

Citrus oils and other furocoumarins containing essential oils

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| CAS-No.: | Not applicable. The scope of this Standard includes any CAS number(s) used to identify these fragrance ingredients. |
| Synonyms: | Not applicable. |

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| History: | Publication date: | 2020 (Amendment 49) | Previous Publications: | 1996 2015 |
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| Implementation dates: | For new creation*: | February 10, 2021 |
| | For existing creation*: | February 10, 2022 |
| | *These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace. | |

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| RECOMMENDATION: | RESTRICTION |
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MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

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| Category 1 | 0.0015 % (5-MOP) | Category 7A | No Restriction |
| Category 2 | 0.0015 % (5-MOP) | Category 7B | 0.0015 % (5-MOP) |
| Category 3 | 0.0015 % (5-MOP) | Category 8 | 0.0015 % (5-MOP) |
| Category 4 | 0.0015 % (5-MOP) | Category 9 | No Restriction |
| Category 5A | 0.0015 % (5-MOP) | Category 10A | No Restriction |
| Category 5B | 0.0015 % (5-MOP) | Category 10B | 0.0015 % (5-MOP) |
| Category 5C | 0.0015 % (5-MOP) | Category 11A | No Restriction |
| Category 5D | 0.0015 % (5-MOP) | Category 11B | 0.0015 % (5-MOP) |
| Category 6 | 0.0015 % (5-MOP) | Category 12 | No Restriction |

Fragrance ingredient restriction - Note box

The Standard is set due to the phototoxic effects of Citrus oils and other furocoumarins containing essential oils. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

Where the Bergapten (5-Methoxypsoralen, (5-MOP)) content of all relevant oils present in a compound

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has been determined, it is recommended that for applications on areas of skin exposed to UV-light, the total level of Bergapten in the consumer products should not exceed 0.0015% (15 ppm). This upper concentration level only applies to applications on skin exposed to UV-light, excluding rinse-off products and incidental skin contact products as detailed in the Guidance for the use of IFRA Standards.

Where the level of Bergapten has not been determined by appropriate methods, the limits specified in the guidelines on individual oils should apply. In those cases, where such oils are used in combination with other furocoumarin-containing phototoxic fragrance ingredients (extracts), the additive effect has to be taken into consideration and the concentration levels have to be reduced accordingly.

The sum of the concentrations of all furocoumarin-containing phototoxic fragrance ingredients (extracts), expressed in % of their recommended upper concentration level in the finished consumer product, shall not exceed 100. Restrictions for furocoumarin-containing fragrance ingredients (extracts) have been recommended for:

- Angelica root oil,
- Bergamot oil expressed,
- Bitter orange oil expressed,
- Cumin oil,
- Grapefruit oil expressed,
- Lemon oil cold pressed,
- Lime oil expressed,
- Rue oil.

The following essential oils contain small amounts of phototoxic furocoumarins (typical levels are provided in brackets):

- Petitgrain Mandarin oil (50 ppm),
- Tangerine oil cold pressed (50 ppm),
- Parsley leaf oil (20 ppm).

These levels are not high enough to require special restrictions if used alone, but if used in combination with one or the other furocoumarin-containing phototoxic fragrance ingredients (extracts), attention should be paid that the total level of Bergapten in the consumer product does not exceed 15 ppm.

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| FLAVOR REQUIREMENTS: | Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards. |
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| CONTRIBUTIONS FROM OTHER SOURCES: | NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS) |
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| INTRINSIC PROPERTY MANAGEMENT: | DRIVING RISK PHOTOTOXICITY |
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RIFM SUMMARIES:

These recommendations are based on the published phototoxic effects of Bergapten and the established dose-effect relationships (Young at al., J. Photochem. Photobiol. B,7, 231 (1990); Dubertret et al. *ibid* 7, 251 (1990), *idem*, *ibid*, 7, 362 (1990).

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Citrus oils and other furocoumarins containing essential oils and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Citrus oils and other furocoumarins containing essential oils in the various product categories.

REFERENCES:

The IFRA Standard on Citrus oils and other furocoumarins containing essential oils is based on at least one of the following publications:

- Young at al., J. Photochem. Photobiol. B,7, 231 (1990).
- Dubertret et al. *ibid* 7, 251 (1990).
- Dubertret et al. *ibid*, 7, 362 (1990).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.