Basic Tools for Thin-Layer Chromatography

Since 1961, CAMAG is dedicated to the development and manufacturing of instruments, software and consumables for all steps of the TLC/HPTLC procedure. CAMAG products are truly Swiss made and have an excellent reputation throughout the world.

Thin-Layer Chromatography (TLC) is a simple, flexible and cost efficient separation technique for both qualitative and quantitative analysis, enabling simultaneous analysis of many substances with minimal time requirement. TLC can be performed manually in easy and inexpensive ways. Therefore it is found in almost all laboratories as a convenient tool for simple and rapid separations. As the expectations grow concerning quality and value of an analysis, there are suitable instruments available for all steps of TLC.

High-Performance Thin-Layer Chromatography (HPTLC) is the most advanced form of TLC and comprises the use of chromatographic layers of utmost separation efficiency and the employment of state-of-the-art instrumentation for all steps in the procedure: precise sample application, standardized reproducible chromatogram development and software controlled evaluation. HPTLC is an entire concept that includes a widely standardized methodology based on scientific facts as well as the use of validated methods for qualitative and quantitative analysis. HPTLC meets all quality requirements of today’s analytical labs, even in a fully regulated environment.

This catalog focuses on the basic tools suitable for your TLC/HPTLC application.

For further information on the full range of CAMAG products, please visit our website at www.camag.com or see our major instruments catalog.

Application Fields

Pharmaceutical
- Quality control
- Content Uniformity Test (CUT)
- Identity- and purity checks
- Stability tests, etc.

Herbals
- Identification
- Stability tests
- Detection of adulteration
- Assay of marker compounds, etc.

Clinical applications
- Lipids
- Metabolism studies
- Drug screening
- Doping control, etc.

Forensics
- Detection of document forgery
- Investigation of poisoning
- Dyestuff analyses, etc.

Cosmetics
- Identity of raw material
- Preservatives, colouring materials, etc.
- Screening for illegal substances, etc.

Food and Feed
- Quality control
- Additives (e.g. vitamins)
- Pesticides
- Stability tests (expiration), etc.

Environment
- Water
- Soil
- Residue analysis, etc.

Industrial applications
- Process development and optimization
- Process monitoring
- Cleaning validation, etc.

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## Overview

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The Nanomat 4 serves for easy application of samples in the form of spots onto TLC and HPTLC layers, precisely positioned and without damage to the layer. The actual sample dosage is performed with a disposable capillary pipette, which is precisely guided, thus ensuring that the chromatogram can be scanned automatically according to a programmed pattern.

The Nanomat 4 is suitable for
- Conventional TLC plates including self-coated plates up to $20 \times 20$ cm
- HPTLC plates $10 \times 10$ cm and $20 \times 10$ cm
- TLC and HPTLC sheets up to $20 \times 20$ cm

Capillary Pipettes
The capillary pipettes are loaded into the dispenser in magazines. Capillaries of 0.5, 1.0, 2.0, and 5.0 µL volume are available. Each capillary size requires an appropriate dispenser magazine. With the Universal Capillary Holder capillary pipettes are taken from the dispenser, then filled with sample solution and placed against the applicator head of the Nanomat 4.

Ordering information
040.1500 CAMAG® Nanomat 4 Complete-Kit
022.4730 CAMAG® Nanomat 4, Dispenser Magazine for 0.5 µL capillaries, without capillaries
022.7660 Dispenser Magazine for 0.5 µL capillaries, without capillaries
022.7655 Capillary Dispenser, without capillaries
022.7661 Dispenser Magazine for 1 µL capillaries, without capillaries
022.7671 Capillary Dispenser, Universal Capillary Holder, without capillaries
022.7662 Dispenser Magazine for 2 µL capillaries, without capillaries
022.7786 Universal Capillary Holder, without capillaries
022.7665 Dispenser Magazine for 5 µL capillaries, without capillaries
022.7770 Capillary Pipettes 0.5 µL pack of 5 x 100
022.7771 Capillary Pipettes 1 µL pack of 5 x 100
022.7772 Capillary Pipettes 2 µL pack of 5 x 100
022.7775 Capillary Pipettes 5 µL pack of 5 x 100

