Section 1. Identification of the substance/ mixture and of the company/ undertaking

1.1 Product identifier
   Product name: IC3D Standard ABS
   This safety data sheet pertains to the following colors:
   Blue, Green, Grey, Natural, Orange, Red, White, Yellow

1.2 Relevant identified uses of the substance or mixture and uses advised against
   Relevant identified uses: Mixture used to produce molded plastic articles

1.3 Details of the supplier of the Safety Data Sheet
   IC3D, Inc
   1697 Westbelt Drive
   Columbus, OH 43228
   614-344-0414

Section 2. Hazards identification

2.1 Classification of the substance or mixture
   Classification according to Directive 67/548/EEC or 1999/45/EC: Not classified as hazardous (polymeric state)
   Classification according to Regulation (EC) N° 1272/2008 (CLP): Not classified as hazardous (polymeric state)

2.2 Label elements
   Not labeled as hazardous

2.3 Other hazards
   vPvB/PBT assessment: not available

Section 3. Composition/information on ingredients
3.1 Composition of the substance/ preparation
Substance or Preparation: Substance Content

<table>
<thead>
<tr>
<th>CAS</th>
<th>Name</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>9003-56-9</td>
<td>Acrylonitrile-Butadiene-Styrene copolymer</td>
<td>&gt;98 %</td>
</tr>
<tr>
<td>-</td>
<td>Additives</td>
<td>≤2 %</td>
</tr>
</tbody>
</table>

Impurities Contributing to Hazard: None

3.2 Additional information:

Reach Info:

<table>
<thead>
<tr>
<th>Name</th>
<th>Registration No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acrylonitrile</td>
<td>01-2119474195-34-0045</td>
</tr>
<tr>
<td>Styrene</td>
<td>01-2119457861-32-0006</td>
</tr>
<tr>
<td></td>
<td>01-2119457861-32-0007</td>
</tr>
<tr>
<td></td>
<td>01-2119457861-32-0057</td>
</tr>
<tr>
<td></td>
<td>01-2119457861-32-0065</td>
</tr>
<tr>
<td></td>
<td>01-2119457861-32-0081</td>
</tr>
<tr>
<td>Buta-1,3-diene</td>
<td>01-2119471988-16-0044</td>
</tr>
</tbody>
</table>

3.3 For full text of R- and H-phrases: See section 16

Section 4. First-aid measures

4.1 Description of first aid measures

General notes: Remove affected persons from the danger area, at the same time ensuring your own safety. Remove all contaminated clothing immediately.

Following inhalation: In case of gases evolving from melted resin, move subject to fresh air. Treat symptomatically.

Following skin contact: In case of pellets or powder, wash with water. In case of smelt, wash affected skin area and clothing with plenty of (soap and) water. Seek medical advice.

Following eye contact: In case of pellets or powder, flush with plenty of water for at least 15 minutes. Seek medical advice if any dust particles remain.
In case of gases evolving from melted resin of high temperature, flush with plenty of water for at least 15 minutes. Seek medical advice if necessary.
Following ingestion: Induce vomiting. Rinse mouth with water. Seek medical advice if necessary

4.2 Most important symptoms & effects both acute & delayed

Dust: Skin irritation, eye irritations and redness

4.3 Indication of any immediate medical attention and special treatment needed:

Treat symptomatically.
(Decontamination, vital functions)

Section 5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing agents: Water, foam, dry chemical powder

5.2 Special hazards arising from the substance or mixture:

5.3 Advice for firefighters

Protective equipment: Self-contained breathing apparatus

Section 6. Accidental release measures

6.1 Personal precautions, protective equipment & emergency procedures

Pellets or powder remained on ground may cause slipping
Wear protective equipment
Ensure adequate ventilation
Keep away from ignition sources
Keep unprotected persons away

6.2 Environmental precautions

Gather pellets and powder thoroughly to avoid birds or fishes taking from draining water.
Do not allow product to reach sewage system or water bodies. Inform respective authorities in case product reaches water, sewage system or soil.

6.3 Methods and material for containment and cleaning up
Recovery if not contaminated or disposal.

6.4 Reference to other sections

See Section 7 for information on safe handling. See Section 8 for information on personal protection equipment.

Section 7. Handling and storage

7.1 Precautions for safe handling

Measures to prevent fire: Prevent from fire around handling area

Measures to prevent aerosol and dust generation: maintain good housekeeping standards to prevent accumulation of dust. To avoid dust explosion resulting from the existence of powder, electrostatics eliminators and grounding should be fixed to such equipment as air transferring pipes, bag filters and hoppers. Use electrically conductive filters for bag filters.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures and storage conditions: Keep the material at a cool dry place. Protect from direct sunlight, rain, and violent temperature fluctuation. Fire is inhibited around storage area.

