ANALYTICAL PROTOCOL FOR BUCKWHEAT FLOUR AND UNPROCESSED BUCKWHEAT

TrustyFood (TF) analytical protocols are defined for each specific food matrix and are based on the full application of current European legislation, supplemented by additional analytical criteria specifically designed to assess product safety, purity and quality.

How to Read the TrustyFood (TF) Analytical Protocol

For each food matrix, the TrustyFood protocol fully incorporates all contaminants and requirements established by the applicable European legislation.

These requirements are supplemented by additional analytical parameters selected on the basis of scientific evidence and their specific relevance to the food matrix under consideration, with the objective of ensuring a higher level of consumer protection.

Contaminants that are not relevant to the specific food matrix are not included in the tables, while all applicable European regulatory requirements remain fully in force.

What LOQ Means

LOQ (Limit of Quantification) is the lowest concentration at which a substance can be reliably quantified by the analytical method used.

Values below the LOQ cannot be quantified with sufficient analytical certainty.

Why TrustyFood Applies More Stringent Criteria Than EU Limits

The limits established by European legislation define the legal compliance of a food product, but do not constitute a criterion for qualitative selection.

TrustyFood therefore applies more stringent criteria aimed at selecting batches characterized by the highest achievable levels of safety, purity and control, as specified in the individual sections of this protocol.

Note: n.a. = not applicable under EU legislation for the specific food matrix being analyzed.

NUTRITIONAL ANALYSIS	LOQ g/100g
Energy (kcal)	
Energy (kJ)	
Proteins (N × 6,25)	0,5
Fats	0,1
Saturated fatty acids	0,05
Monounsaturated fatty acids	0,05
Poliunsaturated fatty acids	0,05
Carbohydrates (by difference to 100)	1
Zuccheri totali (HPLC, come somma)	0,2
Anhydrous Glucose (HPLC)	0,1
Anhydrous Maltose (HPLC)	0,1
Dietary Fibre	0,5
Sodium as Na (ICP-OES)	0,0005
Equivalent Salt (NaCl) (Sodio × 2,5)	0,0015
Moisture content	0,1
Ash content	0,05

MYCOTOXINS	LOQ µg/kg	UE Limit µg/kg	Trustyfood Limit µg/kg
Aflatoxin B1	0,05	2	0,8
Aflatoxin B2	0,05	n.a.	0,5
Aflatoxin G1	0,05	n.a.	0,5
Aflatoxin G2	0,05	n.a.	0,5
Total Aflatoxins (B1+B2+G1+G2)	n.a.	4	1,5
Deoxynivalenol (DON)	50	750	350
Zearalenone (ZEN)	5	75	30
Ochratoxin A (OTA)	0,1	3	1
Citrinin	1	n.a.	10

NATURAL TOXINS	LOQ µg/kg	UE limit µg/kg	Trustyfood Limit µg/kg *
Tropane Alkaloids	1	10	LOQ

* Any result ≥ LOQ results in batch rejection.

METALS	LOQ mg/kg	UE Limit mg/kg	Trustyfood Limit mg/kg
Lead	0,005	0,2	0,1
Cadmium	0,005	0,1	0,06
Arsenic (sum As III e As IV)	0,005	n.a.	0,15
Copper	0,005	n.a.	6
Cromium	0,005	n.a.	0,050
Nickel	0,005	n.a.	0,2

PESTICIDES

The selected batch will undergo multi-residue screening using accredited analytical methods (LC-MS/MS and GC-MS/MS), covering more than 500 active substances and their relevant metabolites, in accordance with the Maximum Residue Levels (MRLs) established by Regulation (EU) No. 396/2005 and its subsequent amendments.
TrustyFood applies more stringent criteria than regulatory compliance alone and rejects batches in which pesticide residues are detected.

FOSFONATE COMPOUNDS (FOSETYL-AL)	LOQ mg/kg	UE Limit mg/kg	Trustyfood Limit mg/kg*
Fosetyl (ethyl hydrogen phosphonate)	0,01	n.a.	LOQ
Fosetyl-Al (sum of Fosetyl, phosphonic acid and their salts, expressed as Fosetyl)	0,01	n.a.	LOQ
Phosphonic acid (phosphorous acid), expressed as Fosetyl	0,01	n.a.	LOQ
Phosphorous acid and its salts, expressed as phosphorous acid	0,0075	n.a.	LOQ

* Any result ≥ LOQ results in batch rejection.