Further information at www.camag.com/nanomat
Alternative Tools for Manual Sample Application

**Multipurpose Spotting Guide**
- The CAMAG Multipurpose Spotting Guide is used for setting up chromatograms on conventional 20 × 20 cm layers
- The Multipurpose Spotting Guide can also be used in combination with the Capillary Dispenser system (see Nanomat 4) to make manual sample application more convenient.

**Capillary Guide**
The Capillary Guide 022.7718 automatically inserts the Disposable Glass Capillaries 022.7725–022.7730 into the Universal Capillary Holder 022.7786.

**Disposable Glass Capillaries**
- Disposable glass capillaries for manual sample application of 0.5, 1, 2, or 5 µL
- Color coded vials containing 100 pieces
- The capillaries are hand-held and can be positioned with the Multipurpose Spotting Guide.

**Graduated disposable micropipettes**
- Graduated in microliters, these 5 µL glass capillaries are suitable for qualitative analysis on conventional TLC layers

### Ordering information

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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<tbody>
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<td>Capillary guide</td>
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<td>022.7725</td>
<td>Disposable Capillaries 0.5 µL, vial of 100</td>
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<td>Disposable Capillaries 1.0 µL, vial of 100</td>
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<tr>
<td>022.7727</td>
<td>Disposable Capillaries 2.0 µL, vial of 100</td>
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<tr>
<td>022.7729</td>
<td>Disposable Capillaries 5.0 µL, vial of 100</td>
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<tr>
<td>022.7730</td>
<td>Disposable Capillaries 10.0 µL, vial of 100</td>
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<td>Disposable glass capillaries 0.5 µL, shelf pack of 10 vials</td>
</tr>
<tr>
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<td>Disposable glass capillaries 1.0 µL, shelf pack of 10 vials</td>
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<td>Disposable glass capillaries 2.0 µL, shelf pack of 10 vials</td>
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<td>Disposable glass capillaries 5.0 µL, shelf pack of 10 vials</td>
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<tr>
<td>022.7142</td>
<td>Disposable glass capillaries 0.5 µL, shelf pack of 10 vials</td>
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<td>022.4230</td>
<td>CAMAG Multipurpose Spotting Guide for 20 × 20 cm plates, with scoring pin</td>
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<tr>
<td>022.4233</td>
<td>Scoring pin</td>
</tr>
<tr>
<td>022.4235</td>
<td>TLC Plate Scraper</td>
</tr>
</tbody>
</table>
CAMAG Flat Bottom Chamber

This is the classical developing tank for Thin-Layer Chromatography. It permits the plate to be developed under conditions of partial or complete saturation of the tank atmosphere with solvent vapors. The degree of layer preconditioning can not be controlled unless additional accessories are used.

CAMAG Twin Trough Chamber

The CAMAG Twin Trough Chamber offer several ways to specifically influence chromatogram development in order to improve it.

Twin Trough Chamber:
Low solvent consumption
20 mL of solvent are sufficient for a 20 × 20 cm chamber, 10 mL for the 20 × 10 cm chamber and 5 mL for a 10 × 10 cm chamber. This reduces not only solvent consumption but also disposal problems.

Reproducible preconditioning of the layer with solvent vapor
Developing solvent is placed in the trough opposite to the plate. Preconditioning can be performed with any solvent and for any duration. Development is started when developing solvent is placed into the trough with the plate.

