Skin undertone: what it really is, where it comes from, and how to use it in makeup

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In 6 takeaways

1. **"Undertone" is not a medical term.** Makeup and color analysis coined it. Science measures the same idea another way: how far the skin leans **toward red or toward yellow** (the so-called *hue angle*).
2. **Skin color comes from five pigments:** two melanins, the carotenoids, and hemoglobin with and without oxygen. Undertone is the mix you see, not a separate pigment.
3. **Depth and undertone are two different axes.** Very fair skin and very deep skin can each be cool, neutral, or warm. Measurements confirm this: light–dark is one dimension, and red–yellow is another.
4. **What makeup calls "cool" skin is not blue.** It is skin where pink and red (from the blood) show more than gold. And "olive" skin has no green pigment: it is gold muted by melanin, which the eye reads as greenish or grayish.
5. **DIY tests fail more often than they seem to.** Vein color depends on the optics of the skin, not on your undertone. In a 2025 study, two independent raters barely agreed when judging undertones with a Pantone guide.
6. **What works best is comparing colors next to the face,** in pairs, in natural light. That is the fabric test, and the wheel in this document gives it an order: every color has a cooler version and a warmer one.

1. What undertone is, and what it is not

When we look at skin we see three things at once, and it helps to keep them separate:

Layer	What it is	Does it change?
Depth (tone)	How fair or deep the skin is	Yes: with the sun, winter, and age
Undertone	Which way the color leans: gold, pink, balanced, or olive	Little. It is the most stable of the three

Layer	What it is	Does it change?
Overtone / surface color	Redness, tan, spots, under-eye shadows, dullness	A lot, from day to day

The industry describes it the same way. Estée Lauder defines tone as the surface color, which changes with the seasons, and undertone as the hue underneath, which "does not change with the seasons" (Estée Lauder). Further down we will see that this is only part of the truth: undertone is *relatively* stable, not fixed.

How science sees it. Dermatology measures color with the CIELAB system. It has three axes: L* (light–dark), a* (green–red) and b* (blue–yellow) (Ly et al., J Invest Dermatol 2020). Two useful numbers come out of that:

- **ITA° (individual typology angle):** combines L* and b* and classifies skin from "very light" to "dark." This is **depth**.
- **Hue angle (h*):** compares a* with b*. Near 0° the skin leans red; toward 90° it leans yellow. This is the closest scientific counterpart to **undertone** (Thong et al., ICCV 2023).

In other words, what makeup calls "warm" is skin whose hue leans more toward yellow–gold, and what it calls "cool" is skin whose hue leans more toward pink–red. *This mapping is ours; we have not found a study that publishes it as an official equivalence, but it follows from how both systems are defined.*

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2. Where skin color comes from

Skin color is produced by four groups of pigments (scientists call them *chromophores*): oxyhemoglobin (red), deoxygenated hemoglobin (bluish), carotenoids (yellow) and, above all, the melanins (brown) (Brenner & Hearing, 2008; Ortonne, 2012).

Pigment	Where it sits	Color it adds	What it pushes in the undertone
Eumelanin	Epidermis	Brown to almost black	Mostly depth. In high amounts it "mutes" the other colors
Pheomelanin	Epidermis	Yellow to reddish brown	Golden or reddish warmth
Carotenoids (beta-carotene, lycopene, lutein)	All layers; they come from the diet	Yellow–orange	Golden warmth
Oxyhemoglobin	Blood vessels in the dermis	Red	Pink, flush: what makeup calls "cool"
Deoxygenated hemoglobin	Veins in the dermis	Blue–violet	A bluish or muted cast



What almost no one mentions

- **Everyone has both melanins.** All human skin is a mix of eumelanin and pheomelanin; what changes is the proportion (Brenner & Hearing, 2008).
- **The number of melanocytes is almost the same in everyone.** The cells that make melanin are not more numerous in deep skin than in fair skin. What changes is how much melanin they produce, of which type, and how it is distributed (Brenner & Hearing, 2008).
- **Melanin also tints, it does not only darken.** A study that compared color measurements with biopsies found that, in fair skin, more melanin means more yellow (b*). But in the deepest skin the yellow reaches a maximum and then **falls**, because so much melanin optically masks the yellow light (Alaluf et al., 2002). That is why the gold of deep skin looks different from the gold of fair skin, and why deep skin can read as reddish or neutral.
- **What you eat shows on your face.** Eating more fruit and vegetables is associated with measurably yellower skin, from the carotenoids that accumulate there (Pezdirc et al., 2015). In experiments with faces, people preferred that carotenoid gold over a tan for a healthier-looking face (Stephen, Coetzee & Perrett, 2011).

