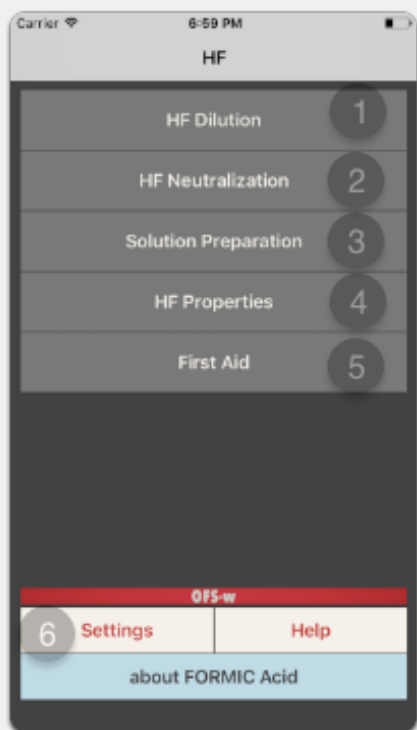


HF Acid

HF Acid is a handy tool for preparing recipes to mix, dilute, neutralize HF acid as well as get a quick safety and first aid directions

HF Home



The Home navigation screen provides access to all modules included in the app.

1. The "HF Dilution" screen allows the preparation of desired diluted acid volume from concentrated acid.
2. The "HF Neutralization" screen allows the calculation of the required quantity of various alkalis to neutralize the given volume of HF acid.
3. The "Solution Preparation" screen allows the calculation of the required acid volume from a given concentration to mix a solution with a given "Molarity/Normality"
4. The "HF Properties" page gives a general information related to the product physical and chemical properties.

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5. The "First Aid" page provide guidance to basic first aid steps to be taken when exposed to uncontrolled HF environment.
6. The "Settings" screen allows user to set his preferred units

HF Dilution



1. Return to Home screen
2. Go to Settings screen
3. Enter raw HF acid concentration
4. Enter desired HF acid concentration
5. Enter water density (water used for dilution)
6. Enter desired diluted acid volume
7. Output screen showing:
 - Initial acid density at 20 °C
 - Desired acid density at 20 °C
 - Raw acid volume
 - Required water volume for diluting the acid

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8. Name of saved calculation or type in a name to save calculation under (☆)
9. Pickerview to revert back to a saved calculation
10. Save your current calculation under recommended name or user typed name
11. Swipe left to delete you selected record on the pickerview
12. Share the calculation

(☆) each record has a case record name and a ID name. Typically, both are set by the app to be identical. If user wants to identify the record with a different record name that appears on the pickerview, please follow the below steps:

1. Complete all data entries (from step 1 to 6 above)
2. Tap anywhere on the screen to process calculation
3. Type the record name in textbox 8
4. Press save button (10)

HF Neutralization



1. Return to Home screen
2. Go to Settings screen
3. Enter HF acid concentration
4. Enter HF acid volume to be neutralized
5. Select the neutralization agent to be used (☆)
6. The calculation output screen showing:
 - Mass of the selected neutralizer used to neutralize a unit volume of acid
 - Total Mass of the selected neutralizer used to neutralize a entire volume of acid
7. The chemical reaction equation and complete name of neutralizer will appear here once the neutralizer is selceted in step (5)
8. Name of saved calculation or type in a name to save calculation under (☆☆)
9. Pickerview to revert back to a saved calculation
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(☆) some neutralizers have an extremely fast and exothermal reaction with a CO₂ gas release when added to the acid. The common neutralizers used on commercial basis are sodium bicarbonate, soda ash or lime. Safety considerations shall be well taken as per each product directives.

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2. Tap anywhere on the screen to process calculation
3. Type the record name in textbox 8
4. Press save button (10)

HF Solution Preparation



1. Return to Home screen
2. Go to Settings screen
3. Enter HF acid concentration
4. Enter HF acid solution volume required
5. Select the solution unit measurement "Molarity or Normality" (☆)
6. Enter the desired Molarity/Normality value
7. The calculation output screen showing:
 - Volume of raw acid needed
 - Volume of water needed
 - The equivalent acid concentration
 - The equivalent acid pH value
8. Name of saved calculation or type in a name to save calculation under (☆☆)
9. Pickerview to revert back to a saved calculation
10. Save your current calculation under recommended name or user typed name
11. Swipe left to delete you selected record on the pickerview
12. Share the calculation

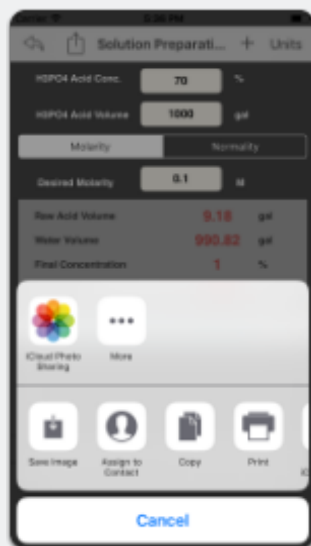
HF Acid

(☆) Normality is similar in concept to Molarity. Where molarity (M) represents the concentration of an ion or compound in solution, normality (N) represents the molar concentration of the acid component (usually the H⁺ ion in an acid solution). Typically $N = (M)(\text{number of hydrogen or hydroxide ions})$.

(☆☆) each record has a case record name and a ID name. Typically, both are set by the app to be identical. If user wants to identify the record with a different record name that appears on the pickerview, please follow the below steps:

1. Complete all data entries (from step 1 to 6 above)
2. Tap anywhere on the screen to process calculation
3. Type the record name in textbox 8
4. Press save button (10)

Share Screen



Share screen allows sharing the calculations screen via sharing apps available to each user

Settings



1. Go to Home screen
2. Select "Volume" unit
3. Select "Weight/mass" unit
4. Select "Density" unit
5. Click on "Save" to save your units selection
6. The saved units are displayed in the "Saved Units" textbox to confirm proper selection