Ordering information
CAMAG® Flat Bottom Chamber
022.5259 for plates 20 × 20 cm, with stainless steel lid
022.5250 for plates 20 × 20 cm, with glass lid
022.5257 for plates 20 × 20 cm, without lid
022.5150 for plates 10 × 10 cm, with stainless steel lid
022.5151 for plates 10 × 10 cm, without lid
022.5275 light-weight for plates 20 × 20 cm, with glass lid
022.5270 light-weight for plates 20 × 10 cm, with glass lid

CAMAG® Twin Trough Chamber
022.5256 for plates 20 × 20 cm, with stainless steel lid
022.5255 for plates 20 × 20 cm, with glass lid
022.5258 for plates 20 × 20 cm, without lid
022.5254 for plates 20 × 10 cm, with stainless steel lid
022.5253 for plates 20 × 10 cm, with glass lid
022.5261 for plates 20 × 10 cm, without lid
022.5155 for plates 10 × 10 cm, with stainless steel lid
022.5156 for plates 10 × 10 cm, without lid
CAMAG Horizontal Developing Chamber

In the Horizontal Developing Chamber the HPTLC plate is developed from both opposing sides towards the middle. This permits the number of samples to be doubled as compared with development in a tank, provided the separation distance of 45 mm (i.e. 50 mm minus 5 mm distance from the edge, is sufficient). In case a longer separation distance is desired, the Horizontal Developing Chamber can be used for development from one side.

In the Horizontal Developing Chamber, a plate can be developed in the sandwich configuration as well as in the tank configuration.

1 HPTLC plate (layer facing down)
2 Glass plate inserted to establish sandwich configuration
3 Reservoir for developing solvent
4 Glass strip for solvent transfer by capillary action
5 Cover plate
6 Conditioning tray

CAMAG smartAlert solvent front monitor

smartAlert serves for dependable monitoring the development of a glass plate in a glass developing chamber.

- Gives acoustic and visual notice when the mobile phase has reached the desired developing distance
- Replaces a timer or stop watch
- Works with glass chambers for plate sizes 20 × 20, 20 × 10 and 10 × 10 cm
- Battery operated

Saturation pads

These 20 × 20 cm sheets of thick filter paper are used to line the inner walls of a developing tank for saturating the chamber atmosphere with solvent vapors. They are suitable for all Flat Bottom and Twin Trough Chambers. These pads are also handy for many other uses in a TLC laboratory.

Ordering information

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<th>Description</th>
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<tbody>
<tr>
<td>022.8535</td>
<td>CAMAG® Horizontal Developing Chamber for plates 20 × 10 cm</td>
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<tr>
<td>022.8530</td>
<td>CAMAG® Horizontal Developing Chamber for plates 10 × 10 cm</td>
</tr>
<tr>
<td>022.5300</td>
<td>CAMAG® smartAlert solvent front monitor</td>
</tr>
<tr>
<td>022.5244</td>
<td>Saturation Pads, pack of 100</td>
</tr>
</tbody>
</table>
CAMAG HPTLC Vario System

Key features

- Development with six different solvents can be tested side by side.
- Sandwich configuration as well as tank configuration can be simulated side by side, making results directly comparable.
- Six different conditions of pre-equilibration, including relative humidity, can be tested simultaneously.
- These variations of developing conditions can be freely combined.

Time saving optimization of separation conditions using the HPTLC Vario System

Application examples, schematic: \( F_1 \ldots = \text{developing solvents}, C_1 \ldots = \text{conditioning liquids} \)

<table>
<thead>
<tr>
<th>Optimization of the developing solvent</th>
<th>Optimization of the development solvent</th>
<th>Optimization of the development solvent after uniform layer preconditioning</th>
<th>Optimization of preconditioning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development with 6 different solvents side by side, without preconditioning = development in sandwich configuration.</td>
<td>Development with 6 different solvents side by side whereby the conditioning troughs contain the same six solvents = simulated tank development</td>
<td>First step: pre-equilibration of all six tracks with the same conditioning liquid; then development with six different solvents (in sandwich configuration).</td>
<td>Pre-equilibration with six different conditioning liquids; then development of all tracks with the same solvent.</td>
</tr>
</tbody>
</table>

Ordering information

022.8550 CAMAG® HPTLC Vario System, consisting of
022.8555 CAMAG® HPTLC Vario Chamber and
022.8556 HPTLC Scoring Unit
CAMAG TLC/HPTLC Sprayer
The function is electro-pneumatic. Reagents are atomized into a fine aerosol spray with particles in the range of 0.3 to 10 µm. This ensures a homogeneous distribution over the layer at a low reagent consumption.

