

# **Seife herstellen**

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Dieses Buch steht im Regal Anleitungen<sup>2</sup>.



Es ist eine PDF-Version<sup>3</sup> dieses Buches vorhanden.

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## 0.1 Zusammenfassung des Projekts

- **Zielgruppe:** Leute, die selbst mal Seifen herstellen wollen
- **Projektumfang:** Das Buch soll die chemischen Abläufe bei der Seifenherstellung aufzeigen, die benötigten Arbeitsmittel und -schritte leicht nachvollziehbar darstellen, um ein Stück Seife zu gewinnen. Eine kleine Rezeptesammlung soll das Ganze vervollständigen.

- **Themenbeschreibung:**

Chemische Grundlagen, Arbeitsmittel, Zutaten, Schritt-für-Schritt-Anleitung, Erweiterungsmöglichkeiten (Kräuter, Öle etc.), Rezeptesammlung

- **Lernziele:** Einstieg in die Seifenherstellung
- **Abgrenzung zu anderen Wikibooks:** Keine anderen Wikibooks bekannt.
- **Policies:**
  - Das Buch soll sehr beispielorientiert sein.
  - Die Texte sollen mit möglichst vielen Bildern veranschaulicht werden.

- **Aufbau des Buches:**

1. Chemische Grundlagen
2. Praxis: Warnhinweise
3. Praxis: Arbeitsmittel
4. Praxis: Zutaten
5. Praxis: Schritt-für-Schritt-Anleitung: Grundrezept
6. Praxis: Erweiterungsmöglichkeiten (Kräuter, Öle etc.)
7. Rezeptesammlung



Abb. 3

## 0.2 Einleitung

Seifen<sup>5</sup> sind die wohl ältesten waschaktiven Substanzen. Schon im 3. Jahrht. v. Chr. benutzten die Sumerer Seifen, im 9. Jahrh. florierte die Seifenproduktion in Marseille und seit Mitte des 18. Jahrh. wird Seife industriell hergestellt.

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<sup>5</sup> <http://de.wikipedia.org/wiki/Seifen%20%28Waschmittel%29%20>

Als Waschmittel<sup>6</sup> wurde die Seife inzwischen fast vollständig von synthetischen Detergentien<sup>7</sup> verdrängt und dient heute in erster Linie der Hand- und Körperwäsche.

*Warum Seife selbst herstellen?* Bei der industriellen Herstellung von Seife wird eine Vielzahl unterschiedlicher Zusatzstoffe verwendet, die die Haut reizen und gesundheitliche Probleme, z.B. Allergien, verursachen können. Stellt man seine Seife selbst her, so kann man die Inhaltsstoffe selbst festlegen und durch Hinzufügen von z.B. Kräutern besondere Seifenkompositionen gewinnen.

### 0.3 Chemische Grundlagen zu Seifen

Seife entsteht durch den Prozess der Verseifung<sup>8</sup> aus Carbonsäureester<sup>9</sup>, d.h. aus Öl<sup>10</sup> oder Fett<sup>11</sup>, zusammen mit einer Lauge<sup>12</sup>, üblicherweise Natronlauge<sup>13</sup> oder auch Kalilauge<sup>14</sup>. Dabei entsteht Glycerin<sup>15</sup> und das entsprechende Alkalisalz<sup>16</sup> der im Fett vorkommenden Fettsäuren<sup>17</sup>.

Die Alkalisalze der Fettsäuren sind die eigentlichen Seifen, da sie Tensid<sup>18</sup>charakter besitzen und somit Schmutz<sup>19</sup> lösen können. Die Verseifung mit Natronlauge liefert Kernseife<sup>20</sup> oder Leimseife, die mit Kalilauge Schmierseife<sup>21</sup>.

Die Verseifung wird auch basische Hydrolyse<sup>22</sup> genannt.