Section 8. Exposure controls/personal protection

8.1 Control parameters

Exposure Limits: None established

8.2 Exposure control

Appropriate engineering controls: Install eyes washer and shower in the place of operation.
Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits

Personal protection:
- Respiratory protection: Wear masks for cleaning molding machines
- Hand protection: Heat-insulating gloves when handling molten form
- Eye protection: Wear safety glasses for general purpose. Wear chemical goggles for cleaning molding machines
- Skin and body protection: Gloves necessary for handling melted resin
- Hygiene measures: Wash hands after handling

8.3 Environmental exposure controls

Product related measures to prevent exposure: None specific
Instruction measures to prevent exposure: None specific
Organizational measures to prevent exposure: None specific
Technical measures to prevent exposure: None specific
Environmental exposure controls: Do not allow product to reach sewage system or water bodies

### Section 9. Physical and chemical properties

**9.1 Information on basic physical and chemical properties**

<table>
<thead>
<tr>
<th>Properties</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Physical state: solid, granulate</td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless or negligible</td>
</tr>
<tr>
<td>Color</td>
<td>Natural or off-white</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Melting point / freezing point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flash point</td>
<td>&gt;400 °C</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Upper/lower flammability or explosive limits</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapor density</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Relative density (H₂O=1)</td>
<td>1.03 - 1.10 g/cm³</td>
</tr>
<tr>
<td>Bulk density</td>
<td>Not available</td>
</tr>
<tr>
<td>Solubility(ies)</td>
<td>Not soluble</td>
</tr>
<tr>
<td>Partition coefficient (n-octanol/water)</td>
<td>Not available</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>&gt;400 °C</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>&gt; 280 °C</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>Not explosive</td>
</tr>
</tbody>
</table>

### Section 10. Stability and reactivity
10.1 Reactivity: Non-reactive under normal handling and storage conditions

10.2 Chemical stability: Stable under normal handling and storage conditions

10.3 Conditions to avoid: Avoid excessive heat, flames, and all sources of ignition

10.4 Incompatible materials: Not applicable

10.5 Hazardous decomposition products: Not applicable

Section 11. Toxicological information

11.1 Information on toxicological effects

Toxicological effects:
- Acute toxicity (oral): Lack of data.
- Acute toxicity (dermal): Lack of data.
- Acute toxicity (inhalative): Lack of data.
- Skin corrosion/irritation: Lack of data. May cause irritations.
- Eye damage/irritation: Lack of data. May cause irritations.
- Sensitization to the respiratory tract: Lack of data. Not to be expected
- Skin sensitization: Lack of data. Not to be expected
- Germ cell mutagenicity/Genotoxicity: Lack of data. Not to be expected
- Carcinogenicity: Lack of data. See Section 15.1 for additional information.
- Reproductive toxicity: Lack of data. Not to be expected
- Effects on or via lactation: Lack of data.
- Specific target organ toxicity (single exposure): Lack of data.
- Dusts: Irritating to eyes, respiratory system, and skin.
- Specific target organ toxicity (repeated exposure): Lack of data.

Symptoms
- Dust: Can cause skin, eye, and respiratory tract irritation.
- The melted product can cause severe burns.
- Thermal treatment, Processing:
- Irritating to eyes, respiratory system, and skin.
- In case of ingestion: Swallowing may cause gastrointestinal irritation and pain of guts.

Section 12. Ecological information
12.1 Toxicity

Not expected to be acutely toxic, but material in pellet or bead form may mechanically cause adverse effects if ingested by waterfowl or aquatic life.

12.2 Persistence and degradability

Further details:
- Biodegradation: Product is not readily biodegradable.
- The product is likely to persist in the environment.

Effects in sewage plants:
- In sewage treatment plants it may be separated mechanically.

12.3 Bio accumulative potential

To avoid bioaccumulation plastics should not be disposed in the sea or in other water environments.

12.4 Mobility in soil

No data available

12.5 Results PBT & vPvB assessment

According to the revised Annex XIII of regulation (EC) 1907/2006 and (EC) 253/2011: No information available on the product as such.

12.6 Other adverse effects:

General information: Do not allow to entrance into groundwater, surface water, or drains.

