

# INTERNATIONAL CODE OF OENOLOGICAL PRACTICES

## Distinction between additives and processing aids

### 0.1 Distinction between additives and processing aids

#### FOOD ADDITIVE

This term means “any substance not normally consumed as a food by itself and not normally used as a typical ingredient of the food, whether or not it has nutritive value, the intentional addition of which to food for a technological (including organoleptic) purpose in the manufacture, processing, preparation, treatment, packaging, transport or holding of such food results, or may be reasonably expected to result (directly or indirectly) in it or its by-products becoming a component of or otherwise affecting the characteristics of such foods. The term does not include ‘contaminants’ or substances added to food for maintaining or improving nutritional qualities”.

#### PROCESSING AID

This term means “any substance or material, not including apparatus or utensils, and not consumed as a food ingredient itself, intentionally used in the processing of raw materials, food or its ingredients, to fulfill a certain technological purpose during treatment or processing and which may result in the non-intentional but unavoidable presence of residues or derivatives in the final product”<sup>[1]</sup>

Compounds admitted by the OIV for treatment of grape, must and wines and their status as additives and processing aids and the use levels or residual limits

Substances	INS or CAS no.	Code of Oenological Practices		OIV Codex file reference	Additive		Processing aid
		Grape/ Must	Wine				
<b>Acidity regulators</b>							
<b>Malic acid (D,L-; L-)</b>	INS 296	File 2.1.3.1.1	File 3.1.1.1	COEI-1-ACIMAL	X		Maximum use level 4 g/L[2]
<b>Lactic acid</b>	INS 270	File 2.1.3.1.1	File 3.1.1.1	COEI-1-ACILAC	X		Maximum use level 4 g/L <sup>2</sup>
<b>Tartaric acid L(+)</b>	INS 334	File 2.1.3.1.1	File 3.1.1.1	COEI-1-LTARAC	X		Maximum use level 4 g/L <sup>2</sup>
<b>Citric acid, monohydrate</b>	INS 330		File 3.3.8; 3.3.1	COEI-1-CITACI	X		Maximum use level 4 g/L <sup>2</sup> Residual limit 1g/L
<b>Potassium L(+) tartrate</b>	INS 336	File 2.1.3.2.2	File 3.1.2.2	COEI-1-POTTAR		X	
<b>Potassium hydrogen tartrate</b>	INS 336i	File 2.1.3.2.2	File 3.1.2.2	COEI-1-POTBIT		X	

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		Grape/ Must	Wine				
Calcium carbonate	INS 170	File 2.1.3.2.2	File 3.1.2.2	COEI-1-CALCAR		X	
Potassium hydrogen carbonate	INS 501ii	File 2.1.3.2.2	File 3.1.2.2	COEI-1-POTBIC		X	
Calcium tartrate	INS 354		File 3.3.12	COEI-1-CALTAR		X	Maximum use level 200 g/L
Potassium carbonate	INS 501i	File 2.1.3.2.5		COEI-1-POTCAR		X	
Calcium sulfate ( <i>liqueur wines only</i> )	INS 516	File 2.1.3.1.1.1		Ongoing	X		Maximum use level 2 g/L
<b>Preservatives</b>							
Ascorbic acid	INS 300	File 1.11; 2.2.7	File 3.4.7	COEI-1-ASCACI	X		Maximum use level 0.25 g/L[3] Residual limit 300 mg/L
Erythorbic acid	INS 315	File 1.11; 2.2.7	File 3.4.7	COEI-1-ASCACI	X		Maximum use level 0.25 g/L <sup>3</sup> Residual limit 300 mg/L
Sorbic acid	INS 200		File 3.4.5	COEI-1-SORACI	X		Maximum use level 0.2 g/L
Potassium sorbate	INS 202		File 3.4.5	COEI-1-POTSOR	X		Maximum use level 0.2 g/L
Lysozyme	INS 1105	File 2.2.6	File 3.4.12	COEI-1-LYSOZY	X	X	Maximum use level 0.5 g/L
Liquid sulphur dioxide	INS 220	File 1.12; 2.1.2	File 3.4.4	COEI-1-SOUDIO	X		Residual limit 150 mg/l for red wines, 200 mg/l for white and rosés wines, 300 mg/l: red wines, rosés and whites
Potassium hydrogen sulphite	INS 228	File 2.1.2		COEI-1-POTBIS	X		containing more than 4 g/l of reducing substances, 400 mg/l: exceptionally in certain sweet white wines
Ammonium hydrogen sulphite	CAS 10192-30-0	File 1.12; 2.1.2		COEI-1-AMMHYD	X		
Potassium anhydrous sulphite	INS 224	File 1.12		COEI-1-POTANH	X		

