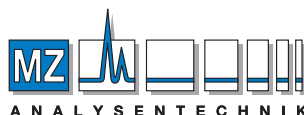


TLC

Thin Layer Chromatography



AUTHORIZED DISTRIBUTOR

MZ-Analysentechnik GmbH
Barcelona-Allee 17 • D-55129 Mainz
Tel +49 6131 880 96-0
Fax +49 6131 880 96-20
e-mail: info@mz-at.de
www.mz-at.de

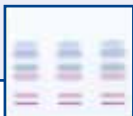
State-of-the-art
TLC products

Quality
Efficiency
Selectivity

MACHEREY-NAGEL

www.mn-net.com





MACHEREY-NAGEL – Thin Layer Chromatography for more than 5 decades

Why TLC?

- ✓ Fast and cost-saving separation technique
- ✓ Multiple sample application possible
- ✓ Developed plate serves as analytical documentation media
- ✓ Time consuming sample preparation steps can be omitted

MN ready-to-use layers for TLC and HPTLC

- ✓ Comprehensive range of plate sizes, surface chemistries and backings
- ✓ Pre-coated plates ready for immediate use
- ✓ Homogeneous, smooth and well adhering layers
- ✓ Available with UV indicator or non-impregnated
- ✓ Consistent high quality from batch-to-batch and from plate-to-plate





Benefits of TLC

TLC does not require complex, costly maintained instrumentation. The investment for performing successful TLC can be hundred times less than for HPLC. Since the separated compounds remain on the plate, they can be used for further experiments. Method development is simplified by TLC. The amount of solvents required for development is much less than with HPLC.

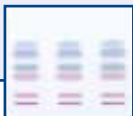
Standard analytical TLC plates and sheets

Thin layer chromatography can be used for both qualitative and quantitative analysis. Standard analytical TLC plates typically have adsorbent layers that are nominally between 0.20–0.25 mm in thickness.

Preparative TLC plates

Preparative TLC is used for purification and isolation of analytes from impurities. Preparative TLC layers (≥ 0.5 mm) are only on glass plates available.





In order to meet your individual application requirements three different types of backings are available.

TLC plates - glass backing



Glass plates are robust, heat proof and chemically resistant to all common mobile phases and visualization reagents.

POLYGRAM® TLC sheets - Polyester (PET) backing



Polyester sheets are easy to handle, lightweight and flexible. Developed **POLYGRAM®** sheets can also be stored for documentation in laboratory notebooks. Scissors cutting possible.

ALUGRAM® TLC sheets - aluminium backing



Aluminium sheets are easy to handle, lightweight and flexible. High performance silica on **ALUGRAM® Xtra** sheets provides outstanding wettability for precise colorization results, even with 100 % aqueous detection reagents. Moreover **ALUGRAM® Xtra** sheets are easy to cut with scissors. No flaking of silica occurs!



Physical properties of backing materials

Material	glass	polyester	aluminium
Thickness (approx.)	1.3 mm	0.2 mm	0.15 mm
Weight, packing and storage requirement	high	low	low
Torsional strength	ideal	low	relatively high
Temperature stability	high	max. 185°C	high
Susceptible to breakage	yes	no	no
Can be cut with scissors	no	yes	yes

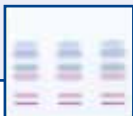
Chemical resistance of support material

against solvents	high	high	high
against mineral acids and conc. ammonia	high	high	low

Stability of the binder system of NP plates in water

Suitability for aqueous detection reagents	depends on phase	very suitable
--	------------------	---------------

ALUGRAM®:
limited suitability
ALUGRAM® Xtra:
well suited



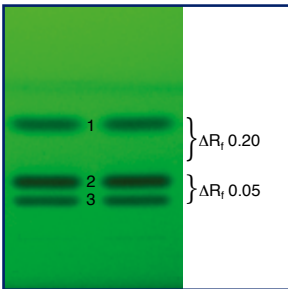
Standard silica · TLC ready-to-use glass plates

MN offers SIL G and ADAMANT as silica coated glass plates.

