

# PANOLIN

## metalworking oils



# PANOLIN-MATRIX<sup>®</sup>



**High-Tech Lubricants**

## PANOLIN metalworking oils

Oil requirements in this sector are just as varied as metalworking itself – ranging from heavy steelworks to microscopically small components.

### «A customer brings us one step further every day»

This heading to our company brochure is reflected in the following:

From ongoing contact with our metalworking customers, we know all about their problems, needs and special requirements.

That is why we have worked out a new metalworking product concept to meet your needs optimally.

**Meeting customer requirements** in practice is very demanding technically, and requires immense know-how in optimally combining basis oils and additives.  
Our new metalworking product concept meets all requirements with **transparent\***, **chlorine-free\*\*** oils.

- \* Some essential additives unfortunately darken our transparent basis oils
- \*\* For exceptional applications, we nevertheless use products containing chlorine

**One of our main goals** was to provide a clear and comprehensive product overview.

This not only meant completely reorganizing the entire range, but also adding new products wherever necessary. Since specifications and product approvals are not always clear in this field, we needed to find another product definition key.

The solution is particularly user-friendly – **PANOLIN-MATRIX®** is keyed to our customers themselves. After all, it is they who know their metalworking and material needs best of all.

**Systematic confusion!** Our product catalogue has been re-organized.

You may find this alphanumeric system confusing at first sight, but it really does make product selection easier.

## PANOLIN-MATRIX®, an innovative tool ...

... for fast and easy lubricant selection.

### The first letter stands for the operation

e.g. INTRA **DOC** 32 = **D** – Wire-Drawing (german: **D**rahtzug)

**E** – **E**roding

**G** – **G**rinding

**H** – **H**oning

**L** – **L**apping

**P** – **P**unching

**T** – Deep-drawing (german: **T**iefzug)

**U** – Forming (german: **U**mformen)

**Z** – Machining (german: **Z**erspanen)

### The second letter stands for the material or operation stage

e.g. INTRA **PAC** 2 = **A** – Lightmetal, **A**luminium

**B** – Nonferrous metals (german: **B**untmetall)

**F** – Normal machining

**Ferrous metals, grey or malleable cast iron, low-alloy machining steel, structural steel, case hardening and heat-treatable steels**

**O** – No specific material allocation  
(german: **O**hne ...)

**R** – Heavy machining

**Stainless steel, high-alloy steel, chrome-nickel steel**  
(german: **R**ostfreier Stahl ...)

**X** – **EX**treme machining

**Manganese, nickel, titanium, manganese-silicon steel, silicon steel, chrome-molybdenum steels.**

### The third letter is part of our internal production code ...

...which needs no definition here.

### The number stands for product viscosity

e.g. INTRA DOS **5** = **5** – ISO-class VG **5**

(2, 3, 5, 7, 10, 15, 22, 32, 46, 68, 100,  
150, 220, 320, 460, 680, 1000, 1500)

e.g. INTRA GOS **4** = **4** – If the viscosity does not correspond with any ISO class, it is given at 40 °C.

(4, 18, 20, 25, 40, 700, 780, 800; also other numbers possible)

## D – Wire-drawing (Drahtzug)

Operation	Wire-drawing				
Product	A	B	F	R	X
INTRA DOC 5	●	●	●	●	●
INTRA DOC 32	●	●	●	●	●
<sup>1</sup> INTRA DOC 460	●	●	●	●	●
INTRA DOS 5	●	●	●	●	●

**Cross-reference**

see also product group **U**

**Footnote**

<sup>1</sup> contains additive for better washability

## E – Eroding

Operations	Eroding					Grinding					Lapping					Machining				
	A	B	F	R	X	A	B	F	R	X	A	B	F	R	X	A	B	F	R	X
<sup>1</sup> INTRA EOC 4	●	●	●	●	●	■	■	■	■	■										
<sup>1</sup> INTRA EOM 2	●	●	●	●	●	■	■	■	■	■										
<sup>1</sup> INTRA EOM 4	●	●	●	●	●	■	■	■	■	■	■	■	■	■	■					
<sup>1</sup> INTRA EOS 2	●	●	●	●	●	■	■	■	■	■										
<sup>2</sup> INTRA EOS 4	●	●	●	●	●	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

