

UNCOMMON CACAO

TRANSPARENT TRADE

Cacao Evaluation

Last updated: June 2023

Physical Evaluation: Wholesomeness, Consistency, Yield

The following describes Uncommon Cacao's approach to evaluating the consistency, yield, and integrity of cacao beans we receive as samples. The Systems & Operations Manager at Uncommon Cacao is responsible for physical evaluation of each sample, but reserves the right to assign this responsibility to one or more members of the Uncommon team as needed if they are not available to conduct the evaluation.

Beans per 100 grams

- a. **Tools:** Food-grade scale (0-10 kg weight capacity; increments of 0.1 grams)
- b. **Methodology:** Uncommon Cacao uses a kitchen-grade food scale to measure the weight of cacao beans. We then count the total number of beans per 100 grams to evaluate the size of the beans. Debris including broken beans and non-cocoa material is separated from the good quality beans, this is used to determine sorting loss (see below step)
- c. **Notes:** Bean size can vary dramatically and not necessarily play a role in quality. Typical bean count is less than 100 beans / 100 grams, but with some origins, bean counts can be as high as 140 beans / 100 grams or as low as 55 beans / 100 grams.

Debris (Sorting Loss)

- d. **Tools:** Food-grade scale (0-10 kg weight capacity; increments of 0.1 grams)
- e. **Methodology:** Uncommon Cacao weighs 100 g of cocoa beans and removes and weighs the following. This is used to calculate sorting loss from the beans per 100 gram sample.
 - i. Non-cacao material: stones, sticks, or any other foreign objects
 - ii. Broken beans
 - iii. Flat beans
 - iv. Stuck together beans

- f. **Notes:** This allows Uncommon Cacao to relay to customers the potential expected sorting loss and set a quality benchmark if reimbursements are needed due to debris present in the cacao sacks.

Visual and Smell Notes

- g. **Tools:** Eyes, nose, cacao beans
- h. **Methodology:** Beginning with visual notes, UC team evaluates whole raw cacao bean size, color, consistency, and condition including placenta, fused beans, and debris. Then we take an isolated smell of the beans (in the bag or on hands) noting and identifying the prominent notes of sweet, fermented, vegetal, fruit, earthy, etc.
- i. **Notes:** When smelling the beans, it is important to make sure you don't have lotion or soap on hands. Brown paper bags can also interfere with smell. For visual notes, we note the characteristics but do not calculate the weight at the step.

Humidity

- j. **Tools:** Coffee/ Cocoa Wile humidity meter from FarmComp Agroelectronics
- k. **Methodology:** Uncommon Cacao uses a humidity meter to verify the moisture content of cacao beans. We take an average of three tests to ensure accuracy.
- l. **Notes:** Humidity is expected to range from 6.0%-7.5% for well-dried beans. Above this, there is a risk of mold. Below this, the beans can be brittle and difficult to work with.

Fermentation Cut Test

- m. **Tools:** Magra 14 cutting unit from Teserba
- n. **Methodology:** Uncommon Cacao cuts a minimum of 100 beans to assess fermentation rate. We look for the following attributes in the cut test:
 - i. Fermented: Beans with deep fissures that are no longer astringent, usually brown in color.

- ii. Partially fermented: beans with mild fissures; sometimes violet in color; still taste astringent.
 - iii. Under fermented beans: flat / slaty beans; shallow or no fissures.
 - iv. Over fermented beans: beans with deep fissures to the point of breaking and dark brown to black in color.
 - v. Germinated beans: beans that have begun sprouting as visible by the radicle poking through the husk .
 - vi. Interior mold: beans that show white or yellow/green mold inside the bean.
 - vii. Insect damage: brown, grey, fuzzy beans that show signs of insect contamination and webby residue or larvae indicative of infestation within the bean when cut.
- o. **Notes:** If we encounter higher than 1% interior mold on the first 100 beans cut, we will continue cutting beans to determine if the presence of mold is consistent and significant.

Sensory Evaluation: Smell, Processing, Tasting

The following describes Uncommon Cacao's approach to evaluating the scent and flavor of cacao beans we receive as samples.