How the four main undertones form

Undertone	The mix you see	How it reads at a glance
Warm	Yellow–gold dominates (pheomelanin, carotenoids, melanin in fair-to-medium skin)	Gold, peach, honey
Cool	The pink–red of the blood shows more than the gold	Pink, blue-red
Neutral	Pink and gold in balance; neither clearly wins	Beige, not leaning either way. Almost always it tips a little: warm-neutral or cool-neutral

Undertone	The mix you see	How it reads at a glance
Olive	Gold plus enough melanin to mute the red	Muted gold that looks greenish or grayish

An honest note: that "cool" skin is the skin that lets more hemoglobin show is the accepted explanation in dermatology for the red component (a*). That this is exactly the basis of what makeup calls "cool" is a reasonable interpretation, but we have not found a study that measures it directly.

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3. Depth and undertone are different things

This is the most important idea in this research: **you do not have to be fair to be cool, or deep to be warm.**

- **Fitzpatrick (1975)** is the most widely used scale, but it does not measure color. It was created to calculate the dose of an ultraviolet treatment in white skin, according to how much a person burns or tans. Types V and VI were added later and work less well as color categories (Ware et al., Cutis 2020; JAMA Dermatology).
- **Monk (10 tones)** was created by Harvard sociologist Ellis Monk with Google to represent brown and deep skin more fairly. Even so, it measures **depth only**, and Google itself notes that it is not suited to every use (Google, MST; FAQ).
- **Hue is a second dimension.** Researchers at Sony AI showed that measuring only light–dark leaves out red–yellow variation, and proposed measuring the two separately (Thong et al., 2023).

In practice, brands organize it the same way: a number for depth and a letter for undertone (section 8).

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4. The olive undertone

Olive is the undertone that confuses people most, because it does not fit neatly into "warm or cool."

- **It is not a medical term.** It comes from makeup artists and color analysts (GoodSkin).
- **There is no green pigment in the skin.** The most accepted explanation: a lot of gold and brown, with little visible pink. But no study has measured why that mix looks greenish, so it should not be presented as a settled fact (GoodSkin).
- **It is muted, not very yellow.** An expert quoted by *Harper's Bazaar* (Myricks) describes it as "a little gray... desaturated, not very yellow," and sees it most clearly in the mid-brown range: from tan to medium-brown skin (Harper's Bazaar).

- **It is an overtone, not a fifth undertone.** Several makeup artists and color analysts describe it as a gray-green veil that sits over a cool, neutral, or warm undertone, and that can appear on fair or deep skin (Harper's Bazaar; IPSY). That is why "warm olive," "neutral olive," and "cool olive" exist: Fenty describes its shade 290 as "medium with a warm olive undertone" (Fenty Beauty). One analyst estimates that most olive skin leans cool, but offers no data (IPSY).

Typical signs: yellow foundation looks orange and pink foundation looks gray or ashen, and a neutral is better but not perfect; warm reds such as chili or coral look too orange, and very warm colors give a sickly look; gold and silver seem to flatter "equally well"; the skin looks greenish or gray in low light (IPSY). No system publishes a specific fabric for olive: you first find the temperature, then notice the olive by how the skin reacts to the extremes (section 7). *(Convention, not studies.)*

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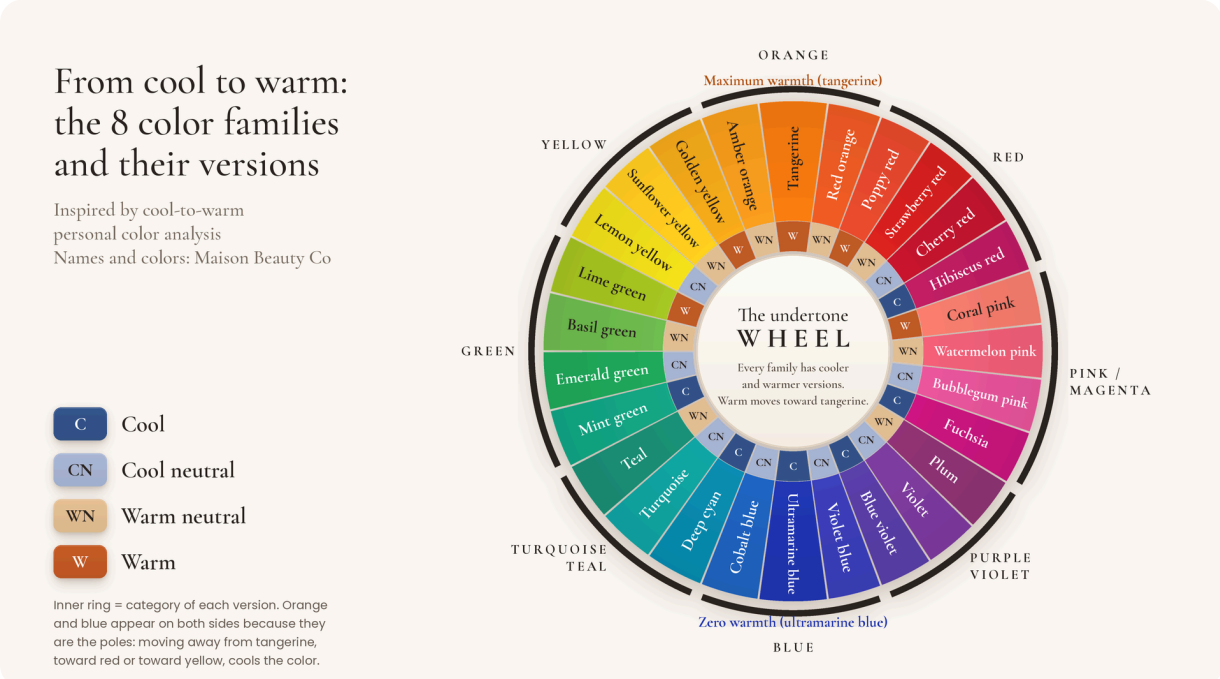
5. The undertone wheel: from cool to warm