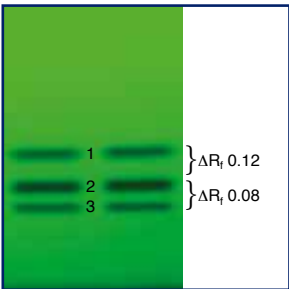
Analytical TLC glass plates:

Silica 60, specific surface (BET) ~ 500 m²/g, mean pore size 60 Å, specific pore volume 0.75 mL/g, particle size 5–17 µm, thickness of layer 0.25 mm

2 different selectivities for the separation of nitroanilines, separations under identical conditions

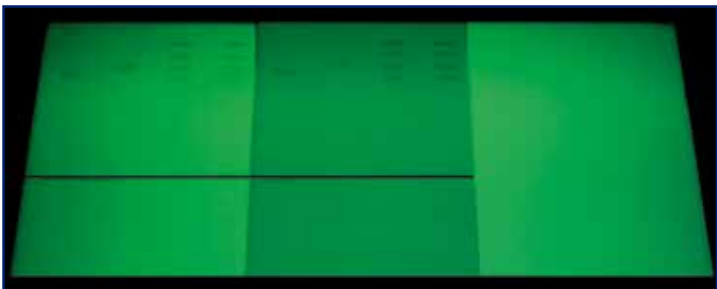


Sil G



ADAMANT

Brilliant UV indicator on ADAMANT plates



ADAMANT

Competitor M

ADAMANT
without separation

		SIL G*			ADAMANT	
		smooth surface · easy to „scrape off“ · low polarity binder			hard surface · can be pen labeled brilliant UV indicator system	
Plate size [cm]	Plates per pack	REF with UV 254 nm	REF with UV 254/366 nm	REF without UV indicator	REF with UV 254 nm	REF without UV indicator
2.5 x 7.5	100	809028.100				
5 x 10	200	809027.200			821010.200	
	50	809027		809017	821010	821040
5 x 20	100	809021	809121	809011	821015	
10 x 10	25	809020		809010	821020	821050
10 x 20	50	809022	809122	809012	821025	821070
20 x 20	25	809023	809123	809013	821030	821060

*Also available as preparative plates in 0.50, 1.00 and 2.00 mm thickness.



POLYGRAM® SIL G and SIL N-HR

Polyester sheets for TLC

Silica 60, specific surface (BET) $\sim 500 \text{ m}^2/\text{g}$, mean pore size $60 \text{ \AA}$, specific pore volume 0.75 mL/g , particle size $5\text{--}17 \text{ }\mu\text{m}$; standard grade

The binder system for **POLYGRAM®** sheets is also completely stable in purely aqueous eluents.

POLYGRAM® SIL G

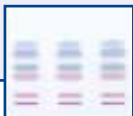
Designation	Thickness of layer	Plate size [cm]	Fluorescent indicator	Plates per pack	REF
SIL G	0.20 mm	2.5 x 7.5	—	200	805902
SIL G	0.20 mm	4 x 8	—	50	805032
SIL G	0.20 mm	5 x 20	—	50	805012
SIL G	0.20 mm	20 x 20	—	25	805013
SIL G	0.20 mm	40 x 20	—	25	805014
SIL G UV ₂₅₄	0.20 mm	2.5 x 7.5	UV ₂₅₄	200	805901
SIL G UV ₂₅₄	0.20 mm	4 x 8	UV ₂₅₄	50	805021
SIL G UV ₂₅₄	0.20 mm	5 x 20	UV ₂₅₄	50	805022
SIL G UV ₂₅₄	0.20 mm	20 x 20	UV ₂₅₄	25	805023
SIL G UV ₂₅₄	0.20 mm	40 x 20	UV ₂₅₄	25	805024
SIL G UV ₂₅₄	0.20 mm	500 x 20	UV ₂₅₄	1 roll	805017

POLYGRAM® SIL N-HR

Different binder system compared to SIL G results in different separation characteristics

Special feature of **POLYGRAM® SIL N-HR**: **higher gypsum content**

SIL N-HR UV ₂₅₄	0.20 mm	5 x 20	UV ₂₅₄	50	804022
SIL N-HR UV ₂₅₄	0.20 mm	20 x 20	UV ₂₅₄	25	804023

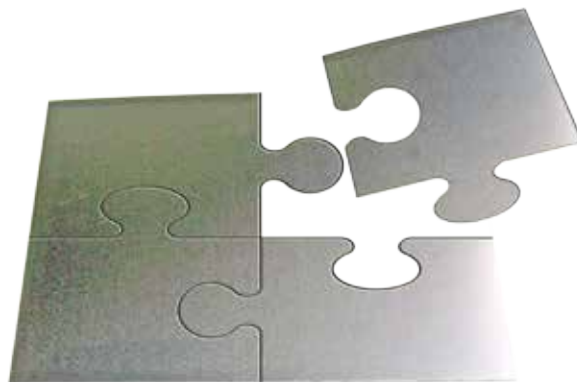


ALUGRAM® Xtra SIL G

Standard silica layers on aluminium for TLC

- ✓ Silica 60, specific surface (BET) ~ 500 m²/g, mean pore size 60 Å, specific pore volume 0.75 mL/g, particle size 5–17 µm; standard grade
- ✓ Outstanding wettability for precise colorization results, even with 100 % aqueous detection reagents
- ✓ Excellent separation efficiency and reproducibility from lot to lot
- ✓ Easy and reliable cutting due to an optimized binder system, no flaking of silica
- ✓ Binder: highly polymeric product, which is stable in almost all organic solvents and resistant towards aggressive visualization reagents; also completely stable in purely aqueous eluents