### 0.4 Praxis: Warnhinweise



Abb. 4

Beim Herstellen von Seife wird mit starken Laugen gearbeitet, daher ist das Tragen von Schutzausrüstung absolute Pflicht. Ebenso sind Arbeitsmittel und Arbeitsflächen peinlichst sauber zu halten.

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- 6 <http://de.wikipedia.org/wiki/Waschmittel%20>
  - 7 <http://de.wikipedia.org/wiki/Detergentien%20>
  - 8 <http://de.wikipedia.org/wiki/Verseifung%20>
  - 9 <http://de.wikipedia.org/wiki/Carbons%E4ureester%20>
  - 10 <http://de.wikipedia.org/wiki/%D6l%20>
  - 11 <http://de.wikipedia.org/wiki/Fett%20>
  - 12 <http://de.wikipedia.org/wiki/Lauge%20>
  - 13 <http://de.wikipedia.org/wiki/Natronlauge%20>
  - 14 <http://de.wikipedia.org/wiki/Kalilauge%20>
  - 15 <http://de.wikipedia.org/wiki/Glycerin%20>
  - 16 <http://de.wikipedia.org/wiki/Alkalisalz%20>
  - 17 <http://de.wikipedia.org/wiki/Fetts%E4uren%20>
  - 18 <http://de.wikipedia.org/wiki/Tensid%20>
  - 19 <http://de.wikipedia.org/wiki/Schmutz%20>
  - 20 <http://de.wikipedia.org/wiki/Kernseife%20>
  - 21 <http://de.wikipedia.org/wiki/Schmierseife%20>
  - 22 <http://de.wikipedia.org/wiki/Hydrolyse%20>

**Wichtig:**

1. **Schutzbrille tragen!** Auch Brillenträger müssen eine Schutzbrille tragen, die gut abschließt. Die normale Korrekturbrille bietet zwar von vorne einen gewissen Schutz aber die Seiten sind praktisch ungeschützt. Kontaktlinsen bieten gar keinen Schutz und verschlimmern die Sache eher noch, wenn doch mal etwas ins Auge gelangt (längerer Kontakt der Lauge mit dem Auge unter der Linse)! Am besten gar nicht tragen sondern während der Seifenherstellung eine Brille verwenden.
2. **Langärmelige Arbeitskleidung tragen!** Am besten einen Arbeitskittel oder alte Kleidung tragen. Laugen beschädigen Kunst- und Naturfasern.
3. **Gummihandschuhe tragen!** Einmalhandschuhe sind wegen der geringen Materialstärke weniger geeignet als Haushaltshandschuhe. Eine ausreichende Materialstärke ist notwendig, da auch mit warmen Laugen gearbeitet wird.
4. **Lange Haare zurückbinden!**
5. **Wenn mit NaOH-Pulver gearbeitet wird: Atemschutzmaske mit Filter P2 für Stäube (z.B. FFP2) tragen!** Die nächsthöhere Kategorie ist P3 und nicht P1 also Vorsicht beim Einkauf. Vorsicht auch vor sogenannten „Hygienemasken“ oder „Mundschutz“. Diese Masken bieten keinen ausreichenden Schutz, da sie nur recht grobe Partikel ausfiltern. Als Schutz kommt hier nur eine Halbmaske aus Gummi o.ä. Material mit entsprechendem Filter oder eine Halbmaske, die im Ganzen filtriert (in der Regel weißes Material), in Frage. Eine Vollmaske („Gasmasken“) geht natürlich auch, aber ist wahrscheinlich etwas übertrieben. Natürlich kann stattdessen auch in einem Abzug gearbeitet werden, aber wer hat das schon zu Hause.
6. **Arbeitsplatz gut lüften!**
  1. **Arbeitsmittel nur zum Herstellen von Seife verwenden, auf keinen Fall dürfen diese Geräte zu Zubereiten von Speisen verwendet werden.**
  2. **Vor Arbeitsbeginn alle Arbeitsmittel und Zutaten bereit legen.**
  3. **Während der Seifenherstellung dürfen keine Haustiere, kleine Kinder oder andere Personen stören.**
  4. **Arbeitsfläche nach Arbeitsende gründlichst säubern.**