Our wheel is **inspired by** the undertone system Anuschka Rees proposes in her book *Personal Color*. The organization, the names, and the colors of the charts are ours. The idea behind it is simple and very useful:

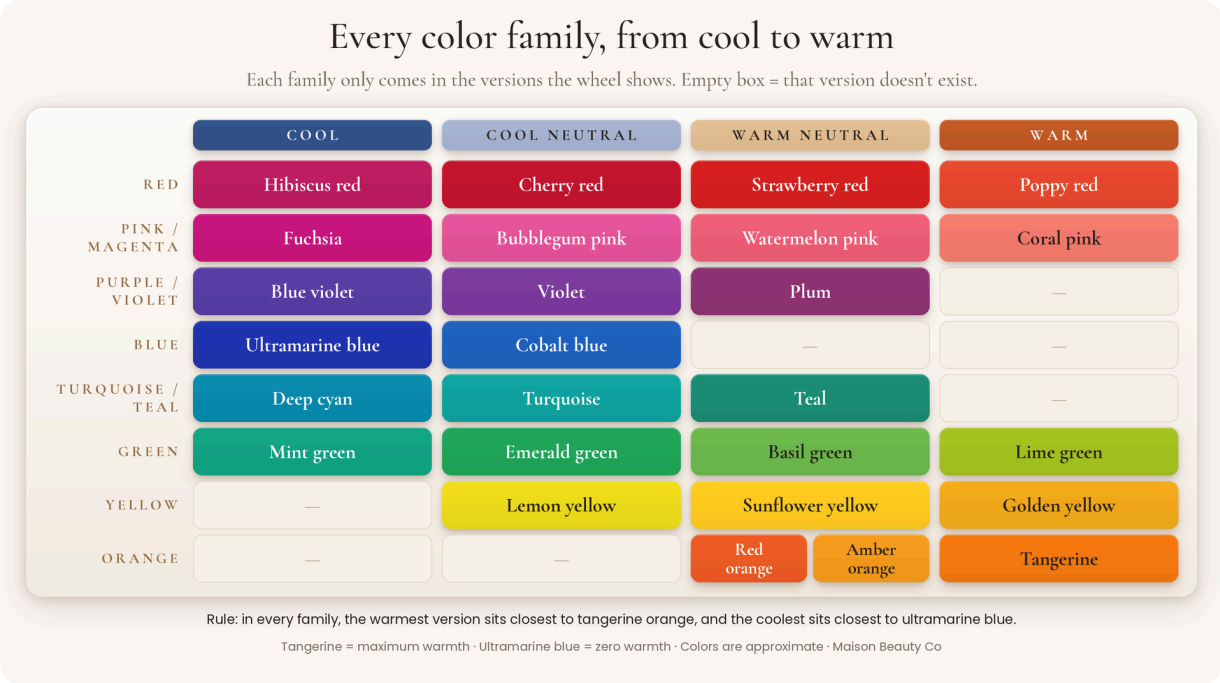
- Warmth is measured by **how close a color is to tangerine orange** (maximum warmth).
- The opposite point is **ultramarine blue** (zero warmth).
- Moving away from tangerine cools the color **in either direction**. A lemon yellow and a reddish orange are both cooler than tangerine.
- **Every family has cooler and warmer versions.** A warm green is the one that moves toward orange (through yellow). A warm pink leans toward red, not toward violet.
- There are **four categories:** cool, cool-neutral, warm-neutral, and warm.



How many versions each family has

Not every family reaches both extremes. A family very close to tangerine has no cool version, and one very close to ultramarine has no warm version:

Family	Versions	Why
Orange	Warm-neutral, warm	It is the warm pole
Yellow	Cool-neutral, warm-neutral, warm	From lemon (cool) to gold (warm)
Red	All 4	It runs from blue-red to orange-red
Pink / magenta	All 4	From fuchsia to coral
Green	All 4	From mint green to lime green
Turquoise / blue-green	Cool, cool-neutral, warm-neutral	It sits close to blue
Purple / violet	Cool, cool-neutral, warm-neutral	From blue-violet to plum
Blue	Cool, cool-neutral	It is the cool pole



Why this connects to the science

The idea that "warm" colors cluster around orange–red and "cool" colors around blue is a convention of art and design, not a physical measurement. But it lines up with the hue angle of the skin: human skin always falls between red and yellow, right in the warm zone of the wheel. What we call "cool" skin is the skin that, within that zone, leans more toward red–pink (toward magenta). "Warm" skin leans more toward yellow–gold (toward tangerine).