For applications, visit www.mn-net.com/apps



Tailored to individual requirements

ALUGRAM® Xtra SIL G aluminium sheets

Designation	Thickness of layer	Plate size [cm]	Fluorescent indicator	Plates per pack	REF
SIL G	0.20 mm	20 x 20	–	25	818233
SIL G UV ₂₅₄	0.20 mm	4 x 8	UV ₂₅₄	50	818331
SIL G UV ₂₅₄	0.20 mm	20 x 20	UV ₂₅₄	25	818333



Nano TLC plates

Higher efficiency on smaller particles . . .

- ✓ Sharper separations
- ✓ Shorter developing times and migration distances
- ✓ Smaller sample volumes 0.01–0.1 μL
- ✓ Minimal diffusion
- ✓ Increased detection sensitivity

Analytical HPTLC glass plates:

Silica 60, specific surface (BET) $\sim 500 \text{ m}^2/\text{g}$, mean pore size $60 \text{ \AA}$, specific pore volume 0.75 mL/g , thickness of layer 0.20 mm , mean particle size range **2–10 μm**

Comparison of ADAMANT and Nano-ADAMANT plates

Separation of anthraquinone dyes

Layers: A: ADAMANT, B: Nano-ADAMANT

Sample: $1 \mu\text{L}$ about 0.1 %

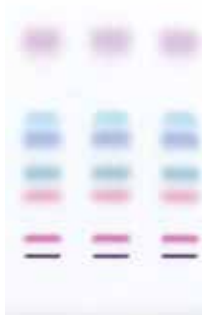
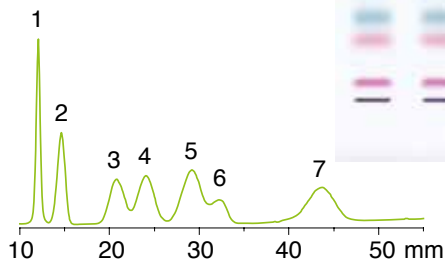
Eluent: toluene-cyclohexane (4:3, v/v)

Migration time: A) 30 min, B) 15 min

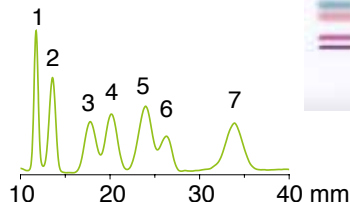
Peaks:

1. Blue 3
2. Violet 2
3. Red
4. Green
5. Blue 1
6. Greenish Blue
7. Violet 1

A: ADAMANT



B: Nano-ADAMANT



Nano-SIL

Nano-ADAMANT

Plate size [cm]	Plates per pack	REF with UV 254 nm	REF without UV indicator	REF with UV 254 nm	REF without UV indicator
Glass plates					
5 x 5	100	811021	811011	821100	821130
10 x 10	25	811022	811012	821110	821140
10 x 20	50	811023	811013	821120	821150
ALUGRAM® Xtra					
5 x 20	50	818342	818240		
20 x 20	25	818343	818241		

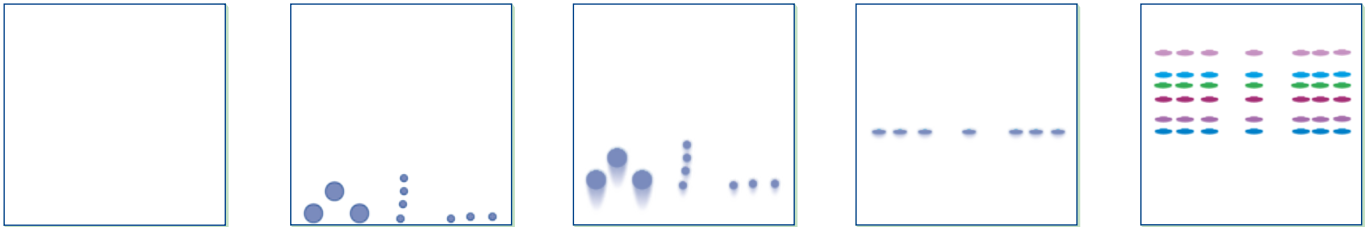


Preadsorbent zone

After sample application in the kieselguhr layer the spots migrate to the kieselguhr/silica interface forming narrow bands. Separation then takes place in the silica layer.