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		Grape/ Must	Wine				
<b>Antioxidant</b>							
<b>Glutathione</b>	CAS 70-18-8	File 2.2.8	File 3.4.18	COEI-1-GLUTAT	X		Maximum use level 0.02 g/L
<b>Sequestrant</b>							
<b>Oenological carbon</b>	INS 153	File 2.1.9	File 3.5.9	COEI-1-CHARBO		X	Maximum use level 1 g/L
<b>Selective vegetal fibres</b>	-		File 3.4.20	COEI-1-FIBVEG		X	
<b>Fermentation activators</b>							
<b>Ammonium chloride</b>	INS 510		File 4.1.8	COEI-1-AMMCHL		X	
<b>Ammonium sulphate</b>	INS 517		File 4.1.7	COEI-1-AMMSUL		X	Maximum use level 0.3 g/L
<b>Diammonium hydrogen phosphate</b>	INS 342		File 4.1.7	COEI-1-PHODIA		X	Maximum use level 0.3 g/L
<b>Thiamine hydrochloride</b>	CAS 67-03-8	File 2.3.3	File 4.1.7	COEI-1-THIAMIN		X	Maximum use level 0.6 g/L
<b>Cellulose food grade</b>	INS 460	File 2.3.2		COEI-1-CELLUL		X	
<b>Microcrystalline cellulose</b>	INS 460	File 2.3.2	File 3.4.21	COEI-1-CELMIC		X	
<b>Anti-foaming agent</b>							
<b>Fatty acid mono- and diglycerides</b>	INS 471	File 2.3.2		COEI-1-ACIGRA		X	
<b>Clarifying agents</b>							
<b>Protein of plant origin from wheat</b>		File 2.1.17	File 3.2.7	COEI-1-PROVEG		X	
<b>Protein of plant origin from peas</b>		File 2.1.17	File 3.2.7	COEI-1-PROVEG		X	
<b>Protein of plant origin from potatoes</b>		File 2.1.17	File 3.2.7	COEI-1-PROVEG		X	
<b>Isinglass</b>			File 3.2.1	COEI-1-COLPOI		X	
<b>Gelatin</b>	CAS 9000-70-8	File 2.1.6	File 3.2.1	COEI-1-GELATI		X	

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		Grape/ Must	Wine			
<b>Egg (albumin)</b>	CAS 9006-59-1		File 3.2.1	COEI-1-OEUALB		X
<b>Casein (calcium caseinate)</b>	CAS 9005-43-0	File 2.1.16		COEI-1-CASEIN		X
<b>Potassium caseinate</b>	CAS 68131-54-4	File 2.1.15	File 3.2.1	COEI-1-POTCAS		X
<b>Alginic acid</b>	INS 400		File 3.2.1	COEI-1-ALGIAC		X
<b>Potassium alginate</b>	INS 402		File 4.1.8	COEI-1-POTALG		X
<b>Calcium alginate</b>	INS 402		File 4.1.8	COEI-1-ALGIAC		X
<b>Cellulose</b>	INS 460	File 2.1.11.1	File 3.2.2.1 3.2.2.2	COEI-1-CELLUL		X
<b>Chitin-glucan</b>	CAS Chitin 1398-61-4 CAS Glucan 9041-22-9	File 2.1.23	File 3.2.1; 3.2.1.3; 3.4.17	COEI-1-CHITGL		X
<b>Chitosan</b>	CAS 9012-76-4	File 2.1.22	File 3.2.1; 3.2.12; 3.4.16	COEI-1-CHITOS		X
<b>Diatomite</b>	CAS 68855-54-9	File 2.1.11	File 3.2.2	COEI-1-DIATOM		X
<b>Kaolin</b>	CAS 1332-58-7		File 3.2.1	COEI-1-KAOLIN		X
<b>Perlite</b>	CAS 93763-70-3	File 2.1.11	File 3.2.2	COEI-1-PERLIT		X
<b>Colloidal silicon dioxide solution</b>	INS 551	File 2.1.10	File 3.2.1; 3.2.4	COEI-1-DIOSIL		X
<b>Bentonites</b>	INS 558	File 2.1.8	File 3.3.5	COEI-1-BENTON		X
<b>Polyvinylpolypyrrolidone (PVPP)</b>	INS 1202		File 3.4.9	COEI-1-PVPP		X
<b>Yeast protein extracts</b>		File 2.1.24; 2.1.25	File 3.2.14	COEI-1-EPELV		X