**Footnotes**

<sup>1</sup> subject to VOC duty

<sup>2</sup> also available in green coloration

## G – Grinding

Operations	Grinding					Honing					Lapping					Punching					Machining				
	A	B	F	R	X	A	B	F	R	X	A	B	F	R	X	A	B	F	R	X	A	B	F	R	X
<sup>1</sup> INTRA GOC 3	●	●	●	●	●						■	■	■	■	■	■	■								
INTRA GOC 5	●	●	●	●	●	■	■	■	■	■	■	■	■	■	■	■	■								
INTRA GOC 7	●	●	●	●	●	■	■	■	■	■						■	■				■	■			
INTRA GOC 10	●	●	●	●	●	■	■	■	■	■						■	■				■	■			
INTRA GOM 3	●	●	●	●	●						■	■	■	■	■	■	■								
INTRA GOM 7	●	●	●	●	●	■	■	■	■	■						■	■				■	■			
INTRA GOS 4	●	●	●	●	●	■	■	■	■	■	■	■	■	■	■	■	■								

**Cross-reference** see also product groups **E, L, P** and **Z**

**Note** all products in this group have a high flash point for safety reasons

**Footnote** <sup>1</sup> subject to VOC duty

**Material/operation phase**

- A** = Aluminium
- B** = Nonferrous metals
- F** = Normal machining
- O** = Independent of material
- R** = Heavy machining
- X** = Extreme machining

**Application rating**

- = PANOLIN recommendation
- = Primary application
- = Secondary application

## H – Honing

Operation		Honing				
Product		A	B	F	R	X
<sup>1</sup>	INTRA HOC 3	●	●	●	●	●
<sup>3</sup>	INTRA HOC 22	●	●	●	●	●

**Cross-reference**

see also product groups **G** and **Z**

**Footnotes**

- <sup>1</sup> subject to VOC duty
- <sup>2</sup> for miniature components
- <sup>3</sup> for SUNNEN honing machines

## L – Lapping

Operations	Lapping					Grinding				
	A	B	F	R	X	A	B	F	R	X
INTRA LOC 5	●	●	●	●	●	■	■	■	■	■

**Cross-reference**

see also product groups **E** and **G**

## P – Punching

Operations	Punching					Grinding					Machining													
	A	B	F	R	X	A	B	F	R	X	Turning Drilling Milling					Tapping Thread-cutting								
											A	B	F	R	X	A	B	F	R	X				
<sup>1</sup> INTRA PAC 2	●																							
<sup>1</sup> INTRA PAC 3	●					■	■	■																
INTRA PBC 5	●	●	●			■	■	■	■	■														
INTRA PFC 22	●	●	●	●								■	■	■										
<sup>1</sup> INTRA PRC 2	●	●	●	●																				
INTRA PRC 68	●	●	●	●	●							■	■	■	■						■	■	■	
INTRA PXC 100	●		●	●	●																	■	■	■

**Cross-reference** see also product groups **G**, **T** and **Z**

**Note** product selection depends on material, cross-section and size of stampings

**Footnote** <sup>1</sup> subject to VOC duty

**Material/operation phase**

- A** = Aluminium
- B** = Nonferrous metals
- F** = Normal machining
- O** = Independent of material
- R** = Heavy machining
- X** = Extreme machining

