# Phenylcarbinol

**Botanical Source**

**Synonyms** Benzyl alcohol;
PHENYLMETHYL ALCOHOL;
alpha-HYDROXYTOLUENE;
BENZENEMETHANOL

**IUPAC Name** BENZYL ALCOHOL

**CAS Reference** 100-51-6

**E Number**

## Food Legislation

| **Council of Europe (CoE)** | |
|---|---|
| Number | Comment |
| 58 | Listed by the Council of Europe as acceptable for use in food. |

| **US Food and Drug Administration** | |
|---|---|
| Number | Comment |
| 172.515 | Approved by the US FDA. FDA 21 CFR 172.515 |

| **Joint FAO/WHO Expert Committee on Food Additives (JECFA)** | | |
|---|---|---|
| Number | ADI | Comment |
| 25 | 16000 | ADI 0-5.0 mg/kg bw |

| **FEMA** | |
|---|---|
| FEMA No. | Comment |
| 2137 | Generally recognised as safe as a flavour ingredient:GRAS List Number 3 |

| **Natural Occurrence and Use in Food** |
|---|
| Found in apricot, beer, almonds, apple, apple juice, asparagus, bananas, blackcurrants, blackberries; used in chewing gum, candy, baked goods. |

| **Estimated Intake from Food and Drink** | |
|---|---|
| Daily Intake mg/kg/day | FEMA Possible Average Daily Intake mg |
| 0.2 | 41.87 |

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## Tobacco Product Related Chemical and Biological Studies for Ingredients Added in a Mixture

| Smoke Chemistry | | |
|---|---|---|
| Published Source | Level Tested % | Comment |
| BAT | 0.17000 | At maximum application level this ingredient is not associated with significant increases in levels of Hoffmann analytes in smoke. |
| Philip Morris | 0.14260 | An overall assessment of the data suggests that this ingredient did not add to the toxicity of smoke. |

| Ames Activity | | |
|---|---|---|
| Published Source | Level Tested % | Comment |
| BAT | 0.17000 | Within the sensitivity and specificity of the system the Ames activity of the cigarette smoke condensate was not increased by the addition of the ingredient. |
| Philip Morris | 0.14260 | Within the sensitivity and specificity of the system the Ames activity of the cigarette smoke was not increased by the addition of the ingredient. |

| Micronucleus | | |
|---|---|---|
| Published Source | Level Tested % | Comment |
| BAT | 0.17000 | Within the sensitivity of the in vitro micronucleus assay the activity of the cigarette smoke condensate was not increased by the addition of the ingredient. |

| Neutral Red | | |
|---|---|---|
| Published Source | Level Tested % | Comment |
| BAT | 0.17000 | Within the sensitivity of the test system the in vitro cytotoxicity of the cigarette smoke condensate was not increased by the addition of the ingredient. |
| Philip Morris | 0.14260 | Within the sensitivity of the test system the in vitro cytotoxicity of the cigarette smoke was not increased by the addition of the ingredient. |

| Inhalation | | |
|---|---|---|
| Published Source | Level Tested % | Comment |
| BAT | 0.17000 | The results indicate that the addition of the ingredient had no discernible effect on the inhalation toxicity of mainstream smoke. |
| Lorillard | 0.36740 | The results indicate that the addition of the ingredient had no discernible effect on the inhalation toxicity of mainstream smoke. |
| Philip Morris | 0.14260 | The data indicate that the addition of the ingredient, when added with one of three groups, did not increase the inhalation toxicity of the smoke. |

| Mouse Skin Painting | | |
|---|---|---|
| Published Source | Level Tested % | Comment |
| Lorillard | 0.36740 | None of the changes appeared to be substantial enough to conclude that the tumour promotion capacity of the condensate was discernibly different between condensate produced from cigarettes with the ingredient in comparison with condensate from cigarettes without the ingredient. |

**References**


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## Tobacco Product Related Chemical and Biological Studies for Ingredients Tested Singly

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## Toxicological Data on the Unburnt Ingredient

[+ve, positive; -ve, negative; ?, equivocal
with, with metabolic activation; without, without metabolic activation]