How this fits with the "seasons"

Seasonal color analysis was popularized by Carole Jackson in *Color Me Beautiful* (1980), building on the work of Suzanne Caygill. Jackson describes Winter and Summer as having a "blue" (cool) undertone and Spring and Autumn as having a "golden" (warm) undertone (PMC 2021; Jezebel). Twelve-season systems add the in-between versions, which correspond to our cool-neutral and warm-neutral categories. *This correspondence is color-analysis convention, not science.*

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6. Red, version by version

Red is the most important family for makeup: lipstick, blush, nails. And it is one of the few that has all four versions.



Category	Bright	Deep	Base	Usually flatters
Cool	Hibiscus red	Wine red	Blue / violet	Cool and cool-neutral undertones
Cool-neutral	Cherry red	Garnet red	Some blue	Cool, cool-neutral and neutral
Warm-neutral	Strawberry red	Cardinal red	Balanced	Almost everyone
Warm · "rule-breaking"	Poppy red	Guajillo red	Orange / yellow	Warm, warm-neutral and olive

The makeup rule is "cool with cool, warm with warm." For a neutral undertone, balanced reds, which mix blue and orange, work best, according to Lancôme's national makeup artist (Lancôme). The same brand recommends reds with orange or coral for olive skin, and says that on deep skin

almost every red works, from cherry red to berry tones (Lancôme). A practical note from that same source: blue-based reds make teeth look whiter.

Two nuances of our own:

- Depth also counts, not only undertone. A deep red on very fair skin creates a lot of contrast. The same red on deep skin reads as an enriched skin tone.
- For olive, a very bright poppy red can look orange. The deep, earthy version usually works better: guajillo, brick.

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7. How to find your undertone: what works and what does not

Method	What it does	How reliable it is	Why it fails
Wrist veins	Blue = cool, green = warm	**Low**	Veins look blue because of how the skin scatters light, plus depth, vessel thickness and how the eye perceives color — not because of your undertone (Kienle et al., 1996). On deep skin they barely show
Gold or silver	Which metal lights you up?	Low to medium	It depends on taste and habit. It is also circular: it uses as a test the same metals it later recommends (PMC 2021)
"Do you burn or tan?"	Burning = cool	**Low**	That is the Fitzpatrick phototype (sun reaction), not undertone. Even so, some brands use it (Estée Lauder)
White paper vs. cream	Compare the face with two whites	Medium	Useful as a starting point, but the light in the room changes everything
Fabrics next to the face (*draping*)	Compare cool and warm colors in pairs	**The best DIY method**	It needs natural light, a bare face, and comparison in pairs. Systems from different countries do not always agree (Cha & Kim, 2011)
Foundation on the jawline	Three foundation stripes: cool, neutral, warm	**High for makeup**	You have to wait a few minutes for oxidation and check it in daylight (Estée Lauder)
Colorimeter	Measures L*, a*, b*	Very high for measuring	It does not tell you which colors flatter you

What the studies say about how hard this is

- **It is hard even in a clinic.** In a 2025 study, two independent raters in consultation agreed well when using the Monk scale, which measures depth only (κ = 0.75). When judging **undertone** with the Pantone guide, agreement was low (κ = 0.37) (Nature npj Digital Medicine, 2025). Judging undertone by eye is difficult even in a clinical setting.

- **We misdiagnose ourselves.** In a Korean study of 354 young people, only those who were "Spring" identified their season more than half the time. The other seasons were right less than 20% of the time, and most people thought they were warm (J Korean Soc Beauty Art, 2021).
- **Harmony also depends on depth.** In a color-harmony study, warm skin harmonized better with autumn colors. For cool skin, depth decided: fair skin with winter colors and medium skin with summer colors. Neutral skin harmonized with every season (Chulalongkorn University, 2022).