The TLC Sprayer consists of the charger and a pump unit with two kinds of spray heads, type A for spray solutions of normal viscosity (organic solvents), and type B for liquids of high viscosity (e.g. sulfuric acid containing reagents).

Glass Reagent Sprayer
This all glass reagent sprayer is a low cost alternative to the TLC/HPTLC Sprayer. It comes with a rubber pump but may also be operated from a compressed air or nitrogen supply. The Erlenmeyer flask may be closed with a standard glass stopper.

CAMAG Chromatogram Immersion Device
For proper execution of the dipping technique, the chromatogram plate must be immersed and withdrawn at a controlled uniform speed; otherwise tide marks may be left which interfere with densitometric evaluation. By maintaining a well defined vertical speed and immersion time, derivatization conditions can be standardized. The immersion device can also be used for the pre-washing of plates.

Key features
- Uniform vertical speed, freely selectable between 30 mm/s and 50 mm/s
- Immersion time selectable between 1 and 8 seconds and indefinitely (upward movement at another touch of the button)
- The device can be set to accommodate 10 cm and 20 cm plate height.
- Battery operated

Ordering information
022.6530 TLC/HPTLC-Sprayer, complete with spray head type A and B, reagent bottle 100 mL, reagent bottle 50 mL
022.6535 Pack of 5 spray heads type A and 1 type B
022.6538 Pack of 6 spray heads type B
022.6536 Reagent bottle 100 mL with cap, pack of 6
022.6537 Reagent bottle 50 mL with cap, pack of 6
022.6539 Service kit for TLC/HPTLC-Sprayer
022.6100 Glass reagent spray with 100 mL Erlenmeyer flask

022.6606 CAMAG® Chromatogram Immersion Device 3 for TLC and HPTLC plates up to 20 × 20 cm, without dip tank
022.6627 Dip tank for plates 20 × 20 cm, with lid
022.6628 Dip tank for plates 20 × 10 cm, with lid
022.6619 Bench top rack for three dip tanks
CAMAG TLC Plate Heater 3

The TLC Plate Heater is designed for heating a TLC/HPTLC plate to a selected temperature after a staining reagent has been applied. The Plate Heater has a CERAN® heating surface which is resistant to all common reagents and is easily cleaned. The 20 × 20 cm heating surface has a grid to facilitate correct positioning of the TLC plate. Programmed and actual temperature are digitally displayed. The temperature is selectable between 25 and 200 °C. The plate heater is protected from overheating.

CAMAG TLC Spray Cabinet 2

The TLC Spray Cabinet is designed for the complete removal of excessive spray mist while spraying a TLC plate with reagent. There is no deflection of the spray jet before it reaches the plate, an effect often encountered in a normal laboratory fume hood. Particles rebounding from the plate are completely removed. The Spray Cabinet is also useful for drying plates after development, with or without the assistance of a hair dryer. The cabinet is made of PVC. The blower, a radial fan driven by a motor outside of the fume duct, produces an airflow of 130 cubic feet (3.7 cubic meter) per minute. The bottom of the spray cabinet has a built-in tray, which is removable for easy cleaning.

Ordering information

022.3306 CAMAG® TLC Plate Heater 3
Stainless steel housing, flat ceramic top, for TLC plates up to 20 × 20 cm, digital temperature display, temperature range 25–200° C.

