

# Degree of Roast

## InfraLab Series 9

### Supplemental Guidelines



Publication Reference : 126/17141-01

Issue A

# Proprietary Notice

The information and design disclosed herein were originated by and are the property of NDC Technologies. NDC Technologies reserves all patent, proprietary design, manufacturing, reproduction use, and sales rights thereto, and to any article disclosed therein, except to the extent rights are expressly granted to others. The foregoing does not apply to vendor proprietary parts.

In-line with NDC's policy of continuous improvement, the information contained in this document may change to allow the introduction of design improvements.

## **InfraLab Series 9 Degree of Roast – Supplemental Guidelines**

Part Number: 126/17141-01

Issue: A

Date of Release: April 11, 2023

Last Revised: April 11, 2023

# Contact NDC

## Online Support

You can access the NDC Customer Support portal, myNDC at <https://ndc.custhelp.com>.

myNDC is a cloud-based portal that allows you to get product support by phone, ask a question, provide feedback, submit an RMA request or access information in our on-line knowledge database. You can browse the myNDC site or create a myNDC account.

- To create a myNDC account, click **Log In** or **Sign Up**. After creating the account, you will be immediately logged in. To log in on subsequent visits to myNDC, click **Log In**, enter your user name and password, and then click **LOG IN**.
- To submit an RMA, click on **RMA Request** and follow the on-screen instructions.

The screenshot shows the myNDC Customer Support portal homepage. At the top, the NDC logo is followed by "is now Nordson" and "MEASUREMENT & CONTROL". Navigation links include "ndc.com", "Log In", "Sign Up", "Contact", "Help & Support", "Careers", and "News". Below these are "Support Home", "Answers", and "Ask a Question". The main banner features the text "Welcome to myNDC" and a search bar with the placeholder "Enter a question or FAQ#". Below the banner, the heading "We're here to help" is followed by a welcome message: "Welcome to service in the cloud with myNDC. Please use the menu below to search help topics, create RMA's, use the search box, options above to access answers or contact us." A row of icons represents various support services: Manuals and Guides, Radioactive Materials, Support Agreements & Training, Technical Support, Preventative Maintenance, On-site Support & Spare Parts, Calibration Services, Remote Support, Search Knowledge Base, and RMA Request. The "RMA Request" icon is highlighted with a red box.

ndc.com Log In Sign Up Contact Help & Support Careers News

Support Home Answers Ask a Question

INTELLIGENCE THAT TRANSFORMS THE WORLD

# Welcome to myNDC

Enter a question or FAQ#

## We're here to help

Welcome to service in the cloud with myNDC. Please use the menu below to search help topics, create RMA's, use the search box, options above to access answers or contact us.

- Manuals and Guides
- Radioactive Materials
- Support Agreements & Training
- Technical Support
- Preventative Maintenance
- On-site Support & Spare Parts
- Calibration Services
- Remote Support
- Search Knowledge Base
- RMA Request

# NDC Contact Numbers

Please have your sales order number at hand before contacting NDC.

|   |  |
|---|--|
| Americas                                    | +1 626 939 3855  |
| Asia Pacific                                | <p>NDC Asia Pacific Customer Service Toll-free contact numbers:</p> <ul style="list-style-type: none"><li>• Thailand: 1800 012 048</li><li>• Indonesia: 00 1803 016 4969</li><li>• Korea: 00 7981 420 30749</li><li>• Malaysia: 1800 81 9290</li><li>• Taiwan: 00 801 128 027</li><li>• India: 000 800 0402 514</li></ul> <p>Singapore non toll-free number: +65 6579 2411</p> <p>Email ID: <a href="mailto:osc-apac@ndc.com">osc-apac@ndc.com</a></p> |
| Japan                                       | +81 (0)3 3255 8157   |
| China                                       | +86 21 61133609  |
| EMEA<br>(Europe,<br>Middle East,<br>Africa) | Germany: 0800 1123194  |
|   | Italy: +39 0331 454 207  |
|   | <p>All other countries (English speaking):<br/>+44 1621 852244</p> <p>Please select option 2 to be connected to the service team</p>   |

# Table of Contents

|  |          |
|--|----------|
| <b>INFRALAB DEGREE OF ROAST SUPPLEMENTAL GUIDELINES.....</b> | <b>1</b> |
| INTRODUCTION.....  | 1        |
| BACKGROUND.....  | 1        |
| STARTING UP INFRALAB AFTER SHIPPING .....                    | 1        |
| STARTING UP INFRALAB FROM COLD .....                         | 1        |
| SAMPLE PREPARATION AND USE.....                              | 2        |
| INFRALAB DEGREE OF ROAST MEASUREMENT SCALE .....             | 3        |
| DOR MEASUREMENT VERIFICATION.....                            | 4        |