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		Grape/ Must	Wine				
<b>Stabilising agents</b>							
<b>Sodium Carboxymethylcellulose</b>	INS 466		File 3.3.14	COEI-1-CMC	X		Maximum use level 0.2 g/L
<b>Metatartaric acid</b>	INS 353		File 3.3.7	COEI-1-METACI	X		Maximum use level 0.1 g/L
<b>Yeast mannoproteins</b>			File 3.3.13	COEI-1-MANPRO	X		
<b>tartaric acid D,L-</b>	CAS 133-37-9	File 2.1.21	File 3.4.15	COEI-1-DLTART		X	
<b>Potassium D,L-tartrate</b>			File 3.4.15	COEI-1-POTRAC		X	
<b>Gum arabic</b>	INS 414		File 3.3.6	COEI-1-GOMARA	X		Maximum use level 0.3 g/L
<b>Copper sulphate, pentahydrate</b>	CAS 7758-99-8		File 3.5.8	COEI-1-CUISUL		X	Maximum use level 0.01 g/L Residual limit 1 mg/L[4]
<b>Copper citrate</b>	CAS 866-82-0		File 3.5.14	COEI-1-CUICIT		X	Maximum use level 0.01 g/L Residual limit 1 mg/L <sup>4</sup>
<b>Potassium hexacyanoferrate (II)</b>	INS 536		File 3.3.1	COEI-1-POTFER		X	
<b>Calcium phytate</b>	CAS 3615-82-5		File 3.3.1	COEI-1-CALPHY		X	
<b>PVI/PVP copolymer</b>	CAS 87865-40-5	File 2.1.20	File 3.4.14	COEI-1-PVIPVP		X	Maximum use level <0.5 g/L Residual limit Vinylpyrrolidone ≤ 10 µg/L Vinylimidazole ≤ 10 µg/L Pyrrolidone ≤ 25 µg/L Imidazole ≤ 150 µg/L
<b>Potassium polyaspartate</b>	CAS 64723-18-8		File 3.3.15	COEI-1-POTASP	X		Maximum use level 0.1 g/L
<b>Enzymes</b>							

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Substances	INS or CAS no.	Code of Oenological Practices		OIV Codex file reference	Additive	Processing aid
		Grape/ Must	Wine			
Arabinanases	EC 3.2.1.99	File 2.1.4; 2.1.18	File 3.2.8; 3.2.11	COEI-1-ACTARA		X
Beta-glucanases ( $\alpha$ 1-3, $\alpha$ 1-6)	EC 3.2.1.6		File 3.5.7	COEI-1-ACTGLU		X
Cellulases	EC 3.2.1.4	File 2.1.4; 2.1.18	File 3.2.8; 3.2.11	COEI-1-ACTCEL		X
Glycosidases	EC 3.2.1.20	File 2.1.19	File 3.2.9	COEI-1-GLYCOS		X
Glucosidases	EC 3.2.1.21	File 2.1.19	File 3.2.9			X
Pectinlyases	EC 4.2.2.10	File 2.1.4; 2.1.18	File 3.2.8; 3.2.11	COEI-1-ACTPLY		X
Pectinmethylesterases	EC 3.1.1.11	File 2.1.4; 2.1.18	File 3.2.8; 3.2.11	COEI-1-ACTPME		X
Polygalacturonases	EC 3.2.1.15	File 2.1.4; 2.1.18	File 3.2.8; 3.2.11	COEI-1-ACTPGA		X
Hemicellulases	EC 3.2.1.78	File 2.1.4; 2.1.18	File 3.2.8; 3.2.11	COEI-1-ACTGHE		X
Urease	EC 3.5.1.5		File 3.4.11	COEI-1-UREASE		X
Beta-glucanases	EC 3.2.1.58		File 3.2.10	COEI-1-BGLUCA		X
Proteases		File 2.2.12	File 3.3.16	COEI-1-PROTEA		X
<b>Gases</b>						
Oxygen	INS 948	File 2.1.1	File 3.5.5	COEI-1-OXYGEN		X
Nitrogen	INS 941	File 2.2.5	File 3.2.3	COEI-1-AZOTE		X
Argon	INS 938	File 2.2.5	File 3.2.3	COEI-1-ARGON		X
<b>Fermentation agents</b>						

