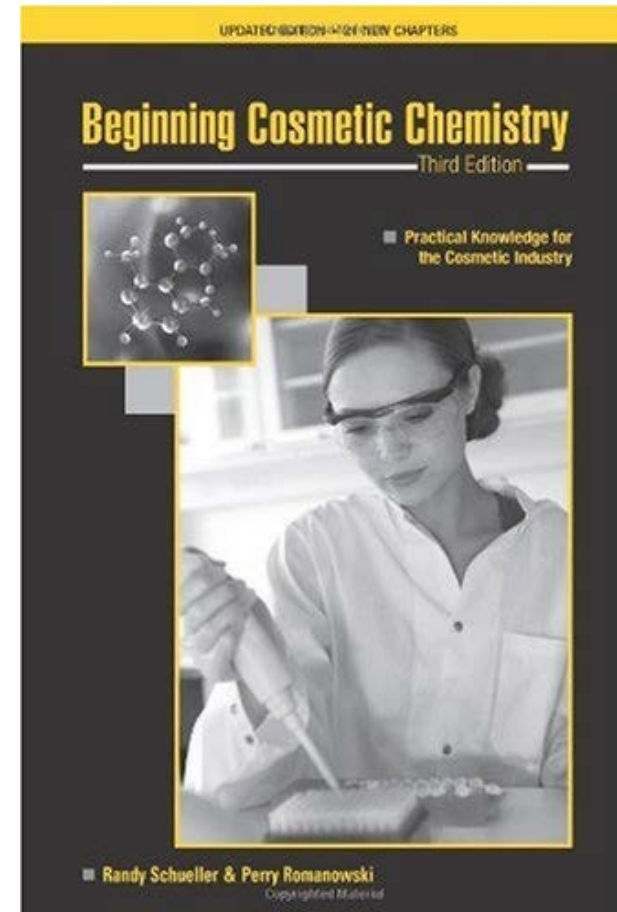
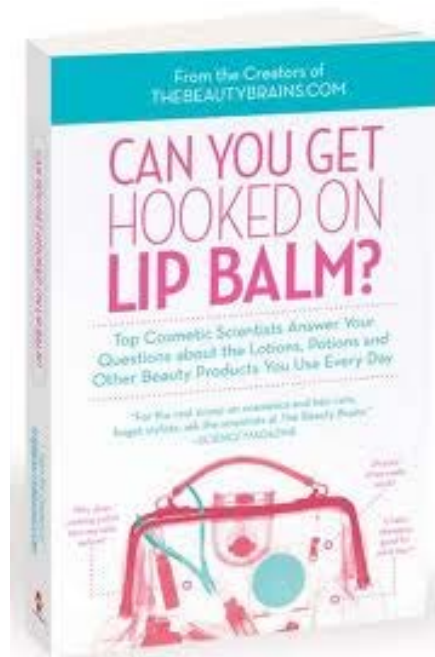


Cosmetic Chemist's Guide to Stability Testing

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- Author
- Online Training





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7 Non Formulating Skills Every Cosmetic Chemist Needs to Develop


by PERRY ROMANOWSKI [EDIT]

If you want to succeed in the world of cosmetic science, it typically requires more than knowing raw materials and being a brilliant formulator. Success in any company will require general knowledge of business and people skills. Here are some of the most useful skills to develop.

1. Getting along with all people

As far as career success goes there is nothing more important than learning how to deal with other people. In truth, the people who succeed best at a job (even cosmetic formulating) are the ones who know how to get along with as many different people as possible. This means you do everything in your power not to make enemies with anyone at your company. There will be plenty of people that you may not like but never let that be known. The better you get along with people, the more likely you will be to succeed at your job. This is not the kind of thing you learn in science classes but it is a lesson that everyone should learn.



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Modules

Course Description

Practical Cosmetic Formulation is designed to introduce the student to the principles of cosmetic science and formulation, including: understanding cosmetic form and function, the basics of cosmetic chemistry, cosmetic terminology and techniques, the product development process, formulation of specific cosmetics, an understanding of raw materials and their use, cosmetic product testing, product scale-up and government regulations affecting cosmetics and the consumer.

Course Frequency

New lessons will be published every other week. A Q&A session will be held monthly.