Section 13. Disposal considerations

13.1 Waste treatment methods

Product / Packaging disposal: Dispose in accordance with the current local regulations. Waste treatment-relevant information: Inadequate incineration may generate toxic gases such as CO, HCN, AN and SM

Action 14. Transport information

ADR/RID
14.1 UN number
14.2 UN proper shipping name
   Proper Shipping Name: NOT REGULATED

14.3 Transport hazard class(es)
   Not applicable

14.4 Packing Group
   Not applicable

14.5 Environmental hazards
   Not considered environmentally hazardous based on available data

14.6 Special precautions for user
   Special Provisions: no data available
   Hazard identification No: no data available

ADNR / ADN

14.1 UN number
   Not applicable

14.2 UN proper shipping name
   Proper Shipping Name: NOT REGULATED

14.3 Transport hazard class(es)
   Not applicable

14.4 Packing Group
   Not applicable

14.5 Environmental hazards
   Not considered environmentally hazardous based on available data

14.6 Special precautions for user
   No data available

IMDG

14.1 UN number
   Not applicable

14.2 UN proper shipping name
   Proper Shipping Name: NOT REGULATED

14.3 Transport hazard class(es)
   Not applicable

14.4 Packing Group
   Not applicable

14.5 Environmental hazards
   Not considered environmentally hazardous based on available data

14.6 Special precautions for user
   EMS Number: Not applicable

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
   Not applicable

ICAO/IATA

14.1 UN number
   Not applicable
14.2 UN proper shipping name
   Proper Shipping Name: NOT REGULATED
14.3 Transport hazard class(es)
   Not applicable
14.4 Packing Group
   Not applicable
14.5 Environmental hazards
   Not considered environmentally hazardous based on available data
14.6 Special precautions for user
   No data available

Section 15. Regulatory information

15.1 Safety, health, and environmental regulations /legislation specific for the
   substance or mixture
   Authorization and / or restrictions on use: None
   CA regulations: The following warning is given pursuant to Prop 65:

   **WARNING**: ABS filaments when used for 3D Printing can expose you and
   others nearby to Styrene, a chemical known to the State of California to
   cause cancer. [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).
   **ALWAYS USE THIS PRODUCT IN A WELL-VENTILATED AREA.**

15.2 Chemical Safety Assessment
   For this substance, a chemical safety assessment is not yet required.

Section 16. Other information

16.1 Indication of changes
   Version 1: First issue according to Regulations (EC) 1907/2006 (REACH) & 1272/2008 (CLP)

16.2 Abbreviations and acronyms

<table>
<thead>
<tr>
<th>AGS</th>
<th>Ausschuss für Gefahrstoffe</th>
<th>LoW</th>
<th>List of Waste</th>
</tr>
</thead>
<tbody>
<tr>
<td>AF</td>
<td>Assessment Factor</td>
<td>MARPOL</td>
<td>Marine Pollution</td>
</tr>
<tr>
<td>BCF</td>
<td>Bioconcentration Factor</td>
<td>MIE</td>
<td>Minimum Ignition Energy</td>
</tr>
<tr>
<td>CAS</td>
<td>Chemical Abstract Service</td>
<td>N°EC</td>
<td>European Commission number</td>
</tr>
<tr>
<td>Acronym</td>
<td>Definition</td>
<td>Acronym</td>
<td>Definition</td>
</tr>
<tr>
<td>---------</td>
<td>------------</td>
<td>---------</td>
<td>------------</td>
</tr>
<tr>
<td>CMR</td>
<td>Carcinogenic, Mutagenic and Reprotoxic</td>
<td>NFPA</td>
<td>National Fire Protection Association</td>
</tr>
<tr>
<td>CSR</td>
<td>Chemical Safety Report</td>
<td>NIOSH</td>
<td>National Institute of Occupational Safety and Health</td>
</tr>
<tr>
<td>DFG</td>
<td>German Research Foundation</td>
<td>NOEC</td>
<td>No Observed Effect Concentration</td>
</tr>
<tr>
<td>DNEL</td>
<td>Derived No Effect Level</td>
<td>NOELR</td>
<td>No Observed Effect Loading Rate</td>
</tr>
<tr>
<td>EC</td>
<td>European Commission</td>
<td>OECD</td>
<td>Organization for Economic Co-operation and Development</td>
</tr>
<tr>
<td>EC50</td>
<td>Effective Concentration (required to induce a 50% effect)</td>
<td>OEL</td>
<td>Occupational Exposure Limit</td>
</tr>
<tr>
<td>EEC</td>
<td>European Economic Community</td>
<td>OSHA</td>
<td>Occupational Safety and Health Administration</td>
</tr>
<tr>
<td>EWC</td>
<td>European Waste Catalogue Code</td>
<td>PBT</td>
<td>Persistent Bio accumulable Tonique</td>
</tr>
<tr>
<td>IDLH</td>
<td>Immediately Dangerous to Life or Health</td>
<td>PNEC</td>
<td>Revisable Non-Effect Concentration</td>
</tr>
<tr>
<td>IBC</td>
<td>International Bulk Chemical</td>
<td>QSAR</td>
<td>Quantitative Structure-Activity Relationship</td>
</tr>
<tr>
<td>Koc</td>
<td>Soil/Water Partition Coefficient</td>
<td>STOT</td>
<td>Specific Target Organ Toxicity</td>
</tr>
<tr>
<td>Kow</td>
<td>Octanol/Water Partition Coefficient</td>
<td>TCLo</td>
<td>Toxic Concentration Low</td>
</tr>
<tr>
<td>LC50</td>
<td>Lethal Concentration 50</td>
<td>TDLo</td>
<td>Toxic Dose Low</td>
</tr>
<tr>
<td>LD50</td>
<td>Lethal Dose 50</td>
<td>UN</td>
<td>United Nations</td>
</tr>
<tr>
<td>LEL</td>
<td>Lower Explosive Limit</td>
<td>UVCB</td>
<td>Unknown or Variable Composition Complex Reaction Products, or Biological Materials</td>
</tr>
<tr>
<td>LL100</td>
<td>Lethal Loading</td>
<td>vPvB</td>
<td>very Persistent, very Bio accumulative</td>
</tr>
</tbody>
</table>
16.3 Key literature references and sources for data

