Butyl Methoxydibenzoylmethane

**Definition**
Organic UV-A filter which absorbs the UV-A radiation (wavelengths between 320-400 nm) and protects the skin effectively from skin ageing

**Chemical name**
4-tert-Butyl-4-Methoxydibenzoylmethane

**Trade name**
Chem 1789

**CAS No.**
70356-09-1

**EINECS No.**
274-581-6

**INCI name**
Butyl Methoxydibenzoylmethane

**CN code**
2914 5000

**Synonyms**
Butyl methoxydibenzoylmethane; Avobenzone [USAN:INN]; Parsol 1789
IUPAC: 1-(4-Methoxyphenyl)-3-(4-tert-butylphenyl)propane-1,3-dione

**Producer**
CHEMSPEC CHEMICALS PVT. LTD., India

---

Kyowa Hakko Europe GmbH
Daiichi Fine Chemical Division
**SPECIFICATION**

Chem. Name: 4-tert. Butyl-4-methoxydibenzoylmethan

Chemical structure

![Chemical structure](image)

Empirical formula: $\text{C}_{29} \text{H}_{26}\text{O}_3$

Molecular weight: 310.39

Appearance: light tan (off white to pale yellow), crystalline powder

Odour: weakly aromatic

Identification:
- IR: conform
- UV: conform

Melting point: 81-86°C

Loss on drying: not more than 0.5%

Chromatographic Purity:
- Individual impurity: not more than 3.0%
- Total impurities: not more than 4.5%
- Assay: 95% to 105%

*meets the quality requirements of the current USP Monograph for Avobenzone

**Other Physico-Chemical Properties**

Function: UV-A filter

Solubility: Insoluble in water, soluble in ethanol

UV Specific Extinction (Ethanol): between 1100 to 1180 at 357+/-2nm

**Storage and Packaging**

Storage:
Store at 15°C to 40°C.
Store according to state and local regulations away from incompatible substances. Incompatibilities are Oxidizers (strong):
Fire and explosion hazard. To be stored in steel, polyethylene, enamel sealed, impervious to light, cool and dry and preferably in full container.
Stable under normal temperatures and pressures.

Standard packaging: 25 kg PE-bag in cardbox drum

Expiry date: 2 years after manufacturing date
General function

Butyl Methoxydibenzoylmethane is an essential UV-A filter, which has a very high efficacy even at lower concentrations. It provides distinct UV-A protection in all varies of cosmetic applications.

UVA radiation (wavelengths between 320nm - 400nm) penetrates down to the dermal layers of the skin. It stimulates tanning and pigmentation but relates also to skin aging.

Furthermore UV-A may act in an indirect way by creating free radicals and reactive oxygen species. In consequence, an efficient sunscreen should not only prevent sunburn (UV-B rays) but also minimize the accumulation of all radiation induced damages in the skin which eventually enhance the risk of fatal alterations like skin aging. So sun care or daily care products should not only content UV-B filter but also a very important part is the add-on of UV-A protection to complete a high and safety prevention of skin damages.

Formulating

Butyl Methoxydibenzoylmethane can be used in combination with UV-B filters to provide broad spectrum protection or for its exclusive use in almost all kind of cosmetic applications like

- Sun care
- Baby sun care
- Daily skin care
- Decorative cosmetic with sun protection

The application of Butyl Methoxydibenzoylmethane with other UV-B filters may have synergistic effects on the SPF value.

Recommended use levels according to local regulations:

Europe up to 5%

For incorporation Butyl Methoxydibenzoylmethane should be added into the oil phase of a cosmetic composition. It is soluble in some liquid UV-B filters and polar oil components like

- Octocrylene
- Octyl Methoxycinnamate
- Homosalate
- Butylene Glycol Dicaprylate/ Dicaprate
- C12-C15 Alkyl Benzoate

Compatibility of ingredients with Butyl Methoxydibenzoylmethane

Ions of heavy metals may induce colored complexes. This can be avoided by using EDTA as complexing agent. Stearates and Aluminium, Zinc or Magnesium salts, as well as formaldehyde donating preservatives may induce precipitations. Avoid these combinations.
The data submitted in this publication are based on our current knowledge and experience. They do not constitute a guarantee in the legal sense of the term and, in view of the manifold factors that may affect processing and application, do not relieve those to whom we supply our products from the responsibility of carrying out their own tests and experiments. Any relevant patent rights and existing legislation and regulations must be observed.