

CLAIMS

1. A process for the purification of the solvent deriving from the production of an elastomeric blend comprising the following steps:
- 5 (a) optionally, subjecting said solvent to a pre-washing in the presence of at least one acid or basic aqueous solution;
- (b) feeding said solvent to a liquid-liquid separation column;
- 10 (c) feeding the stream leaving the head of said liquid-liquid separation column to an azeotropic distillation column;
- (d) feeding the stream withdrawn laterally (side-withdrawal) from said azeotropic distillation
- 15 column to an adsorption section;
- wherein in step (b), water is fed in countercurrent to said liquid-liquid separation column.
2. The process according to claim 1, wherein in said step (a), the acid aqueous solution is selected from
- 20 aqueous solutions comprising at least one acid selected from sulfuric acid or carboxylic acids preferably comprising 7-8 carbon atoms, or mixtures thereof; whereas the basic aqueous solution is selected from aqueous solutions comprising at least one base selected
- 25 from sodium hydroxide, sodium bicarbonate, potassium hydroxide, potassium bicarbonate, or mixtures thereof.
3. The process according to claim 1 or 2, wherein in said step (b), the solvent is fed to said liquid-liquid separation column at a temperature ranging from 20°C to
- 30 100°C, preferably ranging from 25°C to 80°C, more preferably ranging from 30°C to 60°C.

4. The process according to any of the previous claims, wherein in said step (b), said liquid-liquid separation column is maintained at a pressure ranging from 0.1 MPaG to 1.5 MPaG, preferably ranging from 0.15
5 MPaG to 1.0 MPaG, more preferably ranging from 0.2 MPaG to 0.7 MPaG.

5. The process according to any of the previous claims, wherein in said step (b), the solvent is fed to said liquid-liquid separation column, at a nominal
10 flow-rate ranging from 100 kg/min to 15,000 kg/min, preferably ranging from 250 kg/min to 10,000 kg/min.

6. The process according to any of the previous claims, wherein in said step (b), the water is fed in countercurrent to said liquid-liquid separation column,
15 at a nominal flow-rate ranging from 5% to 100%, preferably ranging from 15% to 50%, of the nominal flow-rate of the solvent.

7. The process according to any of the previous claims, wherein in said step (b), the water is fed in
20 countercurrent to said liquid-liquid separation column at a temperature ranging from 20°C to 100°C, preferably ranging from 25°C to 80°C, more preferably ranging from 30°C to 60°C.

8. The process according to any of the previous
25 claims, wherein said stream leaving the head of said liquid-liquid separation column is fed to said azeotropic distillation column, at a temperature that is in relation to the solvent used.

9. The process according to any of the previous
30 claims, wherein in said step (c), said azeotropic distillation column is maintained at a pressure ranging

from 0.01 MPaG to 0.4 MPaG, preferably ranging from 0.03 MPaG to 0.3 MPaG, more preferably ranging from 0.04 MPaG to 0.25 MPaG.

10. The process according to any of the previous
5 claims, wherein in said step (c), the stream leaving the head of said liquid-liquid separation column is fed to said azeotropic distillation column at a nominal flow-rate ranging from 100 kg/min to 20,000 kg/min, preferably ranging from 250 kg/min to 10,000 kg/min.
- 10 11. The process according to any of the previous claims, wherein said stream leaving the head of said liquid-liquid separation column before being fed to said azeotropic distillation column [step (c)], is fed to a separator equipped with a coalescence system
15 (coalescer) obtaining a stream of solvent essentially free of water-soluble contaminants and an aqueous stream comprising solvent and contaminants, said contaminants being present in a concentration at most equal to the limit of their solubility in said solvent.
- 20 12. The process according to any of the previous claims, wherein said stream leaving the head of said liquid-liquid separation column or said stream of solvent essentially free of contaminants, before being fed to said azeotropic distillation column [step (c)],
25 is fed to a storage container.
13. The process according to any of the previous claims, wherein the stream leaving the bottom of said liquid-liquid separation column is sent to a separator equipped with a coalescence system (coalescer),
30 obtaining: an aqueous stream comprising solvent in a quantity ranging from 15 ppm to 500 ppm, preferably

ranging from 20 ppm to 200 ppm, and contaminants dissolved in said solvent at the temperature of said stream, said temperature being preferably ranging from 20°C to 100°C, more preferably ranging from 25°C to 80°C, even more preferably ranging from 30°C to 60°C, and an aqueous stream comprising solvent optionally deriving from the coalescence of the solvent.

14. The process according to any of the previous claims, wherein in said step (d), the stream withdrawn laterally (side withdrawal) is sent to a condenser and subsequently to a heat exchanger.

15. The process according to any of the previous claims, wherein said adsorption section envisages passage on beds of zeolites and/or of activated aluminas, preferably beds of zeolites, optionally with an activated surface, or mixtures thereof, or mixed systems of aluminas/silica gel/zeolites.

16. The process according to any of the previous claims, wherein the gaseous stream leaving the head of said azeotropic distillation column, comprising solvent, light contaminants and water vapour, is sent to a first partial condenser obtaining a liquid stream which is sent to a gravity separator and a first stream in vapour phase that is sent to a second partial condenser obtaining a second stream in vapour phase comprising light contaminants that is subsequently sent to an incineration system, and a biphasic liquid stream (water/solvent) that is sent to a small-capacity tank used for allowing the correct functioning of the process.

17. The process according to any of the previous claims, wherein the stream leaving the bottom of said azeotropic distillation column is partly sent to a first reboiler to be vaporized and recycled to said
5 azeotropic distillation column, and partly, in order to partially recover the solvent, to a second reboiler, preferably of the Kettle type, equipped with a small distillation column with plates or filling elements wherein the partial vaporization is completed and the
10 stream leaving the head of said small distillation column comprising the solvent is recycled to the azeotropic distillation column.