

112-15-2	Diethylene glycol monoethyl ether acetate

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· **Pennsylvania Hazardous Substances List**	
112-15-2	Diethylene glycol monoethyl ether acetate

· **California SCAQMD Rule 443.1 VOC's:** No information available.
· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms**

GHS07 GHS08

· **Signal word** Warning

· **Hazard-determining components of labeling:**
Proprietary Resin
Carbon black
· **Hazard statements**
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H317 May cause an allergic skin reaction.
H351 Suspected of causing cancer. Route of exposure: Inhalation.
H412 Harmful to aquatic life with long lasting effects.
· **Precautionary statements**

P261	Avoid breathing dust/fume/gas/mist/vapors/spray
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P310	If swallowed: Immediately call a poison center/doctor.
P302+P352	If on skin: Wash with plenty of soap and water.
P304+P341	If inhaled: If breathing is difficult, remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P337+P313	If eye irritation persists: Get medical advice/attention.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

· **National regulations:**

· **Other regulations, limitations and prohibitive regulations**
Kayaku Advanced Materials has confirmed with our precious metal suppliers that they do not use conflict minerals, as outlined in the Dodd-Frank Wall Street Reform and Consumer Protection Act in Title XV, Section 1502.
· **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.

· **Department issuing SDS:** Product safety department

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· **Contact:** *Tom Cole, EHS Manager (tcole@kayakuAM.com)*

· **Revision History:** *The manufacturer's information in Section 1 has been updated.*
· **Date of preparation / last revision** *03/25/2020 / 1*
· **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
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
BEI: Biological Exposure Limit
Flam. Liq. 2: Flammable liquids – Category 2
Acute Tox. 4: Acute toxicity – Category 4
Skin Irrit. 2: Skin corrosion/irritation – Category 2
Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A
Skin Sens. 1: Skin sensitisation – Category 1
Carc. 2: Carcinogenicity – Category 2
STOT RE 2: Specific target organ toxicity (repeated exposure) – Category 2
Asp. Tox. 1: Aspiration hazard – Category 1
Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2
Aquatic Chronic 3: Hazardous to the aquatic environment - long-term aquatic hazard – Category 3