Dark Roast Profile Guide - Guatemala 150g Batch

Profile Overview

Target Roast Level: Dark (Full City+ to French) **Target Drop Temperature:** 195-205°C BT **Total Time Target:** 11:30-13:00 **Development Time:** 3:00-4:00 (longer for dark roasts)

Key Temperature Milestones

Target Temperatures (Bean Temperature)

- **Charge:** 135-140°C
- **Turning Point:** 105-110°C (at 90-120 seconds)
- **Dry End:** 150-155°C (at 4:00-4:30)
- **First Crack Start:** 168-172°C (at 8:00-8:30)
- **Second Crack Start:** 195-200°C (at 11:00-11:30)
- **Drop:** 198-205°C (at 11:30-13:00)

Environmental Temperature Targets

- **Charge:** 95-105°C
- **Dry End:** 120-130°C
- **First Crack:** 130-140°C
- **Second Crack:** 145-155°C
- **Drop:** 150-160°C

Phase Timing & RoR Targets

Phase 1: Drying (0-4:15, 35-40% of total time)

Target RoR: 8-10°C/min declining to 6-8°C/min

- **0-1:30:** 10-12°C/min (initial momentum)
- **1:30-3:00:** 8-10°C/min (controlled decline)
- **3:00-4:15:** 6-8°C/min (preparing for Maillard)

Phase 2: Maillard (4:15-8:15, 30-35% of total time)

Target RoR: 5-7°C/min

- **4:15-6:00:** 6-7°C/min (flavor development)
- **6:00-8:15:** 5-6°C/min (approaching first crack)

Phase 3: Development (8:15-12:00, 30-35% of total time)

Target RoR: 4-6°C/min (higher than light roasts)

- **8:15-10:00**: 5-6°C/min (post-first crack)
- **10:00-11:30**: 4-5°C/min (approaching second crack)
- **11:30-12:00**: 3-4°C/min (during second crack)

Heat Management Strategy

Critical Differences from Light/Medium Roasts

1. Extended Development Phase

- Dark roasts need 3:00-4:00 development time (vs 2:30-3:00 for medium)
- Allows time to reach second crack without rushing
- Prevents scorching from excessive heat

2. Slower Final RoR

- Maintain 4-6°C/min through most of development
- Slow to 3-4°C/min during second crack
- Prevents tipping, scorching, and uneven roasting

3. More Conservative Heat Management

- Reduce heat more aggressively after first crack
- Avoid temperature spikes in development phase
- Monitor carefully for second crack

Heat Application Timeline

Pre-Charge Setup

- Preheat to 210-230°C environmental temperature
- Set initial burner to 60-70%
- Plan for extended roast time

Phase 1: Drying (0-4:15)

0-0:30 (Charge to Turnaround)

- Burner: Start 60-70%, reduce to 50-60%
- Goal: Achieve turning point at 90-120 seconds
- Watch for: Temperature drop, then gradual climb

0:30-2:00 (Post-Turnaround)

- Burner: Reduce to 45-55%
- Goal: 8-10°C/min RoR
- Adjustment: Small 5-10% changes every 30 seconds

2:00-4:15 (Late Drying)

- Burner: Gradual reduction to 35-45%
- Goal: 6-8°C/min RoR
- Critical: Don't let RoR drop below 5°C/min

Phase 2: Maillard (4:15-8:15)

4:15-6:00 (Early Maillard)

- Burner: Maintain 35-45%
- Goal: 6-7°C/min RoR
- Watch for: Color changes, aroma development

6:00-8:15 (Pre-First Crack)

- Burner: Gradual reduction to 30-40%
- Goal: 5-6°C/min RoR
- Strategy: Plan heat reduction at 7:45

Phase 3: Development (8:15-12:00)

8:15-9:00 (First Crack Peak)

- Burner: Reduce to 25-35%
- Goal: Control crack intensity
- Watch for: Even crack propagation

9:00-10:30 (Post-First Crack)

- Burner: Maintain 25-30%
- Goal: 5-6°C/min RoR
- Critical: Steady heat for even development

10:30-11:30 (Approaching Second Crack)

- Burner: Reduce to 20-25%
- Goal: 4-5°C/min RoR
- Listen for: First pops of second crack

11:30-12:00 (During Second Crack)