http://esis.jrc.ec.europa.eu/
http://echa.europa.eu/
http://gestis-en.itrust.de

16.4 Relevant R-phrases and/or H-statements (number and full text):

<table>
<thead>
<tr>
<th>LOEC</th>
<th>Lowest Observed Effect Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>H220</td>
<td>Extremely flammable gas</td>
</tr>
<tr>
<td>H225</td>
<td>Highly flammable liquid and vapor</td>
</tr>
<tr>
<td>H226</td>
<td>Flammable liquid and vapor</td>
</tr>
<tr>
<td>H301</td>
<td>Toxic if swallowed</td>
</tr>
<tr>
<td>H311</td>
<td>Toxic in contact with skin</td>
</tr>
<tr>
<td>H315</td>
<td>Causes skin irritation</td>
</tr>
<tr>
<td>H317</td>
<td>May cause an allergic skin reaction</td>
</tr>
<tr>
<td>H318</td>
<td>Causes serious eye damage</td>
</tr>
<tr>
<td>H319</td>
<td>Causes serious eye irritation</td>
</tr>
<tr>
<td>H331</td>
<td>Toxic if inhaled</td>
</tr>
<tr>
<td>H332</td>
<td>Harmful if inhaled</td>
</tr>
<tr>
<td>H335</td>
<td>May cause respiratory irritation</td>
</tr>
<tr>
<td>H340</td>
<td>May cause genetic defects</td>
</tr>
<tr>
<td>H350</td>
<td>May cause cancer</td>
</tr>
<tr>
<td>H351</td>
<td>Suspected of causing cancer</td>
</tr>
<tr>
<td>H400</td>
<td>Very toxic to aquatic life</td>
</tr>
<tr>
<td>H411</td>
<td>Toxic to aquatic life with long lasting effects</td>
</tr>
</tbody>
</table>

R10 Flammable
R11 Highly flammable
R12 Extremely flammable
R20 Harmful by inhalation
R23/24/25 Toxic by inhalation, in contact with skin and if swallowed
R36 Irritating to eyes
R37 Irritating to respiratory system
R38 Irritating to skin
R40 Limited evidence of a carcinogenic effect
R41 Risk of serious damage to eyes
R42 May cause sensitization by skin contact
R45 May cause cancer
R46 May cause inheritable genetic damage
R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment
R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment
16.6 Further information: According to the guidance version 2.0 for monomers and polymers from the European Chemicals Agency dated as of April 2012, the classification of the polymer considers the classification of all its constituents, such as unreacted monomers. These constituents in fact should be considered for classification of the polymer. This means that the same classification methods as for mixture should be applied to polymer substances. To determine a classification for the studies about the water-soluble fraction as well as the absorption should be performed on the polymer as such.