Which colors to use in the fabric test

We reviewed how the best-known personal color systems choose their fabrics, and what the few studies on the subject say. They agree on five points:

What professionals do	Example	Type
They decide cool or warm first, and only then refine light, deep, bright, or muted	House of Colour first tests warm fabrics against cool ones to separate Spring and Autumn from Summer and Winter (House of Colour). The Korean PCDS system also starts there (Hong & Kim, 2019)	Convention
They compare in pairs that change only temperature, with the same lightness and intensity	A DIY color guide uses pairs "that change a single property": cherry red against tomato red, fuchsia against coral, silver against gold (Decode Your Style)	Convention with experimental logic
Red and pink are the pairs used most to decide temperature	Blue-red against orange-red, and cool pink against coral or salmon, appear in almost every guide (Decode Your Style; StyleMeMama)	Convention
Optic white against ivory as a warm-up	One color analyst uses it: white flatters cool and cool-neutral people, and ivory flatters warm and warm-neutral people (Color by Tamara). Another guide treats it only as a warm-up, because ivory also changes intensity (Decode Your Style)	Convention
A third, neutral fabric for in-between cases	In the 12-season method (Sci\ART and 12 Blueprints), the red test uses a cool red, a warm red, and a neutral red at each level of lightness. 12 Blueprints adds a cool-neutral red and a warm-neutral red "to identify which type of neutral" (Your Natural Design). DIY guides do the same with trios such as blue-red, true red, and orange-red (Gabrielle Arruda)	Convention
Gold against silver	The Korean PCDS uses gold and silver fabrics as a first step (Hong & Kim, 2019). Other analysts use it to confirm or break a tie, because some neutral people look good in both (StyleMeMama; Bridgette Raes)	Convention

What the evidence says:

- **The fabrics are not the same from system to system.** A study measured diagnostic fabrics from the United Kingdom, Japan, Korea, and Germany with a spectrophotometer. It found differences in lightness and intensity across countries, and warns that the same person can get different results depending on the fabric set (Journal of the Korean Society of Makeup Design, 2014). That is why we give reference colors with their codes.
- **Red and blue are the tones with the strongest reaction.** In one experiment, observers chose reds and blues most often for clothing. They preferred cool blues for fair skin and warm reds or oranges for tanned skin (PMC 2021).
- **A Korean thesis measured lipsticks on different skin types** and found that cool reds (with a blue base) were judged more harmonious on cool skin, and warm reds (with an orange or yellow base) on warm skin (Kim, 2020). The finding supports using red as a diagnostic pair, although the study was of lipstick, not draping fabrics, and in a Korean population.

The six pairs we recommend

We chose six pairs (five plus a confirmation pair) that follow those professional practices. The hex codes are a reference so the test can be repeated with the same colors.



Pair	Cool side	Warm side	What it is for
1. Reds (the main trio)	Hibiscus red #C82668	Poppy red #D4432A	The most decisive pair for temperature. The third fabric is strawberry red #D22848, the balanced red, to detect neutrals
2. Pinks	Bubblegum pink #E65A9C	Coral pink #EE6B5B	Confirms the reds with another family that also has all four versions
3. Greens	Pine green #187A60	Moss green #66711A	A second confirmation, in a family farther from red

Pair	Cool side	Warm side	What it is for
4. Whites	Optic white #FFFFFF	Ivory #F5EBD0	A warm-up pair: useful, but ivory also changes intensity, so it does not decide on its own
5. Muted midtones	Mauve #9C6B86	Soft terracotta #B8704F	Separates cool-neutral from warm-neutral when the reds do not point clearly
6. Metals (confirmation only)	Silver #C9CDD3	Gold #D4AF37	Confirms; it does not decide. Many neutral people look good in both

What to look for in the face

Professional guides describe similar signs, but they do not always agree, and almost none of this has been measured in a study. A Korean thesis did observe, with visual evaluation, that the most harmonious color softened spots, wrinkles, and shadows, and made the complexion look more even (Shin, 2016). That supports looking at the skin, not at the fabric, but it does not tell us which sign goes with which error.

What you see	What it usually means	Type
Gray, ashen, lifeless skin	The fabric is **too cool.** It can also happen with a fabric that is too light, too dark, or too muted (Truth is Beauty; The Colour Mentor)	Consistent convention
Yellowish, orange, or "dirty" skin	The fabric is **too warm** (Truth is Beauty; The Colour Mentor). One source says that warm skin in a cool color can also look sallow (Skintonic)	Convention, with one discrepancy
Redness, spots, or blemishes that stand out	**No fixed direction.** One analyst attributes this to a color that is too soft or too light; another source, to the opposite temperature (Truth is Beauty; Skintonic)	Contradictory convention
Darker under-eyes (gray-green or purple-blue), deeper shadows, more visible wrinkles or texture, lips that look colorless or bluish, a blurred jawline, a greenish cast, "washed-out" skin	That color is not the one, but it does not say which way to go. Shadows and texture are cited mostly with fabrics that are too dark or too harsh (Callume; The Colour Mentor; Gabrielle Arruda)	Convention
You notice the fabric before the face	The fabric is **too intense**; this is not about temperature (Truth is Beauty; Color Memory Game)	Convention
You look flat, tired, "powdery"	The fabric is **too muted**; this is not about temperature (Color Memory Game)	Convention

Two warnings almost every source repeats: each person reacts differently, so the signs are a guide, not a rule (Truth is Beauty), and the first impression is the right one, because the eye adapts to a color in seconds (Color Memory Game). House of Colour explains the effect through simultaneous contrast: the neighboring color changes how we perceive the skin (House of Colour). No study has measured which sign corresponds to which error.