DITHIOCARBAMATES	LOQ mg/kg	UE Limit mg/kg	Trustyfood Limit mg/kg *
Dithiocarbamates, expressed as CS_2	0,01	n.a.	LOQ

* Any result ≥ LOQ results in batch rejection.

PERCHLORATE	LOQ µg/kg	UE Limit µg/kg	Trustyfood Limit µg/kg *
Perchlorate, expressed as ClO_4^-	10	n.a.	LOQ

* Any result ≥ LOQ results in batch rejection.

MOSH / MOAH	LOQ µg/kg	UE Limit µg/kg	Trustyfood Limit µg/kg *
MOSH (Mineral Oil Saturated Hydrocarbons)	500	n.a.	2000
MOAH (Mineral Oil Aromatic Hydrocarbons)	500	n.a.	LOQ

* Any result ≥ LOQ results in batch rejection.

PERFLUOROALKYL SUBSTANCES (PFAS)

Given the current widespread presence of PFAS in the environment, it is unrealistic to expect their complete absence in all food matrices.

TrustyFood accepts only batches with PFAS levels among the lowest reasonably achievable for the specific food matrix under consideration. Priority is given to sources and supply chains subject to lower environmental pressure, while actively seeking products cultivated in areas with low PFAS occurrence, with the objective of progressing toward their complete absence.

PERFLUOROALKYL SUBSTANCES	LOQ µg/kg	UE Limit µg/kg	Trustyfood Limit µg/kg
Perfluorobutanoic acid (PFBA)	0,5	n.a.	1
Perfluorododecanesulfonic acid (PFDoDS)	0,05	n.a.	0,1
Perfluorononanesulfonic acid (PFNS)	0,05	n.a.	0,1
Perfluorooctanesulfonic acid (PFOS)	0,05	n.a.	0,1
Perfluoropentanesulfonic acid (PFPS)	0,05	n.a.	0,1
Perfluorotridecanesulfonic acid (PFTrDS)	0,05	n.a.	0,1
Perfluoroundecanesulfonic acid (PFUnDS)	0,05	n.a.	0,1
Perfluorooctanesulfonamide (FOSA)	0,05	n.a.	0,1
Perfluorodecanoic acid (PFDA)	0,05	n.a.	0,1
Perfluorododecanoic acid (PFDoDA)	0,05	n.a.	0,1
Perfluoroheptanoic acid (PFHpA)	0,05	n.a.	0,1
Perfluorohexanoic acid (PFHxA)	0,05	n.a.	0,1
Perfluorononanoic acid (PFNA)	0,05	n.a.	0,1
Perfluorooctanoic acid (PFOA)	0,05	n.a.	0,1
Perfluoropentanoic acid (PFPeA)	0,05	n.a.	0,1
Perfluorotetradecanoic acid (PFTeDA)	0,05	n.a.	0,1
Perfluorotridecanoic acid (PFTrDA)	0,05	n.a.	0,1
Perfluoroundecanoic acid (PFUnDA)	0,05	n.a.	0,1
Perfluorobutanesulfonic acid (PFBS)	0,05	n.a.	0,1
Perfluorodecanesulfonic acid (PFDS)	0,05	n.a.	0,1
Perfluoroheptanesulfonic acid (PFHpS)	0,05	n.a.	0,1
Perfluorohexanesulfonic acid (PFHxS)	0,05	n.a.	0,1
Sum of PFOS, PFOA, PFNA and PFHxS			0,2

POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)	LOQ µg/kg	UE Limit µg/kg	Trustyfood Limit µg/kg*
Benzo[a]anthracene	2	n.a.	LOQ
Benzo[a]pyrene	2	n.a.	LOQ
Benzo[b]fluoranthene	2	n.a.	LOQ
Benzo[j+k]fluoranthene	2	n.a.	LOQ
Benzo[e]pyrene	2	n.a.	LOQ
Benzo[g,h,i]perylene	2	n.a.	LOQ
Chrysene	2	n.a.	LOQ
Dibenzo[a,e]pyrene	2	n.a.	LOQ
Dibenzo[a,i]pyrene	2	n.a.	LOQ
Dibenzo[a,h]pyrene	2	n.a.	LOQ
Dibenzo[a,l]pyrene	2	n.a.	LOQ
Dibenzo[a,h]anthracene	2	n.a.	LOQ
Indeno[1,2,3-c,d]pyrene	2	n.a.	LOQ
Pyrene	2	n.a.	LOQ
Acenaphthene	2	n.a.	LOQ
Acenaphthylene	2	n.a.	LOQ
Anthracene	2	n.a.	LOQ
Phenanthrene	2	n.a.	LOQ
Fluoranthene	2	n.a.	LOQ
Fluorene	2	n.a.	LOQ
Naphthalene	2	n.a.	LOQ

* Any result ≥ LOQ results in batch rejection.

BTEX	LOQ µg/kg	UE Limit µg/kg	Trustyfood Limit µg/kg*
Benzene	5	n.a.	LOQ
Toluene	5	n.a.	LOQ
Ethylbenzene	5	n.a.	LOQ
m-Xylene	5	n.a.	LOQ
o- + p Xylene	5	n.a.	LOQ
Styrene	5	n.a.	LOQ

* Any result ≥ LOQ results in batch rejection.

AOX – HALOGENATED ORGANIC COMPOUNDS	LOQ µg/kg	UE Limit µg/kg	Trustyfood Limit µg/kg*
Chloromethane	2	n.a.	LOQ
Chloroethane	2	n.a.	LOQ
Vinyl chloride	2	n.a.	LOQ
1,3-Dichloroethylene	2	n.a.	LOQ
1,1-Dichloroethylene	2	n.a.	LOQ
cis-1,2-Dichloroethylene	2	n.a.	LOQ
trans-1,2-Dichloroethylene	2	n.a.	LOQ
Dichloromethane (methylene chloride)	2	n.a.	LOQ
1,1-Dichloroethane	2	n.a.	LOQ
1,2-Dibromoethane	2	n.a.	LOQ
1,2-Dichloropropane	2	n.a.	LOQ
Dibromochloroethane	2	n.a.	LOQ
Bromodichloromethane	2	n.a.	LOQ
Trichloromethane	2	n.a.	LOQ
1,1,1-Trichloroethane	2	n.a.	LOQ
1,1,2-Trichloroethane	2	n.a.	LOQ
1,1,1,2-Tetrachloroethane	2	n.a.	LOQ
1,1,2,2-Tetrachloroethane	2	n.a.	LOQ
Tetrachloroethylene	2	n.a.	LOQ
Carbon tetrachloride	2	n.a.	LOQ
Hexachlorobutadiene	2	n.a.	LOQ
Chlorobenzene	2	n.a.	LOQ
1,2-Dichlorobenzene	2	n.a.	LOQ
1,3-Dichlorobenzene	2	n.a.	LOQ
1,4-Dichlorobenzene	2	n.a.	LOQ
1,2,3-Trichlorobenzene	2	n.a.	LOQ
1,2,4-Trichlorobenzene	2	n.a.	LOQ
1,3,5-Trichlorobenzene	2	n.a.	LOQ

* Any result ≥ LOQ results in batch rejection.