**0.5 Praxis: Arbeitsmittel**

Für den Einstieg reichen ein paar einfache Arbeitsmittel aus:

- Ein **großer Topf**
  - emailliert oder aus nichtrostendem Stahl
  - Größe: ca. für 2 bis 3 Liter Inhalt
  - Ein hoher Topf ist besser als ein flacher, damit die Seifenmasse nicht so leicht herausspritzt.
- Ein **kleiner Topf** zum Mischen der Lauge
  - emailliert oder aus nichtrostendem Stahl
  - oder ein hitzebeständiger transparenter Kunststoff- oder Glasmessbecher (der es erlaubt, genau zu überprüfen, ob sich die Kristalle vollständig aufgelöst haben)
  - Größe: ca. 1 Liter Inhalt
  - mit Griff und Ausgießer (dies, damit beim Umfüllen nicht so leicht was daneben geht)
- Ein **kleines Plastik- oder Glasgefäß** zum Abwiegen der Lauge.

- Einen **Holzkochlöffel** oder Holzspatel zum Umrühren der Seifenmasse.
- Eine gute Hilfe ist ein Stabmixer, damit kann man viel Zeit sparen.
- Ein **Küchenthermometer**, z.B. ein Bratenthermometer, bis etwa 100°C.
- Eine genaue **Küchenwaage**, auf 1 Gramm oder 2 Gramm genau ablesbar.
- Eine **Seifenform**. (Zum Einstieg ist ein Holzkistchen, das mit einer unbedruckten(!) Plastikfolie - zum Beispiel Gefrier- oder Müllbeutel - ausgelegt wurde, völlig ausreichend, gut geeignet sind auch Backformen aus Silikon, die das Herausnehmen der Seife erleichtern, oder normale Backformen, die aber unbedingt mit Plastikfolie ausgelegt werden müssen, damit die Lauge nicht mit dem Metall reagiert. Gut geeignet sind auch leere Eiscremedosen mit ca. 2 Litern Inhalt.)
  - Größe: ca. 1,5 bis 2 Liter Inhalt
  - Hitzebeständig bis 100 °C

Metallgegenstände sollten nicht aus Aluminium sein, da dieses sehr stark von der Lauge angegriffen wird. Kupfer ist auch weniger gut geeignet. Im heißen Zustand leidet es auch unter der Lauge.



Abb. 5

**Die Arbeitsmittel, die direkt mit der Lauge oder der frischen Seife in Berührung kommen, sollten vor der Verwendung bei der Zubereitung von Speisen gründlich gespült werden. Kleine Rückstände der Lauge, die an den Werkzeugen haften, können zu gefährlichen Verletzungen führen.**

## 0.6 Praxis: Zutaten

### 0.6.1 Grundstoffe

#### Öle und Fette

Für eine Seife wird meist eine Mischung verschiedener Fette verwendet, um z.B. die Festigkeit der Seife zu beeinflussen. Eine gute Mischung umfasst:

- *harte Fette*, diese sorgen dafür, dass das Seifenstück später im Wasser seine Form behält. Zu den harten Fetten zählt auch Olivenöl, das trotz seiner flüssigen Konsistenz eine sehr schöne harte Seife ergibt.
- *weiche Öle*, z.B. Sojaöl, Rapsöl oder Sonnenblumenöl, die feuchtigkeitsspendend wirken.
- *schaumfördernde Fette*, damit die Seife richtig schäumt. Hierzu werden hauptsächlich Kokosfett und Palmkernfett, seltener auch Palmöl verwendet.
- *hautpflegende Öle*, die die Haut pflegen sollen.