How the neutral and the olive are decided

- **House of Colour does not recognize neutral:** it says there is never an equal balance of yellow and blue pigment, so everyone is cool or warm, and in-between cases are refined with substations (House of Colour).
- **Twelve-season systems do, but with a lean:** the "neutral" seasons are mid-cool or mid-warm, never purely neutral (Style Syntax; ElementalColour). They are detected with the third, neutral fabric, and neighboring seasons are then eliminated by comparing fabric sets (Your Natural Design).
- **Cool-neutral versus warm-neutral:** compare muted colors from the two soft seasons, such as dusty pink or mauve against muted peach or terracotta (Curate Your Style).
- **Gold and silver:** neutral people often look good in both, so the metals confirm but do not decide (Gabrielle Arruda; StyleMeMama).
- **What science has measured:** a Korean thesis measured skin hue and found an intermediate (neutral) zone between the yellow base and the blue, which it proposes deciding at the end with fabrics (Shin, 2016). That is evidence, though in a Korean population.
- **Olive:** no system publishes a fabric for olive. The temperature underneath is read with the same pairs, and the olive shows because intense warms make the skin look orange, greenish, or unwell, intense cools make it look gray, and muted, earthy tones flatter more (IPSY). *(Convention.)*
- **What has no source:** we did not find any published method that decides the neutral by counting wins ("the cool side wins 2 of 3 pairs") or that assigns warm olive or neutral olive according to a specific fabric. That is why our guide uses the third, neutral fabric and reads the olive's temperature with the same pairs.

The method we recommend

1. **Indirect natural light,** next to a window, with no direct sun and with the lamps off.
2. **A clean face,** with no foundation or blush. Cover the hair and clothing with a white or gray towel.
3. **Test pairs 1 through 5** under the chin. Alternate the two fabrics for 2 or 3 seconds, three times; with the reds, alternate all three. The first impression is the right one: the eye gets used to a color in seconds.
4. **Look at the skin, not the fabric,** using the signs in "What to look for in the face": gray or ashen points to too cool; yellow, orange, or "dirty" points to too warm; redness, shadows, under-eyes, or texture only say that that color is not the one.

5. **Read the result:**

Result	Likely undertone
Hibiscus red wins over strawberry red and poppy red. Bubblegum pink and pine green also win, and optic white flatters you more than ivory	**Cool**
Strawberry red flatters you more than hibiscus and more than poppy. In pair 5, mauve wins, and optic white looks the same as or better than ivory. Silver confirms it	**Cool-neutral**
Strawberry red flatters you more than hibiscus and more than poppy. In pair 5, soft terracotta wins, and ivory looks the same as or better than optic white. Gold confirms it	**Warm-neutral**
Poppy red wins over strawberry red and hibiscus red. Coral pink and moss green also win, and ivory flatters you more than optic white	**Warm**

Olive: this is not a fifth result; it is added to one of the four (for example, "warm-neutral olive"). It points to olive if poppy red and coral pink make you look orange, greenish, or unwell, hibiscus red and bubblegum pink make you look gray, and mauve or soft terracotta flatter you more than those bright reds and pinks.

If the pairs contradict each other, try again another day in different light; if they still disagree, let the red trio be your guide. That rule is our judgment.

6. **Use pair 6 (silver and gold) only to confirm.**
7. **Ask for a second opinion or take photos** in the same light and with no filters.
8. **Confirm with foundation on the jawline.**

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8. What this means for makeup

