

# Basic Training Module Chemical Management

Exercise Module 4:

## Consumption of Water and COD

### Task

A textile finishing industry is processing cotton fabric for shirts in a quantity of 40 000 meters per day. The specific weight is 250 g/meter. As sizing agents, mainly starch or starch derivatives and some polyvinylalcohol has been used with an add-on of 10 weight-% on the fabric.

The company says that the wastewater flow is 850 m<sup>3</sup>/d. Further, it reports that the COD of the wastewater is 1000 mg O<sub>2</sub>/l and the BOD<sub>5</sub> 720 mg O<sub>2</sub>/l.

### QUESTION:

Are the numbers concerning the wastewater reasonable (water consumption, COD and BOD<sub>5</sub> in the wastewater)?

### Needed background information

#### Specific COD and BOD<sub>5</sub> values of sizing agents

Kind of sizing agent	Specific COD-value [mg O <sub>2</sub> /g]	Specific BOD <sub>5</sub> -value [mg O <sub>2</sub> /g]
Starch	900 – 1000 * <sup>1</sup>	500 – 600
CMC	800 – 1000 * <sup>1</sup>	50 – 90
PVA	c. 1700 * <sup>1</sup>	30 – 80 * <sup>2</sup>
Polyacrylates	900 – 1650	< 50
Galactomannans	1000 – 1150 * <sup>1</sup>	400
PES-dispersions	1450 – 1700	< 50
Protein sizing agents	1200	700 – 800