

PHTHALATES AND NEW LIMITS

SAFE SUSTAINABLE SOLUTIONS



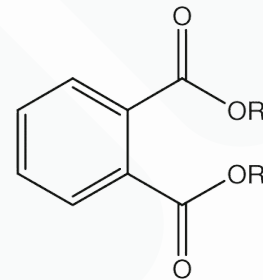
PHTHALATES

Analytical approach to determine the presence of Phthalates:

Esters of 1,2-benzenedicarboxylic acid, which are commonly referred to as phthalates, form a group of compounds that is primarily used as a plasticizer for polymers such as polyvinyl chloride (PVC). Other areas of application are adhesives, paints, films, glues, cosmetics, etc.

Chemical and physical characteristics:

- Fat-soluble
- Poorly soluble in water
- Colorless
- Odourless
- Volatile/semi-volatile (DMP, DEP, DIBP, DBP, BBP, DEHP)



The annual production of phthalates has been estimated by the World Health Organization (WHO) and it will approach 8 million tonnes. The most important of the congeners is DEHP, which accounts for about 50% of the world's phthalate production along with DIDP and DINP. Due to their widespread application, phthalates have become ubiquitous in the environment. In addition, phthalates are stable in solution and are able to withstand high temperatures while degrading under exposure to sunlight. Humans are exposed to phthalates through food, air, water, and other sources such as cosmetics or pharmaceuticals. Food could be contaminated through migration from packaging materials or during processing, and that's because phthalates can be present in paper and cardboard packaging, especially if the packaging contains recycled fibres. On the other hand, as far as food is concerned, fatty and oily foods are more easily contaminated with phthalates due to their lipophilic character.

Legal limits of phthalates in paper:

	<i>Fiche MCDA n°4 (V02 - 01/01/2019)</i> Aptitude au contact alimentaire des matériaux organiques à base de fibres végétales destinés à entrer en contact avec des denrées alimentaires	Page 1/18
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	Fiche (mg/kg alimento)	BfR XXXVI (mg/kg alimento)
Benzilbutilftalato (BBP)	3	-
Bis-2-etilesilftalato (DEHP)	0,3	1,5
Diisobutilftalato (DIBP) + Dibutilftalato (DBP)	0,12	0,3
Diisonilftalato (DINP) + Diisodecilftalato (DIDP)	0,9	-



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Legal limits of phthalates in plastic:

COMMISSION REGULATION (EU) 2023/1442
OF JULY 11, 2023

The latest amendment of Reg. 10/2011 has lowered the legal limits in force several times.

	Reg. EU 10/2011 16° emendamento	Reg. EU 10/2011 15° emendamento
BBP	6	30
DEHP	0,6	1,5
DBP	0,12	0,3
DINP + DIDP	1,8	9
TOTM	1	-

In addition to the FCM regulations, phthalates are also included in ECHA's "Candidate List of Substances of Very High Concern" (SVHC) of the REACH Regulation. Further information can be found at the link: <https://echa.europa.eu/hot-topics/phthalates>

PHTHALATES IN PIZZA BOXES: WHY LOOKING FOR THEM?



- Since phthalates are a group of substances found in recycled paper, there is a need to look for them directly in pizza box, which is very often made of recycled paper.
- In addition, the classic simulant analysis can sometimes lead to non-compliance: this may depend on the fact that compared to real-use conditions the approach is worse, therefore the analysis in food is recommended, considered more suitable.

OUR SOLUTION

To assess the real migration into food, **Food Contact Center started in 2019 to perform the test of evaluation of the phthalate content in pizza, accrediting the method.** In specific discussions that took place in technical tables, also chaired by experts from the Moca laboratory of the National Institute of Health (ISS), the criteria used by the Food Contact Center laboratory were discussed and validated on the basis of previous experiences reported in the literature and comparison with other experts.

The method, described in detail in technical reports provided to some customers operating on a global scale, was shared with French official control laboratories, which approved the approach and results provided by the method, subsequently used by French laboratories starting in 2021.

Pizza/Pizza, Prodotti da forno/Bakery products

Denominazione della prova / Campi di prova	Metodo di prova	Tecnica di prova	O&I
Benzil butilftalato (BBP)/Benzyl butylphthalate (BBP), Di-2-etilftalato (DEHP)/Di-2-ethylhexylphthalate (DEHP), Di-butilftalato (DBP)/Di-butylphthalate (DBP), Di-isobutilftalato (DIBP)/Di-isobutylphthalate (DIBP), Di-isodeciltalato (DIDP)/Di-isodecylphthalate (DIDP), Di-isononilftalato (DINP)/Di-isononylphthalate (DINP) (0,01 - 2 mg/Kg di alimento pizza)	MHTH086 rev. 1 2023	GC-MS/MS	

The Laboratory's Management