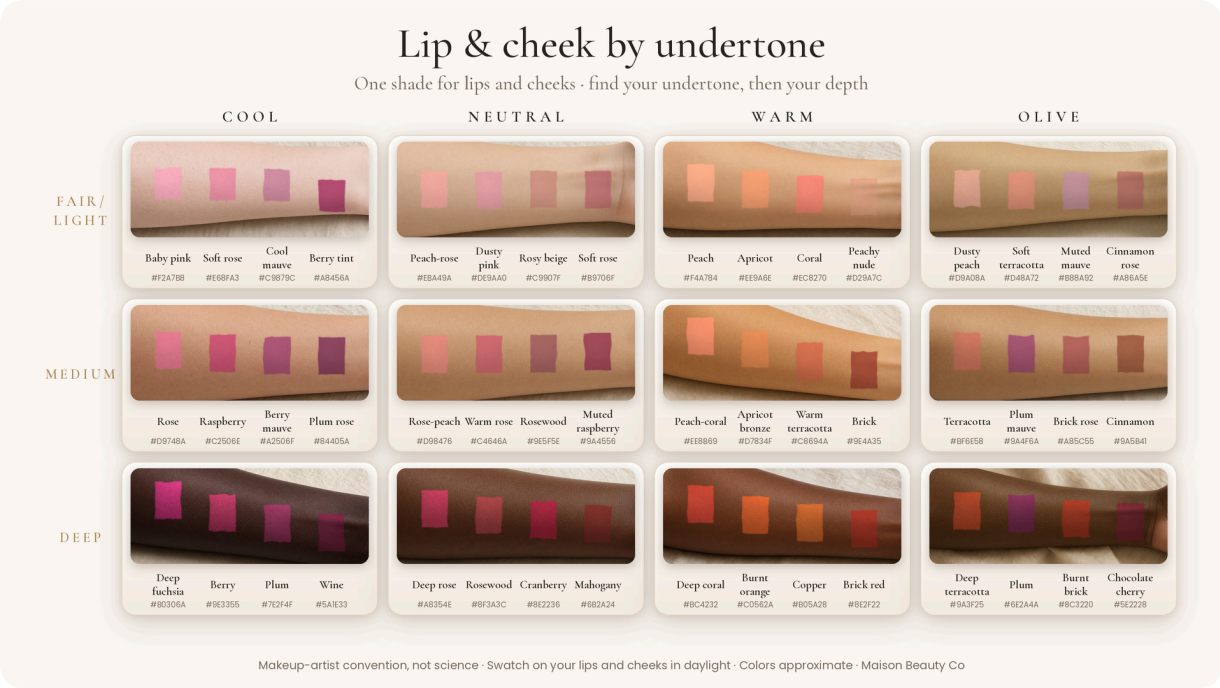
Foundation: read the label, but do not trust it blindly

Brand	Code	What it means
Estée Lauder (Double Wear)	number + C / N / W + number, e.g. 2C1, 4W2	The first number is the depth (1 to 9). C = cool (pink), N = neutral, W = warm (gold) (Estée Lauder)
MAC	NC, NW, N, W, C + a number	**The opposite of most brands:** W = pink and C = gold. MAC says so on its own site (MAC)
Fenty Beauty (Pro Filt'r)	number + a description	Includes olive shades, e.g. 290 "medium with a warm olive undertone" (Fenty). Note: Fenty has announced it is discontinuing this formula

Practical takeaway: there is no standard across brands. A "C" can be pink in one brand and gold in another. Always check the brand's chart and test on the jawline.

By undertone

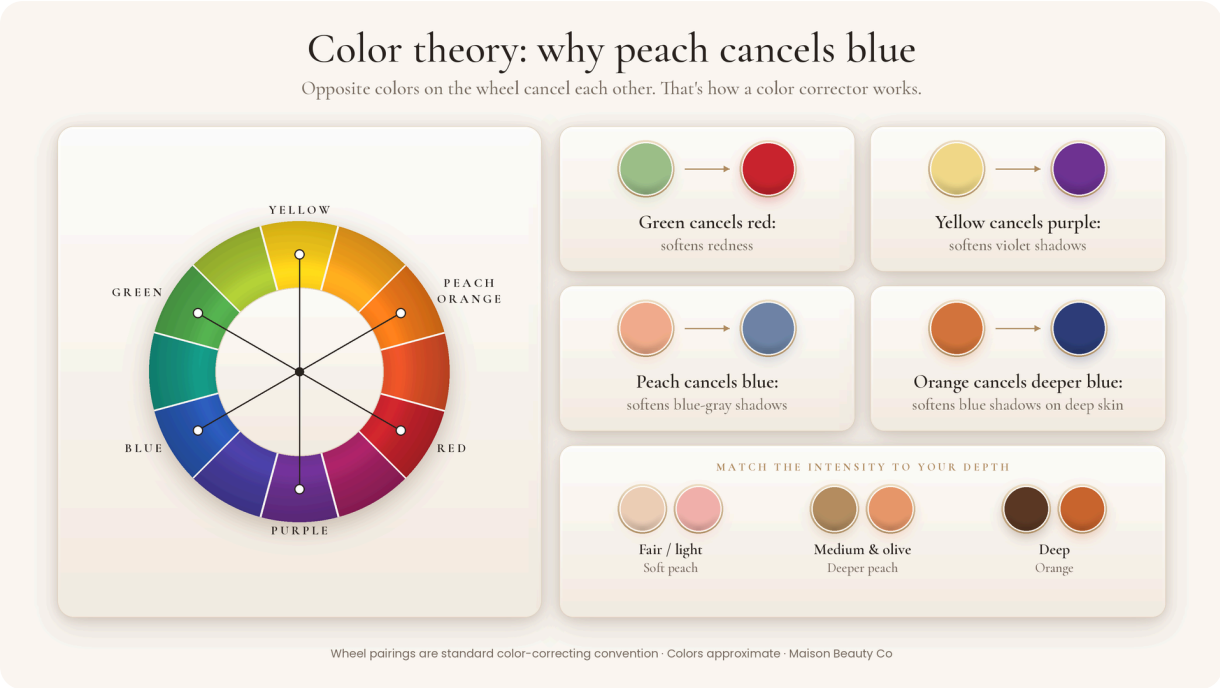
Everyday lip and cheek color can be the same shade, chosen for your undertone. That is makeup convention, not a laboratory finding. The table below also covers foundation, a red lipstick, and under-eye corrector.