#### Ätznatron (Natriumhydroxid, NaOH)

Erhältlich in Apotheken und Drogerien. Es wird auch zur Laugengebäckherstellung verwendet und kann unter Umständen in Bäckereien erstanden werden.



Abb. 6

**Vorsicht bei der Handhabung: Stark ätzend! Verpackung immer luftdicht verschließen, da es stark feuchtigkeitsanziehend wirkt, durch die Luftfeuchtigkeit zerfließt und dadurch unbrauchbar wird. Für Kinder und Haustiere unerreichbar aufbewahren!**

Löslichkeit in Wasser: 420 g/l (0 °C), 1090-1260 g/l (20 °C)

### **Wasser**

Destilliertes Wasser verwenden, da Leitungswasser Kalk, Mineralien und unerwünschte chemische Verbindungen enthält. Bei kalkreichem Wasser bildet sich sog. „Kalkseife“. Sehr weiches Leitungswasser kann verwendet werden - bitte informieren Sie sich beim örtlichen Wasserwerk über den Härtegrad Ihres Leitungswassers!

## **0.6.2 Zusätzliche Inhaltsstoffe**

**Kräuter und Blüten (vorzugsweise getrocknet)**

**Färbemittel, z.B. Kurkuma oder Lebensmittelfarben**

**Ätherische Öle**

**Synthetische Duftöle**

**Natürliche Zusatzstoffe**

**nichtlösliche Bestandteile für einen Peelingeffekt, zum Beispiel Kokosflocken, Mohn oder Hafererschrot**

## **0.7 Praxis: Schritt-für-Schritt-Anleitung: Grundrezept**

Im Allgemeinen ist es einfacher, größere Mengen an Seife herzustellen, weil sich kleine Ungenauigkeiten im Mischungsverhältnis der Zutaten nicht so gravierend auswirken wie bei kleineren Mengen.

### **0.7.1 Fett**

Wir entscheiden uns daher, eine Seifenmenge von ca. 1,5 kg herzustellen. Dafür benötigen wir

- **500 g reines Kokosnußfett** (in vielen Supermärkten als Würfel erhältlich),
- **250 g Olivenöl**,
- **125 g Sonnenblumenöl** sowie
- **125 g Rapsöl**.

Das Fett und das Öl werden im großen Topf langsam erwärmt. Die Masse sollte nicht zu heiß werden, 60 °C bis 90 °C ist ideal. Wenn alles geschmolzen ist läßt man den Topf wieder bis auf 50 °C bis 60 °C abkühlen.

### 0.7.2 Lauge

Festes Ätznatron (Natriumhydroxid, Formel: NaOH) besteht aus kleinen farblosen Kristallen oder aus sog. Plätzchen, die durch die Lichtbrechung weiß wirken. Man bekommt sie in Apotheken oder Drogerien.

Die notwendige Laugenmenge kann genau berechnet werden. Jedes Fett oder Öl braucht eine ganz bestimmte Menge Lauge zur Verseifung. Nimmt man zuviel Lauge, dann wird die Seife ätzend und hautschädigend. Nimmt man zu wenig, dann bleibt zu viel Fett unverseift, die Seife wird weich und weniger haltbar. Also verwendet man eine geringfügig kleinere NaOH-Menge, als zur Verseifung des gesamten Fettes notwendig wäre. Die dadurch erzielte leichte Überfettung bewirkt, dass die Seife den hauteigene Säureschutzmantel weniger stark angreift. Eine sogenannte Rückfettung, also eine Übertragung von unverseiftem Fett von der Seife auf die Haut findet - entgegen einem landläufigen Irrtum - nicht statt, die Wirkung ist jedoch die selbe.

Wir nehmen für die Fettmenge in unserem Rezept

- **genau 146 g Natronlauge Ätznatron**

Das Ätznatron wird aufgelöst in

- **340 g destilliertem Wasser**

Durch dieses Mischungsverhältnis wird die Seife etwas überfettet.