**Application rating**

- = PANOLIN recommendation
- = Primary application
- = Secondary application

## T – Deep-drawing (Tiefzug)

Operations	Deep-drawing					Punching					Forming					Machining										
																Turning Drilling Milling			Deep- drilling							
Product	A	B	F	R	X	A	B	F	R	X	A	B	F	R	X	A	B	F	R	X	A	B	F	R	X	
INTRA TFC 22	●	●	●	●	●			■	■	■						■	■	■	■	■						
INTRA TFC 320	●	●	●	●	●									■	■	■										
INTRA TRS 700	●	●	●	●	●									■	■	■										
INTRA TRS 1500	●	●	●	●	●									■	■	■										
INTRA TXC 320	●	●	●	●	●									■	■	■										

## U – Forming (Umformen)

Operations	Forming					Wire-drawing				
	A	B	F	R	X	A	B	F	R	X
INTRA UAC 4	●	●				■				
INTRA UAC 460	●	●				■				
<sup>1</sup> INTRA UFS 15	●	●	●	●	●					
<sup>1</sup> INTRA UFS 20	●	●	●	●	●					
<sup>1</sup> INTRA UFS 25	●	●	●	●	●					
INTRA URC 68	●	●	●	●	●					
<sup>2</sup> INTRA URC 780	●	●	●	●	●					
INTRA URC 800	●	●	●	●	●					

### Cross-reference

see also product group T

### Footnotes

<sup>1</sup> ideal for minimum quantity lubrication

<sup>2</sup> contains additive for better washability

### Material/operation phase

- A** = Aluminium
- B** = Nonferrous metals
- F** = Normal machining
- O** = Independent of material
- R** = Heavy machining
- X** = Extreme machining

### Application rating

- = PANOLIN recommendation
- = Primary application
- = Secondary application

## Z – Machining (Zerspanen)

Operations	Machining															Grinding					Honing					Punching				
	Turning Drilling Milling					Tapping Thread- cutting					Deep- drilling																			
Product	A	B	F	R	X	A	B	F	R	X	A	B	F	R	X	A	B	F	R	X	A	B	F	R	X	A	B	F	R	X
INTRA ZBC 10	●	●	●													■	■	■												
INTRA ZBC 15	●	●	●													■	■	■												
INTRA ZBC 22	●	●	●													■	■	■												
INTRA ZBC 32	●	●	●													■	■	■												
INTRA ZBM 22	●	●	●													■	■	■												
INTRA ZFC 4	●	●	●	●		●	●	●																						
INTRA ZFC 10	●	●	●	●																										
INTRA ZFC 15	●	●	●	●																										
INTRA ZFC 22	●	●	●	●																										
INTRA ZFC 68	●	●	●	●		●	●	●	●																■	■	■			
INTRA ZFM 18	●	●	●	●		●	●	●	●																					
INTRA ZFM 22	●	●	●	●		●	●	●	●																					
INTRA ZFS 40						●	●	●																						
INTRA ZRC 7	●	●	●	●	●			●	●										■	■	■									
INTRA ZRC 10	●	●	●	●	●			●	●		●		●	●	●				■	■	■			■	■	■	■			
INTRA ZRC 22	●	●	●	●	●			●	●		●		●		●				■	■	■			■	■	■	■			
INTRA ZRC 46	●	●	●	●	●			●	●																					
INTRA ZRC 68	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●										■	■	■			
INTRA ZRC 80	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●									■	■	■				
INTRA ZXC 10	●		●	●	●						●		●	●	●															
INTRA ZXM 22	●		●	●	●						●		●	●	●															

### Cross-reference

see also product group **E**, **G**, **P** and **T**

### Notes

all products in this group are VOC-free

depending on material, all products in this group can also be used for broaching, planing, shaping and sawing operations

### Footnotes

<sup>1</sup> ideal for tapping the finest holes

<sup>2</sup> compatible with perchloroethylene washing lines

<sup>3</sup> ideal for machining nonferrous metals, but afterwards clean immediately to prevent discoloration

### Material/operation phase

- A** = Aluminium
- B** = Nonferrous metals
- F** = Normal machining
- O** = Independent of material
- R** = Heavy machining
- X** = Extreme machining

### Application rating

- = PANOLIN recommendation
- = Primary application
- = Secondary application