



# Equipment III

## Decanters and Extractors

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### Course Objectives

1. Describe the theory of operation of decanters and extractors.
2. Describe typical applications for decanters and extractors in chemical processing.
3. Distinguish between the different types of decanters and extractors.
4. Explain the function of auxiliary or support equipment to the function of extractors.
5. Identify typical operating parameters associated with controlling decanters and extractors.
6. Describe common performance issues related to decanters and extractors including their causes and indicators.



### Key Terms (Define the following)

emulsion - \_\_\_\_\_  
\_\_\_\_\_

extract - \_\_\_\_\_  
\_\_\_\_\_

interface - \_\_\_\_\_  
\_\_\_\_\_

phase inversion - \_\_\_\_\_  
\_\_\_\_\_

raffinate - \_\_\_\_\_  
\_\_\_\_\_

rag - \_\_\_\_\_  
\_\_\_\_\_

specific gravity - \_\_\_\_\_  
\_\_\_\_\_



## Questions

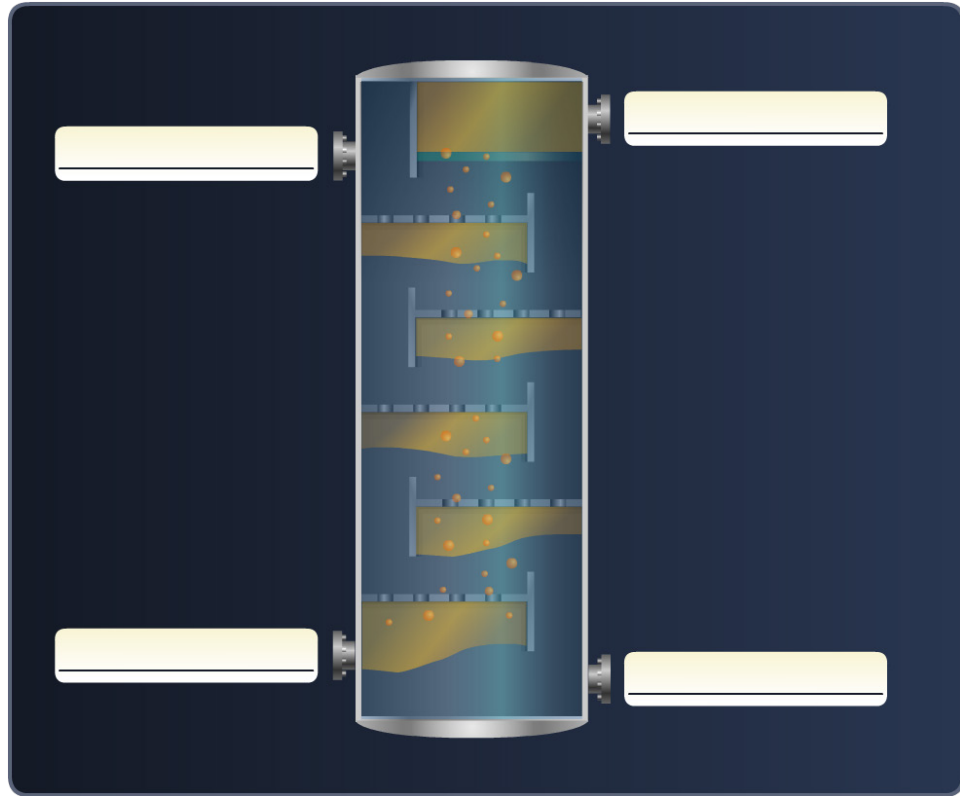
1. Why is it possible to separate cooking oil and water by decanting?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
2. If cooking oil and water separate by decanting, which liquid will be at the top?  
\_\_\_\_\_
3. Will the organic layer always be on top? \_\_\_\_\_
4. List the four basic requirements for separating two liquids by decanting.
  - 1) \_\_\_\_\_
  - 2) \_\_\_\_\_
  - 3) \_\_\_\_\_
  - 4) \_\_\_\_\_
5. Describe the process for manual removal of the separate liquids from a decanter.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
6. How can a change in temperature affect the operation of a decanter?  
\_\_\_\_\_  
\_\_\_\_\_
7. How can rag in a decanter be prevented or reduced?  
\_\_\_\_\_  
\_\_\_\_\_
8. Explain the phrase "like dissolves like".  
\_\_\_\_\_  
\_\_\_\_\_
9. List the five basic requirements for extraction to work.
  - 1) \_\_\_\_\_
  - 2) \_\_\_\_\_
  - 3) \_\_\_\_\_
  - 4) \_\_\_\_\_
  - 5) \_\_\_\_\_

10. When is extraction preferred over distillation?

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11. Label the feed and output to this tray column decanter.



12. Describe three mechanisms for contacting and mixing the feed and the solvent in an extractor.

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_

13. Describe units downstream from an extractor.

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14. What is the overall equation for inventory control in an extractor?

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15. How can "flooding" affect the interface in an extractor?

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