022.6230 CAMAG® TLC Spray Cabinet 2 with blower and flexible exhaust hose 1.5 m
022.6232 CAMAG® TLC Spray Cabinet 2 without blower, for connection to existing forced flow conduit, with 1.5 m flexible exhaust hose 127 mm diameter
022.6226 Exhaust hose extension 1.5 m with adapter

Further information can be found at www.camag.com/derivatization
CAMAG UV Lamp 4

The CAMAG UV Lamp 4 is designed primarily for use in a TLC laboratory. Users benefit from a convenient one-button operation for each UV tube. In order to reduce the user’s risk of UV radiation exposure, the CAMAG UV Lamp 4 is equipped with two safety features: in addition to the built-in timer (which automatically switches off the lamp after 10 minutes) a tilt sensor automatically turns off the lamp in case the lamp is tilted more than 30 degrees. Beyond optimized handling and improved safety features, the CAMAG UV Lamp 4 comes with a more homogeneous illumination and higher UV light intensity.

**Key features**
- Two UV tubes for illumination (1 × UV 254 nm, 1 × UV 366 nm, each 8W)
- Convenient handling through one button operation for each UV tube
- High level of user safety through tilt sensor and timer
- Homogeneous illumination

CAMAG UV Cabinet 4

The CAMAG UV Cabinet 4, a combination of the CAMAG UV Lamp 4 and the Viewing Box 4, is specially designed for UV observation with minimal influence of ambient light. Thanks to a compact footprint, the CAMAG UV Cabinet 4 requires only minimum space. The observation port has a built-in UV filter in the viewing window ensuring effective eye protection. The interior is accessible via a roller shutter on the front.

**Key features**
- Chromatogram inspection with minimal influence of ambient light
- Eye protection through UV filter in the viewing window
- Minimum space requirements through compact footprint

**Important notice**

**Two types of UV light are required for inspecting thin-layer chromatograms:**

**Long-wave UV light 366 nm**
Under long-wave UV light fluorescent substances appear as bright, often differently colored zones, on a dark background. The sensitivity increases with the intensity of the UV light and also with the efficiency visible light is eliminated.

**Short-wave UV light 254 nm**
Under 254 nm UV light substances absorbing light of that wavelength appear as dark zones on a bright background, when the TLC layer contains a fluorescent indicator excited by UV 254 nm.

**Ordering information**

040.2000 CAMAG® UV Cabinet 4, incl. CAMAG® UV Lamp 4 and CAMAG® Viewing Box 4
022.9160 CAMAG® UV Lamp 4, 254/366 nm, 2 × 8 W
022.9060 CAMAG® Viewing Box 4
022.9165 Stand for CAMAG® UV Lamp 4
All CAMAG Basic Kits have been composed so that a lab can efficiently start working with Thin-Layer Chromatography. These assemblies are configured to allow upgrading to a complete system for quantitative TLC without items becoming redundant. Also transition from using conventional TLC layers to high-performance layers is straight forward.

**Basic Kits**

040.1200 CAMAG® HPTLC Basic Kit 20×10, consisting of

- 022.4730 CAMAG® Nanomat 4
- 022.7650 Capillary dispenser consisting of universal capillary holder (022.7786), one dispenser magazine for 1 µL capillaries (022.7661) and one package of 5 × 100 disposable capillary pipettes 1 µL (022.7771)
- 022.7660 Dispenser magazine for 0.5 µL capillaries, without capillaries
- 022.7770 Disposable capillary pipettes 0.5 µL, pack of 5 × 100
- 2 × 022.5254 CAMAG® Twin Trough Chamber, for 20 × 10 cm plates, with stainless steel lid
- 022.5244 Saturation pads, pack of 100 (20 × 20 cm)
- 022.5300 CAMAG® smartAlert solvent front monitor (only suitable for glass plates)
- 022.8535 CAMAG® Horizontal Developing Chamber, for 20 × 10 cm plates
- 022.6530 TLC/HPTLC-Sprayer
- 034.5642 MERCK HPTLC plates Silica gel 60 F254, 20 × 10 cm, pack of 50
- 022.9060 CAMAG® Viewing Box 4, for CAMAG UV lamps of the 022.91XX series
- 022.9160 CAMAG® UV Lamp dual wavelength, 254/366 nm, 2 × 8 W

