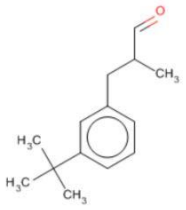
3-(m-tert-Butylphenyl)-2-methylpropionaldehyde (m-BMHCA)

CAS N°:	62518-65-4	**Empirical formula:** **Structure:**	$C_{14}H_{20}O$ 
Synonyms:	Benzenepropanal, 3-(1,1-dimethylethyl)-α-methyl- 3-(3-tert-Butylphenyl)-2-methylpropanal m-BMHCA		

History:	Initial reviews:	New Standard	
	Current revision date:	2015	
	Implementation date:	For new submissions*:	August 10, 2015
		For existing fragrance compounds*:	August 10, 2016
	Next review date	2020	

* This date applies to the supply of fragrance compounds (formulas) only, not to the finished products in the marketplace.

RECOMMENDATION:	**RESTRICTED**

RESTRICTIONS:

Limits in the finished product:			
Category 1 See Note box (1)	0.12 %	Category 7	0.31 %
Category 2	0.15 %	Category 8	2.00 %
Category 3	0.62 %	Category 9	5.00 %
Category 4	1.86 %	Category 10	2.50 %
Category 5	0.98 %	Category 11	See Note box (2)
Category 6	2.97 %		

Note box:

(1) IFRA would recommend that any material used to impart perfume or flavour in products intended for human ingestion should consist of ingredients that are in compliance with appropriate regulations for foods and food flavourings in the countries of planned distribution and, where these are lacking, with the recommendations laid down in the Code of Practice of IOFI (International Organization of the Flavor Industry - www.iofi.org).

(2) Category 11 includes all non-skin contact or incidental skin contact products. Due to the negligible skin contact from these types of products there is no justification for a restriction of the concentration of this fragrance ingredient in the finished product.

Fragrance material specifications:	N/A

CONTRIBUTION FROM OTHER SOURCES:

None to consider (see also the note on contributions from other sources in the **Introduction to the IFRA Standards**).

3-(m-tert-Butylphenyl)-2-methylpropionaldehyde (m-BMHCA)

CRITICAL EFFECT:	DERMAL SENSITIZATION

RIFM SUMMARIES:

LLNA weighted mean EC3 values (µg/cm²) [no. studies] for p-BMHCA	Potency Classification Based on Animal Data[1]	Human Data			WoE NESIL[3] (µg/cm²)
		NOEL – HRIPT (induction) (µg/cm²)	NOEL – HMT (induction) (µg/cm²)	LOEL[2] (induction) (µg/cm²)	
2376 [6][4]	Weak	4125	NA	29528	4100

All data in this table are for p-BMHCA and and are listed in the RIFM Database and available from RIFM.
NOEL = No Observed Effect Level; HRIPT = Human Repeat Insult Patch Test; HMT = Human Maximization Test;
LOEL = Lowest Observed Effect Level; NA = Not Available.

[1]Based on animal data using classification defined in ECETOC, Technical Report No. 87, 2003.
[2]Data derived from HRIPT or HMT.
[3]WoE NESIL limited to two significant figures.
[4]EC3 value from the mean of the individual LLNAs

REXPAN RATIONALE / CONCLUSION:

The Standard for 3-(m-tert-Butylphenyl)-2-methylpropionaldehyde (m-BMHCA) is based on a concern for sensitization potential due to the presence of structural alerts, the fact that structurally similar materials are sensitizers, and the lack of sensitization test data on this material.
The RIFM Expert Panel recommends the limits for the 11 different product categories, which are the acceptable use levels of 3-(m-tert-Butylphenyl)-2-methylpropionaldehyde (m-BMHCA) in the various product categories. These were derived from the application of the exposure-based quantitative risk assessment approach for fragrance ingredients, which is detailed in the publication by Api *et al*., 2008, based on a No Expected Sensitization Induction Level (NESIL) of 4100 µg/cm² derived from the data on p-BMHCA as provided above.

REFERENCES:

Api, A. M., Basketter, D. A., Cadby, P. A., Cano, M-F., Ellis, G., Gerberick, G. F. *et al*, 2008. Dermal Sensitization Quantitative Risk Assessment (QRA) For Fragrance Ingredients. *Regulatory Toxicology and Pharmacology* 52(1): 3-23.

Gerberick, G.F. *et al*. (2001) Contact allergenic potency: Correlation of human and local lymph node assay data. American Journal of Contact Dermatitis, 12(3), 156-161

Kimber, I., Ryan, C. A., Gerberick, G. F., White, I. R., 2001. Human potency predictions for aldehydes using the local lymph node assay. Contact Dermatitis, 45(2), 89-94.

RIFM (Research Institute for Fragrance Materials, Inc.), 1980. Repeated Insult Patch Test on BMHCA. Unpublished report from IFF, Inc., 14 February. Report number 15029 (RIFM, Woodcliff Lake, NJ, USA).

RIFM (Research Institute for Fragrance Materials, Inc.), 1999. Repeated Insult Patch Test on BMHCA. RIFM report number 34405, May 4. (RIFM, Woodcliff Lake, NJ, USA).

RIFM (Research Institute for Fragrance Materials, Inc.), 2001a. Local Lymph Node Assay on BMHCA. RIFM report number 37065, March 12. (RIFM, Woodcliff Lake, NJ, USA).

RIFM (Research Institute for Fragrance Materials, Inc.), 2001b. Local Lymph Node Assay on BMHCA. RIFM report number 37066, May 9. (RIFM, Woodcliff Lake, NJ, USA).

RIFM (Research Institute for Fragrance Materials, Inc.), 2001c. Local Lymph Node Assay on BMHCA. RIFM report number 37068, May 9. (RIFM, Woodcliff Lake, NJ, USA).

3-(m-tert-Butylphenyl)-2-methylpropionaldehyde (m-BMHCA)

RIFM (Research Institute for Fragrance Materials, Inc.), 2001d. Local Lymph Node Assay on BMHCA. RIFM report number 37067, May 9. (RIFM, Woodcliff Lake, NJ, USA).

RIFM (Research Institute for Fragrance Materials, Inc.), 2001e. Local Lymph Node Assay on BMHCA. RIFM report number 41235, September 27. (RIFM, Woodcliff Lake, NJ, USA).