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## Explanation

This is to inform you that 2,6-Di-tert-butyl-p-cresol (BHT) always contains a small amount of water and phenol.

### Reasons for the presence of water:

#### 1. Hygroscopicity:

- Although BHT itself is not very hygroscopic, it can adsorb moisture from the air, especially when stored under normal conditions.
- This makes it almost impossible to completely eliminate traces of water, especially in technical or analytical grades of the substance.

#### 2. Production and storage processes:

- During synthesis and subsequent purification, BHT comes into contact with aqueous solutions (washing, precipitation, etc.).
- Even when drying in production, it is difficult to completely get rid of water.

### Reasons for the presence of phenol:

#### 1. Synthesis by-product:

- BHT is synthesized by alkylating para-cresol (or phenol) with isobutylene in the presence of acid.
- This may result in incomplete conversion of the starting phenol or para-cresol, especially in technical grades of the substance.

#### 2. BHT Degradation/Oxidation:

- During storage, BHT may partially degrade, especially when exposed to light, oxygen and heat, to form phenolic compounds, including phenol itself.

### Conclusion:

BHT almost always contains traces of water and phenol due to:

- Technological features of synthesis and purification,
- Hygroscopicity,
- Possible degradation,
- Residues of the original reagents.

It is technically impossible to completely get rid of these impurities, so their presence is considered acceptable in small quantities (within the norms).

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