In vivo

| Species | Test conditions | Endpoint | Results | Reference |
|---|---|---|---|---|
| Mouse, ddY, 6 males/ group | Bone marrow micronucleus assay in mice administered a single intraperitoneal injection at 0, 50, 100 or 200 mg/kg bw; evaluated 24 hours after dosing. | Chromosome damage | -ve<br><br>High quality study. | Hayashi et al. 1988 |
| Mouse; ddY; 6 males/ group | Bone marrow micronucleus assay in mice injected intraperitoneally at 0 or 100 mg/kg bw/day for 4 days; evaluation 24 hours after final dose. | Chromosome damage | -ve<br><br>High quality study. | Hayashi et al. 1988 |
| *Drosophila melanogaster* | Adult flies fed 0 or 5000 ppm solution for 3 days, or injected with 0 or 8000 ppm solution. Three successive matings with broods monitored for appearance of sex-linked recessive lethal mutations. | Germ cell mutations | -ve<br><br>High quality study | NTP |
| *Drosophila melanogaster* | SMART (somatic mutation and recombination test). Larvae treated with up to 50 mM and wings of adults scored for mutant spots. | Mutation | +ve | Demir et al. 2008 |

In vitro

| Test system | Test conditions | Endpoint | Activation status | Results | Reference |
|---|---|---|---|---|---|
| Mouse lymphoma L5178Y cells | Gene mutation assay in cells exposed at up to 5 mg/ml; 4 tests without S9, 2 tests with S9. | Mutation | With and without S9 | Equivocal without S9 (1/4 tests +ve)<br><br>High quality study | McGregor et al. 1988; NTP, 1989 |
| Chinese hamster ovary (CHO) cells | Chromosome aberration assay in cells exposed at up to 5 mg/ml for 12-18 hours; 4 tests both with and without S9 | Chromosome damage | With and without S9 | +ve (3/4 tests +ve with S9; 1/4 test +ve without S9)<br><br>High quality study | Anderson, 1990; NTP, 1989; Zeiger et al. 1990 |
| Chinese hamster ovary (CHO) cells | Sister chromatid exchange assay in cells exposed at up to 5 mg/ml for 12-18 hours; 4 tests both with and without S9 | Chromosome effects | With and without S9 | Weak +ve (or equivocal)<br><br>High quality study | Anderson, 1990; NTP, 1989; Zeiger et al. 1990 |
| Human alveolar tumour cells | Cells exposed at up to 0.5 mmol/litre [54 mg/ml] [no further details in citing source] | DNA damage | Not known | -ve | Waters et al. 1982 |
| Rat hepatocytes | Alkaline elution assay with cells exposed at up to 10 mmol/litre [1080 mg/ml] | DNA damage | Not applicable | -ve | Storer et al. 1996 |

| | | | | | |
|---|---|---|---|---|---|
| *Salmonella typhimurium* strains TA92, TA94, TA97, TA98, TA100, TA102, TA1535 and TA1537 | Ames tests, some with up to 10 mg/plate | Mutation | With and without S9 | -ve | Ball et al. 1984; Florin et al. 1980; Fujita et al. 1992; Ishidate et al. 1984; Milvy & Garro, 1976; Mortelmans et al. 1986; NTP, 1989; Rogan et al. 1986; Wiessler et al. 1983; Zeiger et al. 1990 |
| *Escherichia coli* polA deficient | Bacterial mutation assay with up to 50 µl [~50 mg]/plate | Mutation | With and without S9 | -ve | Fluck et al. 1976 |
| *Escherichia coli* strain WP2 uvrA | Bacterial mutation assay with up to 8 mg/plate | Mutation | Without | -ve | Kuroda et al. 1984; Yoo, 1986 |
| *Salmonella typhimurium* strain TA1535/ pSK1002 | Umu test with up to 5 mg/ml | DNA damage | With and without S9 | -ve | Yasunaga et al. 2004 |
| *Bacillus subtilis* strains H17 and M45 | Rec assay (measuring differential killing) with up to 20 µl [~20 mg]/disc | DNA damage [indicative test] | Without | +ve | Kuroda et al. 1984; Yoo, 1986 |

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