NON-DIOXIN-LIKE POLYCHLORINATED BIPHENYLS (NDL-PCBs)	LOQ ng/g	UE Limit ng/g	Trustyfood Limit ng/g *
2,2',5-Trichlorobiphenyl (BZ #18)	0,04	n.a.	LOQ
2,4',5-Trichlorobiphenyl (BZ #31)	0,04	n.a.	LOQ
2,4,4'-Trichlorobiphenyl (BZ #28)	0,04	n.a.	LOQ
2,2',5,5'-Tetrachlorobiphenyl (BZ #52)	0,04	n.a.	LOQ
2,2',3,5'-Tetrachlorobiphenyl (BZ #44)	0,04	n.a.	LOQ
2,2',3,5',6-Pentachlorobiphenyl (BZ #95)	0,04	n.a.	LOQ
2,2',4,5,5'-Pentachlorobiphenyl (BZ #101)	0,04	n.a.	LOQ
2,2',4,4',5-Pentachlorobiphenyl (BZ #99)	0,04	n.a.	LOQ
3,4,4',5-Tetrachlorobiphenyl (BZ #81)	0,04	n.a.	LOQ
3,3',4,4'-Tetrachlorobiphenyl (BZ #77)	0,04	n.a.	LOQ
2,3,3',4',6-Pentachlorobiphenyl (BZ #110)	0,04	n.a.	LOQ
2,2',3,5,5',6-Hexachlorobiphenyl (BZ #151)	0,04	n.a.	LOQ
2',3,4,4',5-Pentachlorobiphenyl (BZ #123)	0,04	n.a.	LOQ
2,2',3,4',5',6-Hexachlorobiphenyl (BZ #149)	0,04	n.a.	LOQ
2,3',4,4',5-Pentachlorobiphenyl (BZ #118)	0,04	n.a.	LOQ
2,3,4,4',5-Pentachlorobiphenyl (BZ #114)	0,04	n.a.	LOQ
2,2',3,4',5,5'-Hexachlorobiphenyl (BZ #146)	0,04	n.a.	LOQ
2,2',4,4',5,5'-Hexachlorobiphenyl (BZ #153)	0,04	n.a.	LOQ
2,3,3',4,4'-Pentachlorobiphenyl (BZ #105)	0,04	n.a.	LOQ
2,2',3,4,4',5'-Hexachlorobiphenyl (BZ #138)	0,04	n.a.	LOQ
3,3',4,4',5-Pentachlorobiphenyl (BZ #126)	0,04	n.a.	LOQ
2,2',3,4',5,5',6-Heptachlorobiphenyl (BZ #187)	0,04	n.a.	LOQ
2,2',3,4,4',5',6-Heptachlorobiphenyl (BZ #183)	0,04	n.a.	LOQ
2,2',3,3',4,4'-Hexachlorobiphenyl (BZ #128)	0,04	n.a.	LOQ
2,3',4,4',5,5'-Hexachlorobiphenyl (BZ #167)	0,04	n.a.	LOQ
2,2',3,3',4',5,6-Heptachlorobiphenyl (BZ #177)	0,04	n.a.	LOQ
2,3,3',4,4',5-Hexachlorobiphenyl (BZ #156)	0,04	n.a.	LOQ
2,3,3',4,4',5'-Hexachlorobiphenyl (BZ #157)	0,04	n.a.	LOQ
2,2',3,4,4',5,5'-Heptachlorobiphenyl (BZ #180)	0,04	n.a.	LOQ
3,3',4,4',5,5'-Hexachlorobiphenyl (BZ #169)	0,04	n.a.	LOQ
2,2',3,3',4,4',5-Heptachlorobiphenyl (BZ #170)	0,04	n.a.	LOQ
2,3,3',4,4',5,5'-Heptachlorobiphenyl (BZ #189)	0,04	n.a.	LOQ

* Any result ≥ LOQ results in batch rejection.

MICROBIOLOGICAL SPECIFICATION SHEET – BUCKWHEAT FLOUR AND UNPROCESSED BUCKWHEAT

Parameter	UE Limit	Trustyfood Limit (TF)	Criterion Type	Purpose
Salmonella spp.	Absence in 25 g (Reg. (EC) No 2073/2005)	Assenza in 25 g	Food safety	Pathogen: zero tolerance
Escherichia coli	≤ 10^2-10^3 CFU/g (Hygiene criterion)	≤ 10^2 CFU/g	Process Hygiene	Indicator of faecal contamination
Bacillus cereus	≤ 10^3-10^4 CFU/g (guidelines)	≤ 10^2 CFU/g	Safety / quality	Relevant risk in cereals
Moulds and Yeasts	Not regulated	≤ 10^3 CFU/g	Quality / shelf life	Spoilage risk
Enterobacteriaceae	Not regulated	≤ 10^2 CFU/g	Process Hygiene	Environmental contamination indicator

OPTIONAL QUALITY ANALYSES – TECHNOLOGICAL QUALITY MODULE

(Not included among the TrustyFood batch safety and acceptance criteria.)

- Total Starch
- Amylose
- Amylopectin
- Amylose / Amylopectin Ratio
- Gelatinization Index
- Gelatinization Temperature
- Resistant Starch
- Estimated Glycaemic Index (Model) (for whole grain, indicative only)
- Particle Size Distribution (not applicable to whole grain)
- Starch Damage (not applicable to whole grain)