

设有部分冷凝器的精馏-第7次

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一.简答题 (共1题,100.0分)

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【设有部分冷凝器的精馏塔理论板数的计算】

Separate a mixture of methanol-water containing 20% (mole fraction) of methanol using distillation operation,

The top of the distillation tower is equipped with a partial condenser

(the uncondensed steam continues to condense in another condenser to obtain liquid product D1),

A portion of the condensate flows back into the distillation tower,

while the other portion serves as product D2, with a quantity of one-third of D1.

Require a content of 0.9 for product D1 at the top of the tower

and 0.05 for product W at the bottom of the tower.

The material enters the tower below the bubble point,

and the reflux ratio calculated based on product D1 is taken as 1.5.

Under operating conditions, the equilibrium relationship of the system is as shown in the figure.

Try to find:

(1) What are the flow of D1, D2, and W?

(2) What is the concentration of the total condensate
flowing out of the partial condenser?

(3) Find out the steam concentration from
the first plate from top to bottom?

(4) Find out the steam concentration from
the second plate from top to bottom ?

用精馏操作分离含甲醇20%（摩尔分数）的水与甲醇混合液，

精馏塔顶部设有部分冷凝器（未冷凝的蒸汽继续在另一个全凝器中冷凝得到液体产品D1），

冷凝液的一部分回流入精馏塔，另一部分作为产品D2，其数量为D1的1/3。

要求塔顶产品D1的含量为0.9，塔底产品含量为0.05。

物料在泡点下入塔，以产品D1计的回流比取为1.5。

在操作条件下，物系的平衡关系如图所示。

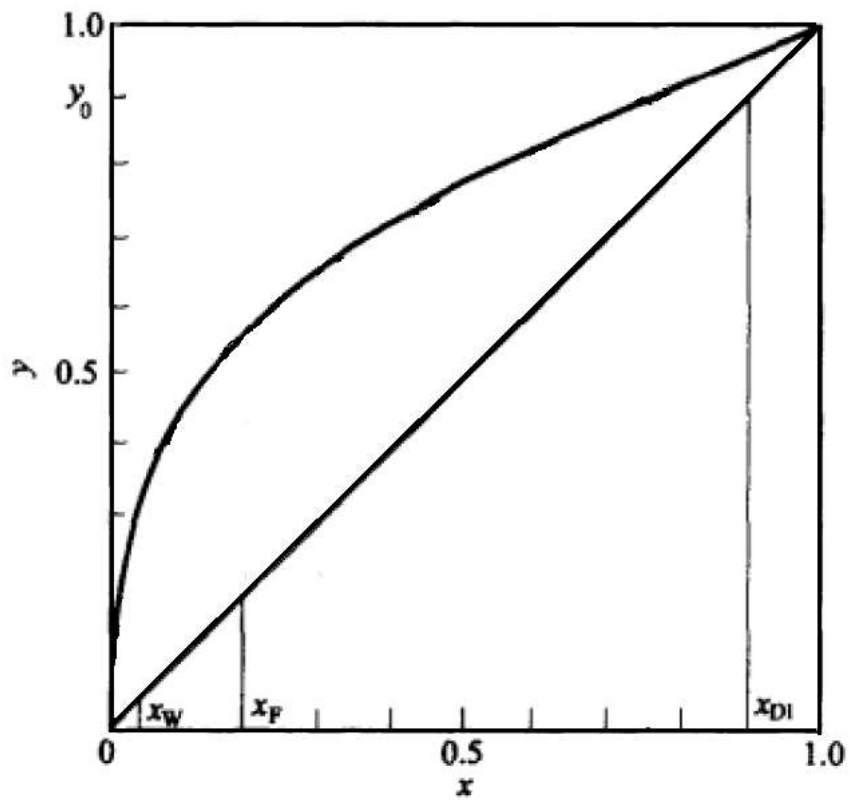
试求：

(1) D1、D2与W的量？

(2) 流出部分冷凝器的全凝液浓度？

(3) 自上而下第一块板上升蒸汽浓度？

(4) 自上而下第二块板上上升蒸汽浓度?



我的答案:

