7. The process according to claim 5 or claim 6, wherein the third aqueous phase comprises not more than 3.0 wt.%, preferably not more than 2.8 wt.%, more preferably not more than 2.5 wt.%, yet more preferably not more than 2.2 wt.%, more preferably not more than 2.0 wt.%, based on the total weight of the third aqueous phase, of organic compounds other than the extraction agent used in process step b1a).

~~8. The process according to any one of claims 1 to 4, wherein the separation in process step b) comprises the process steps:~~

~~b2a) crystallisation of at least a part of the water from at least a part of the first aqueous phase obtained in process step a3) to form a crystallised aqueous phase as second aqueous phase and a mother liquor, wherein the mother liquor comprises at least one component ii.;~~

~~b2b) at least partial separation of the crystallised aqueous phase from the mother liquor.~~

~~9. The process according to claim 8, wherein the separation in process step d) comprises at least one of the process steps:~~

~~d2a) at least partial dewatering of the mother liquor separated in process step b2b) to obtain an at least partially dewatered mother liquor;~~

~~d2b) separation of at least a part of at least one component ii. from the mother liquor obtained in process step b2b) or from the at least partially dewatered mother liquor obtained in process step d2a).~~

~~10. The process according to claim 8 or claim 9, further comprising the process step~~

~~e2) melting of the crystallised aqueous phase to obtain a melted crystallised aqueous phase as third aqueous phase.~~

~~11~~8. The process according to ~~any one of~~ claims ~~7 to 10~~, wherein the third aqueous phase ~~or the crystallised aqueous phase~~ comprises not more than 5000 ppm, preferably not more than 4000 ppm, more preferably not more than 3000 ppm, preferably in the range of from 1500 to 2500 ppm, more preferably in the range of from 1800 to 2200, most preferably not more than 2000 ppm, based on the total weight of the third aqueous phase, of organic compound.

~~12~~9. The process according to any one of the preceding claims, wherein the third aqueous phase is subjected to at least one of being conducted to at least one biological purification treatment, being used as process water, and being conducted to at least one of process steps a1) and a2).

~~13~~10. The process according to any one of the preceding claims, wherein the at least one component ii. separated in process step d) is a mixture of at least two components ii. and wherein in a further process step

f) at least one component ii. is at least partially separated from this mixture.

~~14~~11. The process according to any one of the preceding claims, wherein the at least one organic compound of component ii. is at least one organic compound selected from carboxylic acids, aldehydes and ketones.

~~15~~12. The process according to any one of the preceding claims, wherein the at least one component ii. is or comprises at least one of acetic acid, acrylic acid, propionic acid and methacrylic acid.

~~16~~13. The process according to any one of the preceding claims, wherein the at least one component ii. separated in at least one of process steps d) and f) is or comprises methacrylic acid and at least a part of this methacrylic acid is added to the crude aqueous phase obtained in process step a2) or to the crude organic phase obtained in process step a3).

~~17~~14. The process according to any one of the preceding claims, wherein the at least one component ii. separated in at least one of process steps d) and f) or at least a part of the first aqueous phase obtained in process step a3) is subjected to a process step

g) esterification to obtain an ester phase comprising at least one ester.

~~18~~15. The process according to claim ~~17~~14, wherein the ester phase comprises at least two esters.

~~19~~16. The process according to claim ~~17~~14 or claim ~~18~~15, further comprising the process steps

h) at least partial separation of at least one ester from the ester phase;

j) optionally, purification of the at least one ester separated in process step h).

2017. The process according to any one of claims ~~17~~ 14 to ~~19~~16, wherein at least a part of the at least one ester obtained in at least one of steps g), h) and j) is used as extraction agent in process step b1a).

2118. The process according to any one of claims ~~17~~ 14 to ~~20~~17, wherein the at least one ester is based on a $C_1 - C_4$ carboxylic acid and a $C_1 - C_4$ alcohol.

2219. The process according to any one of the preceding claims, further comprising the step

aa1) splitting of methyl tert-butyl ether to obtain at least one C_4 compound and methanol,

wherein at least a part of the at least one C_4 compound is supplied as feed to the gas phase oxidation of at least one of process steps a1).

2320. The process according to claim ~~22~~19, wherein the methanol obtained in process step aa1) is supplied to process step g).

2421. A device for production of at least one of methacrylic acid and a methacrylic acid ester, comprising at least the following components in fluid-conducting communication with each other:

- a gas phase oxidation unit (A1),
- a quench unit (A2),
- a first extraction unit (A3),
- a first separation unit (A4),
- optionally, a first esterification unit (A5),
- a second separation unit (B),
- optionally, a third separation unit (C),
- optionally, a fourth separation unit (D),

wherein the first separation unit is a thermal separation unit comprising at least one bottom outlet in the lower third thereof, the at least one bottom outlet being in fluid-conducting communication with at least one inlet of the second separation unit (B) and wherein the second separation unit (B) serves to separate at least part of the water comprised in an aqueous phase from at least a part of at least one organic compound.