Abb. 7

Beim Auflösen des Ätznatrons wird sich das Wasser stark erwärmen. Die Verwendung von stark gekühltem, am besten teils gefrorenem Wasser verringert dies und beugt der Bildung ätzender Dämpfe vor. Desweiteren empfiehlt es sich, das Auflösen der Lauge im Freien oder unter einer angeschalteten Dunstabzugshaube vorzunehmen.



Abb. 8

**ACHTUNG:** *Man gibt immer zuerst das destillierte Wasser in den Topf und schüttet langsam das Ätznatron zum Wasser hinzu. Niemals umgekehrt arbeiten, sonst gibt es eine kleine Explosion mit schlimmen Laugenspritzern.* Gut merken kann man sich das mit den Sätzen: Erst das Wasser, dann die Lauge - sonst geht die Sache leicht ins Auge. :-)

### 0.7.3 Seife sieden

Das Fett und das Öl sollten immer noch eine Temperatur von 50 bis 60°C haben. Jetzt vorsichtig die noch heiße, aufgelöste Lauge in den Topf mit dem Fett und dem Öl gießen. Es entsteht sofort eine milchige Masse, die für einige Minuten umgerührt werden muss bis sich Fett und Lauge vollständig vermischt haben. (Wer nur mit dem Kochlöffel arbeitet, muss dafür ungefähr eine halbe Stunde fleißiges umrühren einplanen.)

Die Masse wird nun immer dicker, ähnlich einem Pudding. Sobald die Masse so fest ist, dass der Kochlöffel darauf Spuren hinterlässt (wenn man auf der Seife "schreiben" kann), dann wird die Masse sofort in die vorbereitete Seifenform gegossen.



Abb. 9

Beim Seifenrühren entsteht auch Wärme. Die ganze Masse wird 60°C und mehr erreichen. Wer zu lange rührt und zu heiß arbeitet, wird die Seifenmasse nur mehr schwer aus dem Topf in die Seifenform kriegen. Die Seife wird grob und bröckelig sein.

Alternativ dazu kann man Seife auch im sogenannten "Kaltrührverfahren" herstellen. Hier wird gewartet, bis sich die Fette und Öle auf Zimmertemperatur abgekühlt haben, erst dann wird die Lauge hinzugegeben und beide Bestandteile, "kalt" miteinander verrührt. Das Verfahren ist ansonsten dasselbe. Die Seife muß allerdings etwas länger reifen.

### 0.7.4 Langsam abkühlen lassen

Die Seifenform wird jetzt noch isoliert, also zum Beispiel mit alten Tüchern abgedeckt, damit die Masse nicht zu schnell auskühlt. So bleibt sie mindestes 24 Stunden stehen, damit sie "ausreifen" kann. In dieser Zeit läuft der Verseifungsprozess, d.h. der Laugenanteil wird geringer und der pH-Wert der Seife sinkt auf einen Wert zwischen 8,5 und 10. Die Seife hat damit die sogenannte Gelphase durchlaufen.

### 0.7.5 Fertig stellen

Wenn sich nach mindestens 24 Stunden Wartezeit die Seifenform nicht mehr warm anfühlt, kann der Seifenblock aus der Form genommen werden. Man schneidet ihn mit einem Messer in handliche Stücke.

### 0.7.6 Reifen lassen

Die einzelnen Seifenstücke werden an einem luftigen Ort für durchschnittlich 3 bis 6 Wochen zum Trocknen aufgestellt. In dieser Zeit läuft der Verseifungsprozess weiter, der ph-Wert sinkt noch etwas und die Seife wird milder.

Auch wenn die Neugier reizt und man seine neue Seife ausprobieren will, nach allerfrühestens zwei bis drei Wochen kann ein Stück ausprobiert werden. Ansonsten riskiert man raue, gereizte Haut...