# Table of Figures

|   |   |
|---|---|
| Figure 1 Static sample holder .....                 | 2 |
| Figure 2 Sample levelling device .....              | 2 |
| Figure 3 Sample bowl location on the InfraLab ..... | 3 |

# InfraLab Degree of Roast Supplemental Guidelines

## Introduction

This supplement details the changes in operation required for using the Degree of Roast (DOR) InfraLab which has additional measurement hardware installed that enables the simultaneous measurement of Moisture and Degree of Roast in Coffee products.

Please follow the instructions of the main InfraLab User Guide and use this supplement guide for features specific to the DOR InfraLab.

## Background

It is common practice for Coffee roast masters to measure the moisture and “color” (which ranges from light to dark) of roasted coffee beans to monitor the quality of the roasting process and ensure that the product is within target specification prior to further processing. The color roast value or degree of roast (DOR) is normally measured in the ground state as the beans are generally not uniform in color.

To date, these measurements require the use of multiple analytical technologies (instruments) with different sample handling and operating requirements. NDC Technologies has recently upgraded its proven and trustworthy InfraLab at-line moisture analyser to provide a **simultaneous** measurement of Moisture and Degree of Roast in seconds.

## Starting Up InfraLab After Shipping

When you have unpacked your InfraLab, install it on a suitable workbench as described in the User guide. Switch the unit on and leave it for 2 hours to warm up. After a few hours warm up, perform a forced re-ref from the Gauge/Reference Check page to set up the internal reference tile.

## Starting Up InfraLab from Cold

It is recommended to leave the InfraLab powered 24/7 but if it has been switched off, then for best results, after powering on, it should be left for approximately 45 mins to 1 hour to warm up before use. The internal reference standard has been programmed to periodically re-reference the InfraLab, so there is no need to carry out periodic reference checking. However, performing an Auto Reference operation after the InfraLab has warmed up is recommended.

# Sample Preparation and Use

**Moisture only measurements** – the InfraLab can be used as documented in the user manual using the turntable and regular sample bowls.

**Degree of roast combined with moisture measurements** – remove the turntable and fit the supplied static sample holder (Figure 1).



**Figure 1 Static sample holder**

Historically, to differentiate between different degrees of roast, a narrow band of visible light wavelengths reflected from a ground sample of the roasted bean is measured.

For consistency, samples should be ground to the desired particle size (ideally soon after quenching) and analysed close to room temperature. As the DOR is an absolute reflectivity measurement, the sample bowl should be completely filled and the surface level with the edge of the dish.

To simplify this for ground and soluble coffee, a sample levelling device is provided. The operator simply overfills the sample dish, which is then pushed under the levelling bar to create a flat surface as shown in Figure 2.



**Figure 2 Sample levelling device**

The sample cup should be located on the static sample holder, and the measurement will automatically be taken (Figure 3).



**Figure 3 Sample bowl location on the InfraLab**

For roasted coffee beans, the sample dish should be packed to form a flat surface that is level with the edge of the dish. Use a straight edge to pat the surface until it is flat (the shallow rotating sample bowl can also be used, provided a flat surface can be achieved).

## InfraLab Degree of Roast Measurement Scale

The InfraLab degree of roast measurement is factory set up to report values on a scale similar to the visual coffee roast standards created by the SCAA – Specialty Coffee Association of America. Unlike the visual scale where there is a degree of human subjectivity, the InfraLab DOR measurement is designed to be highly repeatable and reproducible.

If required, this scale can be adjusted to agree more closely with your current degree of roast color measurement scale (such as those used output by Dr Lange, Probat, Neotech or Agtron, etc.). To adjust the DOR measurement, measure a series of samples on both the InfraLab and your current color measurement system and use the calibration adjustment tools in InfraLab Manager to determine the new Span and Trim values to adjust the InfraLab DOR output.

## DOR Measurement Verification

The InfraLab periodically performs an auto reference operation without any user interaction. If the user wishes to make a measurement when the unit is performing this operation, the measure button will be greyed out for a short period (in most circumstances, this operation will also be reported on the HMI).

Periodic measurement verification can be achieved by comparing ground coffee samples against your QC color meter or using the external ARS reflectivity standard. The reading on the external ARS should be repeatable to within +/- 0.4 DOR units.

If any adjustments to the DOR measurement are required, then calculate the new Span and Trim settings in InfraLab Manager.