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Substances	INS or CAS no.	Code of Oenological Practices		OIV Codex file reference	Additive	Processing aid
		Grape/ Must	Wine			
Active Dry Yeasts	INS 510		File 4.1.8	COEI-1-LESEAC		X
Lactic acid bacteria	INS 342		File 4.1.7	COEI-1-BALACT		X
Yeast autolysates	-	File 2.3.2		COEI-1-AUTLYS		X
Yeast hulls	-	File 2.3.4		COEI-1-YEHULL		X Maximum use level 0.4 g/L
Inactivated yeasts	-	File 2.3.2		COEI-1-INAYEA		X
Inactivated yeasts with guaranteed glutathione levels	-	File 2.2.9	File 3.4.19	COEI-1-LEVGLU		X Maximum use level (glutathione) 0.02 g/L
<b>Others</b>						
Caramel ( <i>special wines only</i> )	INS 150a, 150b, 150c, 150d		File 4.3; 6.1	COEI-1-CAMEL	X	
Dimethyl dicarbonate (DMDC)			File 3.4.13			
Silver Chloride			File 3.5.15			
Oenological tannins		File 2.1.7 File 2.1.17	File 3.2.6 File 3.3.1	COEI-1-TANINS		X
Skim milk			File 3.2.1			
Grape sugar						
Rectified alcohol of agricultural origin			File 3.5.1			
Rectified alcohol of vitivinicultural origin			File 3.5.1			
Carbon dioxide		File 1.7 File 2.1.14 File 2.2.3 File 2.2.5 File 2.3.9	File 4.1.10 File 4.5			
Acidification by yeasts		File 2.1.3.1.2.1				

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Substances	INS or CAS no.	Code of Oenological Practices		OIV Codex file reference	Additive	Processing aid
		Grape/ Must	Wine			
De-acidification by yeasts		File 2.1.3.2.3.1				
De-acidification by lactic acid bacteria		File 2.1.3.2.3.3				
Inoculation with yeasts		File 2.3.1				
Fumaric acid			File 3.4.2; 3.4.23		X	Recommended doses of 300-600 mg/L

Processes admitted by the OIV for treatment of grape, must and wines

Substances	Code of Oenological Practices		OIV Codex file reference
	Grape/ Must	Wine	
<b>Physical technics</b>			
Filtration on filter bed	File 2.1.11.1	File 3.2.2.1	
Flotation	File 2.1.14		
Pasteurisation	File 2.2.4	File 3.4.3.1; File 3.4.3.2	
Interruption of alcoholic fermentation by physical procedures	File 2.3.6		
Warm post fermentation maceration of red grapes called warm final maceration	File 2.3.9		
Maceration of raisined grapes or their pomace in wine	File 2.3.10		
Sterilising filtration		File 3.2.2.2	

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Substances		Code of Oenological Practices		OIV Codex file reference	
		Grape/Must	Wine		
Cold stabilisation treatment			File 3.3.4		
Topping up			File 3.4.1		
Blending and mixing or preparation of the cuvee			File 3.5.3		
Hot bottling			File 3.5.4		
Fermentation in small capacity wooden containers		File 2.3.8			
Fermenting must or wines in contact with wood			File 3.5.12		
Ageing in small capacity wooden containers			File 3.5.12.1		
Usage of pieces of oak wood in winemaking			File 3.5.12.2		
<b>Physical processes</b>					
<b>Electromembrane</b>					
	Acidification by electromembrane treatment (Bipolar membrane electro dialysis)	File 2.1.3.1.3	File 3.1.1.4		
	De-acidification using an electromembrane process	File 2.1.3.2.4	File 3.1.2.3		
Elimination of sulfur dioxide by physical process		File 2.1.13			
<b>Reverse osmosis</b>					
	Concentration of must by reverse osmosis	File 2.1.12.1			