## 0.8 Praxis: Erweiterungsmöglichkeiten (Kräuter, Öle etc.)

Wenn man eine Seife für die Handreinigung gegen große Verschmutzungen einsetzen möchte, kann der Seife auch ein Anteil von feinem Quarzsand zugesetzt werden. Dadurch werden die Verschmutzungen schneller gelöst, aber auch die obere Hautschicht schneller abgetragen. Das sollte bei gelegentlicher Anwendung aber kein Problem sein, da die Haut sich regelmäßig regeneriert.

Duftöle wie Rosenwasser oder Jasmin können beim Durchrühren tropfenweise der Seifenmasse zugefügt werden. Es sollte möglichst nicht zu Beginn dem anderen Pflanzenöl beigemischt werden, weil durch die anschließende Erhitzung die Qualität des Duftstoffes abnimmt. Viele Duftzusätze beschleunigen zudem das Andicken der Seifen - es ist deshalb gut, sie mit etwas Basisöl zu vermischen und wirklich erst kurz vor dem Abfüllen der Masse in die Form zuzusetzen.



Abb. 10

**Hinweis:** Überprüfen Sie bitte die NaOH-Menge in Rezepten unbedingt - Tippfehler passieren nun mal leider und eine falsche Dosierung kann gefährlich werden! Zum Überprüfen gibt es im Internet "Seifenrechner".

## 0.9 Rezeptesammlung

**Unser Grundrezept lässt sich wie folgt verfeinern:**

**Zitronenseife** - Zutaten: Seife Grundrezept + Bergamotteöl 5 g Gramm + Zitronenöl 15 Gramm + Portugalöl 1 Gramm + Berbenaessenz 3 Gramm; Färbung - Zitronengelb

**Rosenseife** - Zutaten: Seife Grundrezept + Bergamotteöl 5 Gramm + Kassiaöl 1 Gramm + Nelkenwürzöl 1 Gramm + Rosenöl 5 Gramm; Färbung - Rosenrot

**Moschuseife** - Zutaten: Seife Grundrezept + Bergamotteöl 5 Gramm + Zitronenöl 2 Gramm + Moschustinktur 10 Gramm; Färbung - hellbraun

**Kräuterseife** - Zutaten: Seife Grundrezept + Bergamotteöl 12 Gramm + Kassiaöl 8 Gramm + Lavendelöl 5 Gramm + Macisöl 1 Gramm + Pfefferminzöl 2 Gramm + Rosmarinöl 2 Gramm; Färbung - Grün

### 0.9.1 Weitere Rezepte:

**Einfache Olivenölseife, unbeduftet** 670 g Olivenöl (entspricht im Normalfall 750 ml-Flasche) + 250 g Kokosfett (Palmin) 125 g NaOH in 308 g Wasser gelöst Diese Seife ist zu etwa 8% überfettet, also gut pflegend, und feincremig schäumend; Färbung: hellgelb mit einem leichten grünen Schimmer, je nach Farbe des Olivenöls Kurz vor dem Abfüllen kann ein EL Distelöl zugerührt werden, um die Seife zusätzlich zu überfetten und die Pflegewirkung zu erhöhen.

## 0.10 Literatur

Die Seifen-Fabrikation, Friedrich, Wiltner, Handbuch für Praktiker, A. Hartleben's Chemisch-technische Bibliothek, 1913

Handbuch der Drogisten-Praxis, Band 26: Zweiter Theil, Die Herstellung der gebräuchlichen Handverkaufsartikel

## 0.11 Weblinks

### **Verseifungsrechner für Pflanzenölseifen im Netz:**

Seifenrechner von Naturseife.com<sup>23</sup>

Seifenrechner von Tuula Naturseifen<sup>24</sup>

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<sup>23</sup> <http://www.naturseife.com/seifenrechner/>

<sup>24</sup> <http://www.tuula-seifen.de/seifenrechner.php>



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