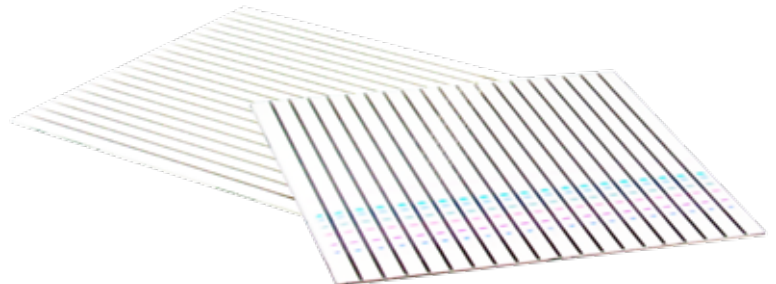
Concentrating zone - SILGUR

- ✓ Concentrates sample spots on the plate
- ✓ Simplifies sample preparation and application



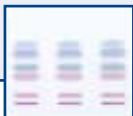
Channeled SILGUR plates

Channel-Plates with 19 channels help to prevent cross contamination by separating several samples. More samples can be separated on a plate, and spot areas can be more easily determined.





Designation	Thickness of layer	Plate size [cm]	Fluorescent indicator	Plates per pack	REF
Glass plates					
SILGUR-25	0.25 mm	10 x 20	–	50	810012
SILGUR-25	0.25 mm	20 x 20	–	25	810013
SILGUR-25 UV ₂₅₄	0.25 mm	10 x 20	UV ₂₅₄	50	810022
SILGUR-25 UV ₂₅₄	0.25 mm	20 x 20	UV ₂₅₄	25	810023
Glass plates – Channel Plates					
SILGUR-25-C UV ₂₅₄	0.25 mm	20 x 20	UV ₂₅₄	25	810123
ALUGRAM® Xtra aluminium sheets					
SILGUR	0.20 mm	10 x 20	–	20	818412
SILGUR	0.20 mm	20 x 20	–	25	818413
SILGUR UV ₂₅₄	0.20 mm	10 x 20	UV ₂₅₄	20	818422
SILGUR UV ₂₅₄	0.20 mm	20 x 20	UV ₂₅₄	25	818423
Glass plates					
Nano-SILGUR-20	0.20 mm	10 x 10	–	25	811032
Nano-SILGUR-20 UV ₂₅₄	0.20 mm	10 x 10	UV ₂₅₄	25	811042
ALUGRAM® Xtra aluminium sheets					
Nano-SILGUR	0.20 mm	10 x 10	–	25	818432
Nano-SILGUR UV ₂₅₄	0.20 mm	10 x 10	UV ₂₅₄	25	818442



TLC accessory

Description	REF
Simultaneous developing chamber for TLC	
20 x 20 cm, for up to 5 plates	814019
10 x 10 cm, for up to 2 plates	814018
MN ALUGRAM® scissors	818666



818666



814019

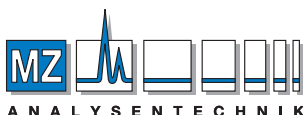
814018



HPLC



GC



AUTHORIZED DISTRIBUTOR

MZ-Analysentechnik GmbH
Barcelona-Allee 17 • D-55129 Mainz
Tel +49 6131 880 96-0
Fax +49 6131 880 96-20
e-mail: info@mz-at.de
www.mz-at.de



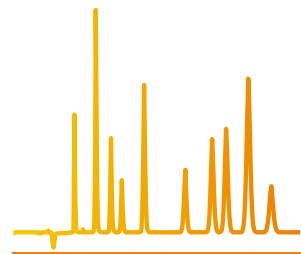
SPE and Flash



Syringe filters



Vials and caps



... we Meet your Needs

www.mn-net.com

MACHEREY-NAGEL



MACHEREY-NAGEL GmbH & Co. KG · Neumann-Neander-Str. 6-8 · 52355 Düren · Germany

Germany and international:

Tel.: +49 24 21 969-0
Fax: +49 24 21 969-199
E-mail: info@mn-net.com

Switzerland:

MACHEREY-NAGEL AG

Tel.: +41 62 388 55 00
Fax: +41 62 388 55 05
E-mail: sales-ch@mn-net.com

France:

MACHEREY-NAGEL EURL

Tel.: +33 388 68 22 68
Fax: +33 388 51 76 88
E-mail: sales-fr@mn-net.com

USA:

MACHEREY-NAGEL Inc.

Tel.: +1 484 821 0984
Fax: +1 484 821 1272
E-mail: sales-us@mn-net.com



Since 1911