

Chem 108

Lab

Week 16

- **Sit @ your original Lab Drawer Station:**
the one that you signed in for @ the beginning of the semester.

Pick up:

- **your pink inventory sheet**
- **a padlock**
- **a tag for your combination lock if you don't have the one that came with it @ the beginning of the semester**

Chem 108

This procedure must be carried out in the fume hood. Acetic anhydride is an irritant and sulfuric acid is a strong oxidizing agent.

Synthesis of Aspirin

Due Today

Name: _____

Section: _____

Report Form – Preparation of Aspirin

Mass, salicylic acid	
Mass, container + aspirin	
Mass, container	
Mass, aspirin*	
Theoretical yield*	
Percent yield*	

Weigh Aspirin

Show the calculations for each of the entries in the Data Table marked with * on the calculations page.

Complete Report Form pg. 90

Calculate % Yield

Provide labeled Calculation of Theoretical Yield & % Yield

Solid aspirin should be disposed in the organic solid waste

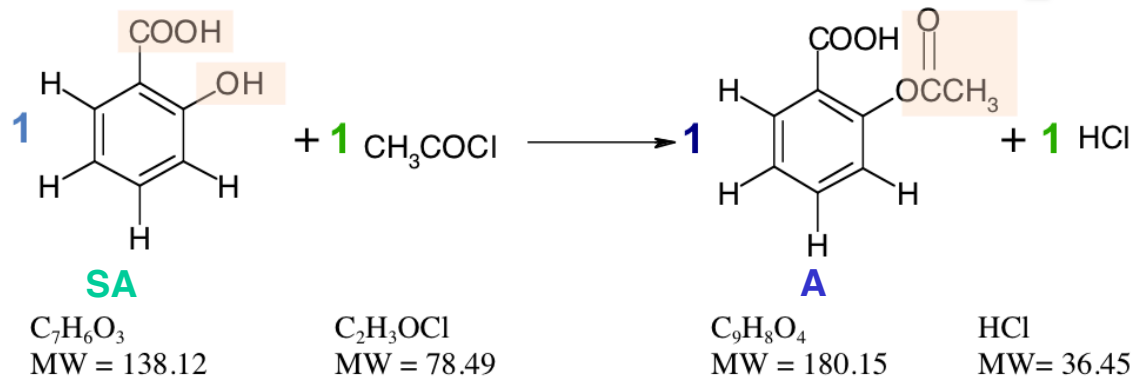
Percent Yield

❁ In synthesis as in any experiment, it is very difficult and at most times impossible to be perfect. Therefore the actual yield (g) is measured and compared to the theoretical calculated yield (g). This is the percent yield:

❁ $\% \text{ Yield} = \text{actual (g)} / \text{theoretical (g)} \times 100$



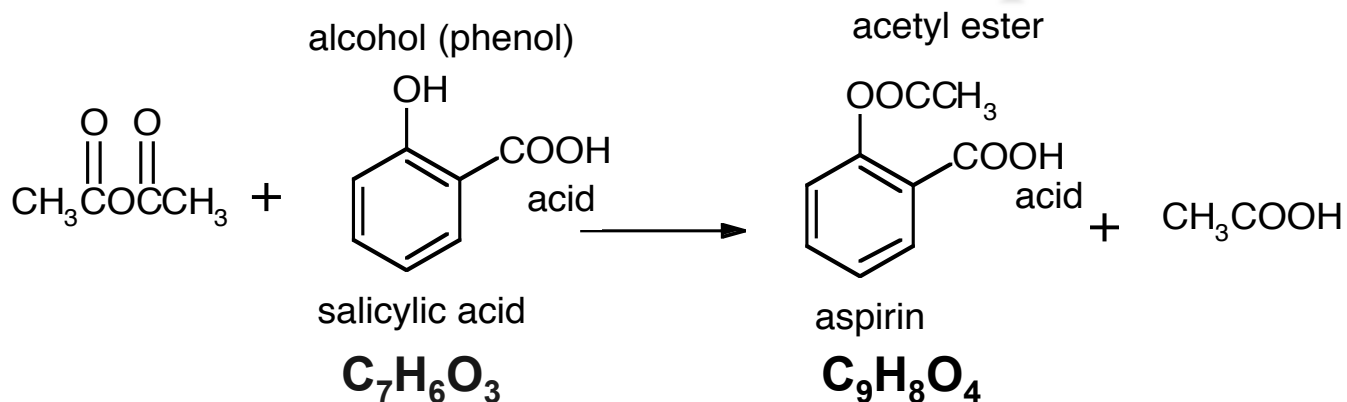
Theoretical Yield Example:



grams (Salicylic Acid) \longrightarrow grams (Aspirin)

		Moles Molar Mass Stoichiometry	$\text{C}_9\text{H}_8\text{O}_4$ MW = 180.15	
6.00 grams (SA)	1 mol (SA)	1 mol A	grams (A) (Molecular Weight A)	$= ? (A)$
grams (SA) (Molecular Weight SA)	1 mol SA	"Gatekeeper"	1 mol (A)	7.83 g aspirin
$\text{C}_7\text{H}_6\text{O}_3$ MW = 138.12				

Percent Yield Example:



grams (Salicylic Acid) \longrightarrow

7.83 g

grams (Aspirin)
Theoretical

Report Form – Preparation of Aspirin

Mass, salicylic acid	6.00 g
Mass, container + aspirin	84.60 g
Mass, container	77.69g
Mass, aspirin*	6.91 g
Theoretical yield*	7.83 g
Percent yield*	88.3 %

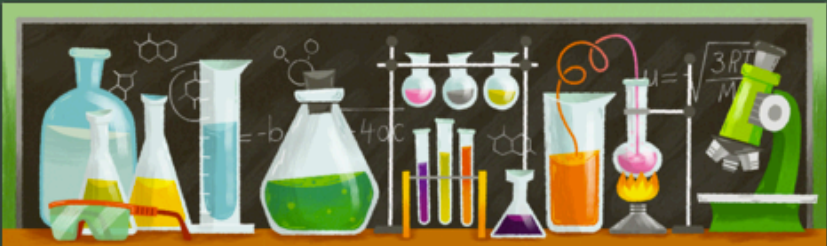
$$\% \text{ Yield} = \text{actual (g)} / \text{theoretical (g)} \times 100$$

$$\% \text{ Yield} = (6.91\text{g}) / (7.83 \text{ g}) \times 100 = 88.3\%$$

Show the calculations for each of the entries in the Data Table marked with * on the calculations page.

Post Lab Questions

Due on-line



Aspirin

Read the text in the web page below & view the linked video. Then answer the questions, which follow the reaction that relate to your experiment, the reading & the video. Be sure to submit your completed answers before the deadline noted in the course calendar for credit.

<http://chemconnections.org/general/chem108/aspirin-2017.html>

* Required

alcohol (phenol) acetyl ester

$$\text{CH}_3\text{COCCH}_3 + \begin{array}{c} \text{OH} \\ | \\ \text{C}_6\text{H}_4 \\ | \\ \text{COOH} \\ \text{acid} \end{array} \longrightarrow \begin{array}{c} \text{OOCCH}_3 \\ | \\ \text{C}_6\text{H}_4 \\ | \\ \text{COOH} \\ \text{acid} \end{array} + \text{CH}_3\text{COOH}$$

salicylic acid aspirin

Name: (last, first) *

e-mail address: *

<http://chemconnections.org/general/chem108/Aspirin%20Guide.html>

Check in lab drawer

Chem 108: Class/ Lab

(Return any loaned i-clickers)

- 1. Check that you have everything on the pink inventory sheet: clean & not broken; dispose of any broken glass in the broken glass container.**
- 2. Replace the paper @ the bottom of the drawer with clean paper towel.**
- 3. Note any missing equipment on the pink sheet.**
- 4. Take a tag, write the combination number on the tag & fasten to lock.**
- 5. Write your name on the blackboard. Dr. R. will check pink sheet & sign off.**
- 6. Thank you, and best wishes.**