- Burner: Reduce to 15-20%
- Goal: 3-4°C/min RoR
- Watch for: Oil development, smoke

Dark Roast Specific Considerations

Second Crack Monitoring

- **First pops**: Around 195-198°C
- **Rolling second crack**: 198-202°C
- **French roast territory**: 202-205°C+

Drop Decision Points

- **Full City+**: Drop at 195-198°C (just into second crack)
- **Vienna/Light French**: Drop at 198-202°C (rolling second crack)
- **French**: Drop at 202-205°C (well into second crack)

Visual/Audio Cues

- **First crack ends**: Around 190-193°C
- **Gap period**: 193-195°C (quiet period)
- **Second crack starts**: 195-198°C (distinct sharper sound)
- **Oil appearance**: 198-202°C (beans begin to shine)

Risks & How to Avoid Them

Common Dark Roast Problems

1. Scorching/Tipping

- **Cause**: Too much heat in development phase
- **Prevention**: Reduce heat aggressively after first crack
- **Target**: Keep RoR below 6°C/min post-FC

2. Baking

- **Cause**: Insufficient heat/too long roast time
- **Prevention**: Maintain 4-6°C/min RoR throughout development
- **Target**: Total time under 13:00

3. Uneven Development

- **Cause**: Rushing through development phase
- **Prevention**: Allow full 3:00-4:00 development time
- **Target**: Smooth RoR curve, no spikes

4. Internal Underdevelopment

- **Cause**: Dark exterior, light interior (rapid surface roasting)
- **Prevention**: Proper heat soak early, controlled development
- **Target**: Even temperature progression throughout

Sample Timeline - Dark Roast Target

Time	BT Temp	ET Temp	RoR	Heat %	Note
0:00	140°C	100°C	-	60%	Charge
0:15	130°C	95°C	-	55%	Dropping
1:00	110°C	92°C	10°C/min	50%	Turning point
2:00	118°C	96°C	9°C/min	45%	Early drying
3:00	127°C	101°C	8°C/min	40%	Mid drying
4:15	152°C	118°C	7°C/min	35%	Dry end
6:00	163°C	128°C	6°C/min	32%	Mid Maillard
7:45	168°C	133°C	5°C/min	28%	Pre-FC heat cut
8:15	171°C	136°C	5°C/min	25%	First crack starts
9:00	177°C	141°C	5°C/min	25%	Peak FC
10:00	185°C	147°C	5°C/min	22%	Post-FC
11:00	192°C	152°C	4°C/min	20%	Approaching 2C
11:30	197°C	155°C	4°C/min	18%	Second crack starts
12:00	201°C	158°C	3°C/min	15%	Drop (French)

Expected Cup Characteristics

Full City+ (195-198°C drop)

- **Body**: Full, syrupy
- **Acidity**: Low, muted
- **Sweetness**: Caramelized, molasses-like
- **Flavors**: Dark chocolate, roasted nuts, slight fruit
- **Bitterness**: Moderate

Vienna/Light French (198-202°C drop)

- **Body**: Very full, heavy
- **Acidity**: Minimal
- **Sweetness**: Dark caramel, burnt sugar
- **Flavors**: Dark chocolate, charcoal, smoky notes
- **Bitterness**: Pronounced

French (202-205°C drop)

- **Body**: Heavy, oily
- **Acidity**: None
- **Sweetness**: Burnt sugar
- **Flavors**: Charcoal, ash, carbon, burnt notes
- **Bitterness**: Intense

Important Notes

Weight Loss: Expect 16-18% weight loss (darker roasts lose more moisture and organic matter)

Smoke Management: Significant smoke production during second crack - ensure proper ventilation

Cooling: Cool rapidly immediately after drop to halt roasting

Bean Appearance:

- Oil will appear on surface at 198°C+
- Beans will be very dark brown to nearly black
- Surface will be shiny/glossy

Comparison to Your Medium Roast Profile

Aspect	Your R18 (Medium)	Dark Roast Target
Drop Temp	181°C	198-205°C
Total Time	10:56	11:30-13:00
Development	24% (159s)	30-35% (3:00-4:00)
Development RoR	5.8°C/min	4-6°C/min
Key Event	First crack only	Through second crack

The main difference is extending development time and managing heat through second crack while maintaining controlled RoR.