040.1100 CAMAG® HPTLC Basic Kit 10×10, consisting of

- 022.4730 CAMAG® Nanomat 4
- 022.7650 Capillary dispenser consisting of universal capillary holder (022.7786), one dispenser magazine for 1 µL capillaries (022.7661) and one package of 5 × 100 disposable capillary pipettes 1 µL (022.7771)
- 022.7660 Dispenser magazine for 0.5 µL capillaries, without capillaries
- 022.7770 Disposable capillary pipettes 0.5 µL, pack of 5 × 100
- 2 × 022.5155 CAMAG® Twin Trough Chamber, for 10 × 10 cm plates, with stainless steel lid
- 022.5244 Saturation pads, pack of 100 (20 × 20 cm)
- 022.5300 CAMAG® smartAlert solvent front monitor (only suitable for glass plates)
- 022.8530 CAMAG® Horizontal Developing Chamber, for 10 × 10 cm plates
- 022.6530 TLC/HPTLC-Sprayer
- 034.5628 MERCK HPTLC plates Silica gel 60 F254, 10 × 10 cm, pack of 25
- 022.9060 CAMAG® Viewing Box 4, for CAMAG UV lamps of the 022.91XX series
- 022.9160 CAMAG® UV Lamp dual wavelength, 254/366 nm, 2 × 8 W

040.1000 CAMAG® TLC Basic Kit 20×20, consisting of

- 022.4730 CAMAG® Nanomat 4
- 022.7650 Capillary dispenser consisting of universal capillary holder (022.7786), one dispenser magazine for 1 µL capillaries (022.7661) and one package of 5 × 100 disposable capillary pipettes 1 µL (022.7771)
- 022.7662 Dispenser Magazine for 2 µL capillary pipettes, without capillaries
- 022.7665 Dispenser Magazine for 5 µL capillary pipettes, without capillaries
- 022.7772 Disposable capillary pipettes 2 µL, pack of 5 × 100
- 022.7775 Disposable capillary pipettes 5 µL, pack of 5 × 100
- 2 × 022.5256 CAMAG® Twin Trough Chamber, for 20 × 20 cm plates, with stainless steel lid
- 022.5244 Saturation pads, pack of 100
- 022.5300 CAMAG® smartAlert solvent front monitor (only suitable for glass plates)
- 022.6100 Glass Reagent Sprayer, all glass, with 100 mL Erlenmeyer flask
- 034.5715 MERCK TLC plates silica gel 60F 254, 20 × 20 cm, pack of 25
- 022.9060 CAMAG® Viewing Box 4, for CAMAG UV lamps of the 022.91XX series
- 022.9160 CAMAG® UV Lamp dual wavelength, 254/366 nm, 2 × 8 W
## TLC/HPTLC Plates

### MERCK Precoated Layers for High-Performance Thin-Layer Chromatography (HPTLC)

<table>
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### MERCK Precoated Layers for Thin-Layer Chromatography (TLC)

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<th>Designation</th>
<th>layer (µm)</th>
<th>size (cm)</th>
<th>quant./pkg</th>
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### CAMAG smartCut plate cutter

Convenient and precise cutting of TLC/HPTLC plates
- Cuts glass plates with a thickness up to 3 mm
- Makes smooth cuts on sensitive layers
- Desired size can be read directly from a scale
- Easy handling

### Ordering information

022.4300 CAMAG® smartCut plate cutter
In-House Preparation of TLC Plates

Today, in-house preparation of TLC plates is indicated when special layers are required which are not available as precoated plates, e.g. layers containing silver nitrate, buffer substances or other reagents, or layers of adsorbent mixtures. Logistic or economic reasons may play a role in exceptional cases.