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Substances		Code of Oenological Practices		OIV Codex file reference	
		Grape/Must	Wine		
	Reduction of the sugar content in musts through membrane coupling	File 2.1.25.1			
<b>Cryoconcentration</b>					
	Concentration of must or wine by cold	File 2.1.12.4	File 3.5.11.1		
<b>Microfiltration</b>					
	Reduction of the sugar content in musts through membrane coupling (used with nanofiltration or reverse osmosis)	File 2.1.25.1	File 3.2.2		
<b>Ultrafiltration</b>					
	Reduction of the sugar content in musts through membrane coupling (used with nanofiltration or reverse osmosis)	File 2.1.25.1			
<b>Nanofiltration</b>					
	Reduction of the sugar content in musts through membrane coupling	File 2.1.25.1			
<b>Cations exchangers</b>					
	Acidification by cation exchanger treatment	File 2.1.3.1.4	File 3.1.1.3 File 3.1.1.5		
	Tartrate stabilisation by treatment with cation exchangers		File 3.1.1.3; File 3.3.3		

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Substances		Code of Oenological Practices		OIV Codex file reference	
		Grape/Must	Wine		
<b>Filter plates containing zeolites <math>\gamma</math>-faujasite</b>					
	Use of filter plates containing zeolites $\gamma$ -faujasite to adsorb haloanisoles		File 3.2.15		
<b>Electrodialysis</b>					
	Tartrate stabilisation by electrodialysis		File 3.3.2		
<b>Heat exchanger</b>					
	Pasteurisation	File 2.2.4	File 3.4.3.1		
	Biological stabilisation		File 3.4.2		
<b>Partial evaporation under atmospheric pressure</b>					
	to obtain the desired degree of concentration and caramelization of sugar	File 2.1.12.3			
<b>Partial evaporation under vacuum process</b>					
	to concentrate musts	File 2.1.12.2			
	Correction of the alcohol content in wines		File 3.5.13		
	Dealcoholisation of wines		File 3.5.16		
<b>Membrane techniques for alcohol reduction</b>					

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Substances		Code of Oenological Practices		OIV Codex file reference	
		Grape/Must	Wine		
	Correction of the alcohol content in wines		File 3.5.13		
	Dealcoholisation of wines		File 3.5.16		
<b>Distillation process</b>					
	Correction of the alcohol content in wines		File 3.5.13		
	Dealcoholisation of wines		File 3.5.16		
<b>Membrane contactor</b>					
	Management of dissolved gas in wine using membrane contactors		File 3.5.17		
<b>Nanofiltration coupled with activated carbon column</b>					
	Treatment of wines using a membrane technology coupled with activated carbon to reduce excess 4-ethylphenol and 4-ethylguaiacol		File 3.5.18		
<b>Ultrasounds</b>					
	Usage of ultrasound for a rapid extraction of grape compounds		File 1.17		
<b>Discontinuous High Pressure Processes</b>					

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Substances		Code of Oenological Practices		OIV Codex file reference	
		Grape/Must	Wine		
	Process that consists in the reduction of indigenous organisms in grapes and musts by the use of discontinuous high pressure processes, with pressures higher than 150 MPa (1500 bar)	File 1.18; 2.1.26			
<b>Pulsed electric fields (PEF)</b>					
	A process that consists on the application of sufficiently high pulsed electric fields (PEF) to destemmed and crushed grapes that causes the permeabilization of the cell membranes especially of the grape skins	File 2.1.27			
<b>Treatment by continuous high pressure processes</b>					
	Operation for the elimination of wild microorganisms in musts and wine by high pressure processing (above 200 MPa or 2000 bar) in continuous. In UHPH, the pressure is usually ranging 300-400 MPa	File 1.18	File 2.2.10		
<b>Treatment of musts using adsorbent styrene-divinylbenzene beads</b>					

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		Grape/Must	Wine		
	Physical process of reduction or elimination of organoleptic deviations characterised as “earthy-musty” by the appropriate and controlled percolation at a high flow rate through adsorbent styrene-divinylbenzene beads	File 2.2.11	File 3.4.22		
<b>Ultrasound Treatments</b>					
	Treatment of crushed grapes with ultrasound to promote the extraction of their compounds	File 1.17			

<sup>[1]</sup> CODEX STAN 107-1981

<sup>[2]</sup> Expressed as tartaric acid

<sup>[3]</sup> When the ascorbic acid has also been used on grape or must, the final concentration, in terms of ascorbic plus dehydroascorbic acid, shall not exceed 300 mg/l.

<sup>[4]</sup> 2 mg/L for liqueur wines