Processing Liquor

- a. **Tools:** Convection oven, Crankandstein Cocoa Mill, Sylph Winnower, ShopVac Vacuum cleaner; Premier Wonder stone wet grinder, KitchenAid Countertop Oven KCO224, **Thermocouple probe, digital thermometer**, electric drill, food grade containers, hair dryer.
- b. **Methodology:**
 - i. **Roasting:** After sorting beans and removing debris, Uncommon Cacao roasts 500-700 g of beans in a convection oven using ISCQF protocol to determine temperature and duration of the roast. Once temperature and duration is determined based on the bean qualifications, then the beans are placed evenly in a single layer over a mesh basket to be placed in the oven. The basket should be placed above the convection fan. Beans are placed in the oven prior to heating. After the roast is complete, the cacao is placed in an open food grade container and left to rest for a minimum of 12 hours and maximum of 72 hours.

- ii. Cracking / Winnowing: Once rested, the beans are weighed for offgas loss, and cracked using the Crankandstein Cocoa Mill. An electric drill powers the mill and the nibs and shells are collected below. Once the beans are broken, we feed the cracked shell and nibs through the Sylph winnower, powered by a ShopVac. We run the nibs through the winnower twice, to ensure as little shell remains in the nibs as possible to keep flavor integrity high for evaluating the cacao. Once the nibs and shell are separated, the weight is taken again. The goal is 70% weight retention of nibs.
- iii. Grinding: The granite stones are first heated with a hair dryer for 10 minutes prior to grinding. Nibs are introduced into the grinder in small batches, over the course of one hour. Once all the nibs are integrated, we mélange for at least 12 hours, but no more than 18. This allows particle size to get small enough, and allows for sufficient off-gassing of volatiles.

iv. Micron-calibration

- c. Notes: Liquors are poured into molds, weighing 25-30 grams each. No sugar, butter, or milk solids are added to the liquor processing or analysis, we review 100% pure roasted and ground cacao. If there is sufficient liquor once poured, we add 20% sugar to the remaining liquor volume to create an 80% chocolate for comparison which grinds for another 6-12 hours.

3. Tasting Liquor

- a. **Tools:** Cocoa liquors, 25-30 grams

- b. **Methodology:** Uncommon Cacao has a weekly tasting panel of at least 3 team members to evaluate liquors. We taste liquor at least 24 hours after grinding, and use the TCHO Sensory Analysis form (see appendix A), that has a 5-point intensity scale across the following flavor attributes:

- i. Aroma
- ii. Acidic
- iii. Astringent
- iv. Bitter
- v. Cocoa
- vi. Sweet
- vii. Nutty
- viii. Dried Fruit
- ix. Fresh Fruit
- x. Floral
- xi. Spices

xii. Other

We also evaluate the cocoa liquor for defective flavor notes on a scale of 1-10, including the following defective attributes:

- i. Mold
- ii. Dirt
- iii. Contaminants
- iv. Raw
- v. Decomposition
- vi. Meaty
- vii. Lactic

- c. **Notes:** While we include a tasting panel in our liquor evaluations, we know assessing these flavor attributes is subjective. Maintaining consistent roasting temperatures and grinding times is a control effort to evaluate flavor profiles consistently.

Appendix A



CACAO
SENSORY ANALYSIS
Tasting Form

SAMPLE _____

TASTER _____

DATE _____

CATEGORIES		INTENSITY	NOTES	QUALITY (0-10)	POINTS
Aroma					x 1 =
Acidity					x 1 =
Bitterness	INTENSITY 0 to 2.5: ≥ 5 in quality 2.5 to 5: ≤ 5 in quality				x 1 =
Astringency					x 1 =
Defects					x 2 =
Flavor	Cocoa/Cacao			x 2 =	
	Sweet				
	Nutty				
	Dried Fruit				
	Fresh Fruit				
	Floral				
	Spices				
	Other				
Aftertaste					x 1 =
COMMENTS:			TASTER'S POINTS		x 1 =
				FINAL SCORE	

INTENSITY SCALE



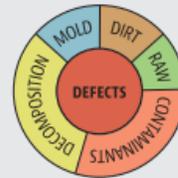
QUALITY SCALE



TIPS TO SCORE QUALITY FOR DEFECTS

Name the defect:
A reduction in quality points should be defined in the notes.

Inverse relationship:
As the defect flavor(s) increase in intensity, the quality score decreases.



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Appendix B