Modules

Free Bonuses

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Agenda

- Define stability testing
- When and why to test
- Basics of conducting a stability test

Objectives

- Know basic philosophy of stability testing
- Be aware of relevant regulations
- Know why & when to conduct a stability test
- Know how to conduct a cosmetic stability test
- Focus on US “rules”

What is stability testing?

- Predictive test
- Determine product longevity
 - Aesthetics
 - Functional
 - Microbial quality
 - Package compatibility
- Subjective decision

Regulations

- For OTC products follow Pharmaceutical Testing standard
 - 21 CFR – part 211
 - [1.usa.gov/1BW8M2R](https://www.fda.gov/oc/1.usa.gov/1BW8M2R)
- In US cosmetic type products such as...
 - Anti-dandruff
 - Sunscreens
 - Antiperspirants

Cosmetic Standards

- No specific requirements
- Defined by manufacturer
 - Reasonable
 - Efficient
- Must document what is done
- PCPC has recommended guidelines



When to test

- New prototypes
- New raw material supplier
- New production equipment / procedure
- New Packaging
- Scale-up
- Ongoing QC / QA
- Regulations

General Guidelines



Type of
Packaging



Storage
Conditions



Testing
Schedule

Basics of a stability test



Making
Batches



Testing
Samples



Making
Decisions

Batch creation

- Calculate amount needed
 - Container size
 - Conditions tested
 - Available raw materials
- Test & Control batches
 - Take initial readings
 - Temp & light controls
- Packaging
 - Glass
 - Final packaging



Sample storage

- Various temperatures
 - 50C, 45C, 35C
 - RT, 4C
- Various lighting
 - Sunlight
 - UV light



Actual stability storage



Sample Evaluation Schedule

- Standard time checks
 - 2 weeks
 - 4 weeks
 - 8 weeks / Decision
 - 12wk, 26wk,
52wk, & beyond



Standard cosmetic tests

- Appearance
- Odor evaluations
- pH testing
 - Indicates chemical changes
 - Unreacted residuals
 - Product functionality
- Viscosity
 - Consistency
 - Indicates possible separation



Other types of evaluations

- Weight Loss
- Specialty
 - Aerosol cans
- Performance tests
- Panel testing
- Clinical testing



Microbial Tests

- Contamination test
 - 2-5 days
 - Plate count should be zero
- Micro-Challenge test
 - Ensure preservation system works
 - Tested against 5 problematic microbes
 - Should effectively kill them all



Freeze Thaw Testing

- Freeze formula / thaw it
- Shows performance under variable conditions
- How
 - Freeze 3 samples overnight
 - Thaw and test
 - Repeat 3 times
- Observe changes
 - Separation
 - Color change



Additional Stability Tests

- Accelerated tests
- Centrifuge
- Package testing
 - Weight loss
 - Drop tests
 - Compatibility tests



Decisions

- Cosmetics stable for at least 1 year
 - 3 years for some products
- 8wk at 45C = 1 year stability
- 4 week = fragrance
- 8 week = provisional
- 12wk = higher confidence
- 52wk = verification
 - Requirement for OTC



Decisions

- Pass or Fail?
- Out of spec
- Color change
- Texture change
- Odor change
- Etc.



Should you outsource stability testing?

- Makes sense to do your own
 - Prototypes
 - Secondary source
 - Fragrance stability tests
- Makes sense to outsource
 - First production runs
 - Space issues
 - Equipment issues
- UL services - bit.ly/1HmoWIP



Stability testing made simple

- Step 1 – Make batches
- Step 2 – Take initial readings
- Step 3 – Fill containers
- Step 4 – Put samples in accelerated conditions
- Step 5 – Evaluate formula at checkpoints
- Step 6 – Decide if formula is stable

Stability test example

- New fragrance skin lotion sold in 8 ounce bottle
- Samples:
 - 33 glass 4oz (120 g)
 - 33 package 8oz (240 g)
- Control / Test batches
- Initial readings
 - pH, Viscosity, odor, color, bottle mass, micro



Example stability test

	2wk	4wk	8wk	12wk	26wk	52wk
45C						
37C						
RT						
4C						
Light						
Freeze / thaw						
Micro RT						
Micro 45C						
W/L RT						
W/L 45C						

Cosmetic Stability testing summary

- Predictive of product shelf life (1 year min)
- Not an exact science
- For cosmetics no specific regulation
- Test design depends on product type / package
- Numerous factors involved in deciding when and what to test



Questions?