Automatic TLC Plate Coater
The glass plates to be coated are conveyed underneath a hopper filled with the adsorbent suspension. The layer thickness is governed by a fixed gate of 300 µm and 500 µm or by an adjustable gate for layer thicknesses 0–2 mm. The plate movement is motor driven at a uniform speed of 10 cm/s onto a plate holder for eight 20 × 20 cm plates.

Ordering information
022.1602 Automatic TLC Plate Coater (230 V)
022.1603 Automatic TLC Plate Coater (115 V)

TLC Plate Coater, hand operated
The manual plate coater functions in the same manner as the automatic coater, with the exception that the plates are pushed through by hand, one after the other and lifted off on the other side.

Ordering information
022.1251 TLC Plate Coater hand operated

Adsorbents for in-house preparation of TLC plates
033.1092 Aluminium Oxide Merck GF (type 60/E), 500 g
033.7731 Silica Gel Merck G (type 60), 1 kg
033.7730 Silica Gel Merck GF (type 60), 1 kg
033.7736 Silica Gel Merck H (type 60), 1 kg
033.7739 Silica Gel Merck HF (type 60), 1 kg
033.7741 Silica Gel Merck HF254+366 (type 60), 1 kg
**Drying Rack**

The Drying Rack consists of ten individual aluminum trays, 20 × 20 cm, which can be stacked quickly and conveniently. A tin box for storing the trays and two wire handles, to move the stack while hot, are supplied. The Drying Rack is convenient to use, particularly when TLC plates are prepared with the automatic plate coater in large runs. The Drying Rack also comes in handy for plates smaller than 20 × 20 cm.

**Ordering information**

022.3200 Drying Rack

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**TLC Plate Box**

The TLC Plate Box holds ten 20 × 20 cm plates. The body with slide rails, the handle and the removable bottom are all made of stainless steel. The cover is of transparent plastic. When used for drying coated TLC plates, the bottom and the cover are removed to increase air circulation. The TLC Plate Box is also recommended to re-activate 20 × 20 cm pre-coated plates, e.g. after they have been pre-washed.

**Ordering information**

022.3250 TLC Plate Box

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**CAMAG Test Dye Mixtures**

Test dye mixtures are useful for functional checks on individual steps in the TLC procedure and for studying the influence of specific parameters.

**Ordering information**

032.8001 Test Dye Mixture I, Toluene, 30 mL – for silica gel
032.8002 Test Dye Mixture II, Toluene, 30 mL – for aluminium oxide
032.8003 Test Dye Mixture III, Toluene, 10 mL – for HPTLC silica gel
032.8006 Test Dye Mixture VI, powder for 30 mL – for IQ/OQ under visionCATS Software

**Glass plates for Thin-Layer Chromatography**

Glass plates with polished edges, about 4 mm thick

**Ordering information**

022.2200 Glass Plates 20 × 20 cm, pack of 10
022.2100 Glass Plates 10 × 20 cm, pack of 10
CAMAG markets its products in Switzerland directly from the headquarters, in Germany and the United States through their subsidiaries. In more than 70 other countries CAMAG is represented by selected companies.

CAMAG distributors regularly send their product specialists for education and training to our headquarters. Furthermore CAMAG organizes training courses overseas, e.g. in the Far East. The task of CAMAG product specialists is to advise customers in system selection and application competence and in the operation of their CAMAG systems. Service engineers of our distributors are also regularly trained in Muttenz.

To our customers and distributors a comprehensive web-based information offer is available: www.camag.com for product and company information, www.camag-laboratory.com for applications.

CAMAG is a flexible, customer-oriented and scientifically sound company, which in its 50 years company history has profiled as a valued partner in all areas of Planar Chromatography.