	Foundation	Blush	Red lipstick	Under-eye corrector	Avoid
Cool	Pink or pink beige	Pink, hibiscus, berry tones	Hibiscus red, cherry, wine red	Pink peach (fair skin) or salmon (medium to deep)	Very yellow foundations: they look sallow
Cool-neutral	Beige with a hint of pink	Mauve pink, soft pink	Cherry red, strawberry red	Peach	Icy silvers and blues: they make you look gray
Warm-neutral	Beige with a hint of gold	Pink peach, soft coral pink	Strawberry red, cardinal red	Peach or a soft orange	Very intense oranges: they make you look orange
Warm	Gold, yellow, or peach	Peach, coral, terracotta	Poppy red, guajillo, brick	Orange or golden peach	Pink foundations: they can look gray
Olive	Olive (O) or a neutral with a green-gold base	Mauve, earthy pink, soft terracotta	Strawberry red, brick, guajillo	Muted peach	Too pink or too orange

The blush and corrector recommendations are professional makeup convention, not findings from studies.

On the color wheel, opposite colors cancel each other: a peach or salmon corrector counters the blue or purple in under-eye shadows. That is why the corrector shades in the table lean peach rather than matching the shadow itself.



Contour and bronzer

- **Contour** imitates a shadow, and shadows are cooler and grayer than the skin. That is why it is usually a neutral-to-cool shade.
- **Bronzer** imitates the sun, which adds warmth. That is why it is usually warm.
- On olive skin, both work better in muted shades.

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9. Myths and facts

Myth	Fact
"If your veins are green, you are warm."	Vein color depends on the optics of the skin and on how the eye perceives it, not on undertone (Kienle et al., 1996)
"Deeper skin = warm; fair skin = cool."	Depth and undertone are different axes (Thong et al., 2023). In very deep skin, the measured yellow even falls (Alaluf et al., 2002)
"Undertone never changes."	It is the most stable, but the yellow in the skin rises with a tan and with diet (Alaluf et al., 2002; Pezdirc et al., 2015). That is why your summer foundation can be warmer
"If you burn in the sun, you are cool."	That is your Fitzpatrick phototype, which measures sun reaction, not undertone (Ware et al., 2020)
"Olive skin has a green pigment."	There is no green pigment in the skin. It is muted gold from melanin, and the exact mechanism has not been measured (GoodSkin)
"Neutral = everything flatters you."	There is almost always a lean (cool-neutral or warm-neutral), and the extremes of the wheel rarely flatter
"Seasonal analysis is science."	Its categories are not scientifically defined (PMC 2021). But there is evidence that undertone and depth do change which colors look harmonious (Chulalongkorn, 2022)
"Every brand uses C = cool and W = warm."	MAC uses the opposite (MAC)

10. Science and convention: which is which

Claim	Type
Skin color comes from melanins, carotenoids, and hemoglobin	**Science** (dermatology, optics)
Depth and red–yellow hue are separate dimensions	**Science** (colorimetry)
Veins look blue because of optics and perception	**Science** (Kienle 1996)
More dietary carotenoids = yellower skin	**Science** (observational studies)
There are 4 categories: cool, cool-neutral, warm-neutral, and warm	**Convention** of color analysis
Maximum warmth sits at tangerine orange	**Convention** of the Rees system that inspires us, consistent with color theory
The versions of each color family	**Convention** of color analysis
Why olive looks greenish	A reasonable **hypothesis**, with no direct measurement
Which red, blush, or corrector goes with each undertone	**Convention** of professional makeup
Which fabric pairs to use in the test	**Professional convention;** no study compares which pair diagnoses best
Which skin signs show that a fabric flatters or does not	**Professional convention;** a Korean study observed that the best color softens spots and shadows (visual evaluation)
A third, neutral fabric to detect neutrals	**Convention** of 12-season systems
Olive as an overtone on top of any undertone	**Convention** of makeup artists and analysts
Letting the red trio be the guide if the pairs contradict each other	**Our judgment**
Undertone and depth change which colors harmonize	**Preliminary evidence** (perception studies)

Annex: illustrative profiles

AI-generated images for illustration only. These are not photographs of real people.



Valeria
Cool
Pink and hibiscus red light her up; gold makes her look sallow.



Daniela
Cool-neutral
Soft pinks and cherry red; icy silvers make her look gray.



Camila
Warm-neutral
Strawberry red and peach; intense orange overwhelms her.



Sofía
Warm
Poppy red, coral and gold; icy pinks wash her out.



Lucía
Olive
Earthy, muted tones; neither too pink nor too orange.

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