### Brominated Flame Retardants Recycling E-Waste Chart

**FLAME RETARDANT SUBSTANCES:**

<table>
<thead>
<tr>
<th>Name</th>
<th>Cas #</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hexabromocyclododecane</td>
<td>3194-55-6</td>
<td>No longer manufactured by BSEF members</td>
</tr>
<tr>
<td>Decabromodiphenyl ether</td>
<td>1163-19-5</td>
<td>No longer manufactured by BSEF members</td>
</tr>
<tr>
<td>Pentabromodiphenyl ether</td>
<td>32534-81-9</td>
<td>No longer manufactured by BSEF members</td>
</tr>
<tr>
<td>Octabromodiphenyl ether</td>
<td>32536-52-0</td>
<td>No longer manufactured by BSEF members</td>
</tr>
<tr>
<td>Tetrabromobisphenol-A</td>
<td>79-94-7</td>
<td>No longer manufactured by BSEF members</td>
</tr>
<tr>
<td>Ethane(1,2 bis pentabromophenyl)</td>
<td>84852-53-9</td>
<td>Synergist used in combination with some brominated flame retardants</td>
</tr>
<tr>
<td>Antimony trioxide</td>
<td>1309-64-4</td>
<td>Brominated polystyrene</td>
</tr>
<tr>
<td>Brominated polystyrene</td>
<td>88497-56-7</td>
<td></td>
</tr>
</tbody>
</table>

**HBCD**

**DecaBDE**

**PentaBDE**

**OctaBDE**

**TBBPA**

**EBP**

**ATO**

**Brominated PS**

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**PRODUCTS**

1. **IT electronics**
2. **Consumer electronics**
3. **White goods**

**PLASTIC PARTS**

1. **Housing**
2. **Printed circuit boards**
3. **Cables**
4. **Connectors**

**REGULATIONS**

1. Authorisation under REACH
2. Restriction under RoHS
3. POP under Stockholm
4. Thermal processing / depolymerisation / gasification
5. Emission limits of the IED
6. Advanced solid waste incineration allowed under Basel Convention
7. Provisions of the EU landfilling directive

**WASTE TREATMENT OPTIONS**

- Mechanical recycling
- Chemical recycling (solvolyis)
- Thermal processing / depolymerisation / gasification
- Incineration
- Landfilling
- Emission limits of the IED
- Advanced solid waste incineration allowed under Basel Convention
- Provisions of the EU landfilling directive

**END PRODUCT**

- Recycled plastic with FR
- Energy recovery
- Urban mining

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**RECYCLABILITY DEPENDS ON:**

- Material composition
- Cleanliness of waste streams
- Available technology
- Economic considerations
- Regulations

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