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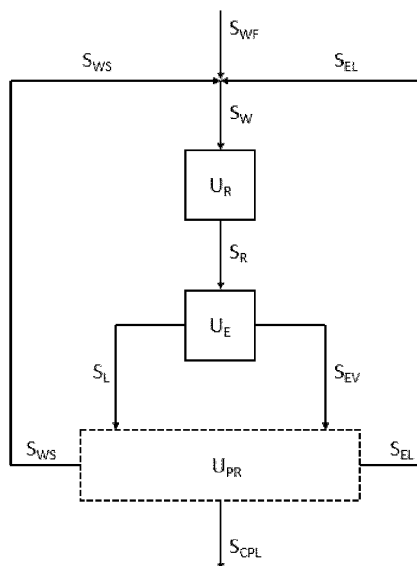
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(54) Title: PROCESS FOR PREPARING PURIFIED EPSILON-CAPROLACTAM FROM POLYAMIDE 6

Figure 1



(57) Abstract: A process for preparing purified ϵ -caprolactam from polyamide 6 comprised in a solid material M, the process comprising preparing an aqueous liquid stream S_R comprising ϵ -caprolactam, comprising providing the solid material M; preparing a liquid stream S_W exhibiting a water mass flow μ_W , the stream S_W comprising a recycle stream S_{WR} exhibiting a water mass flow μ_{WR} and a makeup stream S_{WF} exhibiting a water mass flow μ_{WF} ; preparing a depolymerization mixture based on the solid material M and the stream S_W ; subjecting in a chemical reaction unit U_R the depolymerization mixture to depolymerization conditions, obtaining a reaction mixture M_R comprising ϵ -caprolactam; removing from U_R the stream S_R exhibiting a water mass flow μ_R ; subjecting the stream S_R to depressurization in an evaporation unit U_E , obtaining from U_E a stream S_L comprising ϵ -caprolactam exhibiting a

[Continued on next page]

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water mass flow μ_L , and at least one vapor stream S_{EV} exhibiting a total water mass flow μ_{EV} ; reprocessing the stream S_L in a heat-consuming purification and recycle unit U_{PR} , comprising subjecting the stream S_L to ϵ -caprolactam purification, obtaining a stream S_{CPL} comprising purified ϵ -caprolactam and at least one stream S_{WS} exhibiting a total water mass flow μ_{WS} ; providing at least part of the heat consumed in U_{PR} by the at least one vapor stream S_{EV} , obtaining at least one at least partially condensed stream S_{EL} exhibiting a total water mass flow μ_{EL} ; recycling the at least one stream S_{WS} and the at least one stream S_{EL} as recycle stream S_{WR} , wherein $\mu_{WS} + \mu_{EL} = \mu_{WR}$; and wherein μ_{EV} / μ_L is in the range of from 0.50 to 0.9 and μ_{WR} / μ_W is in the range of from 0.02 to 0.3.