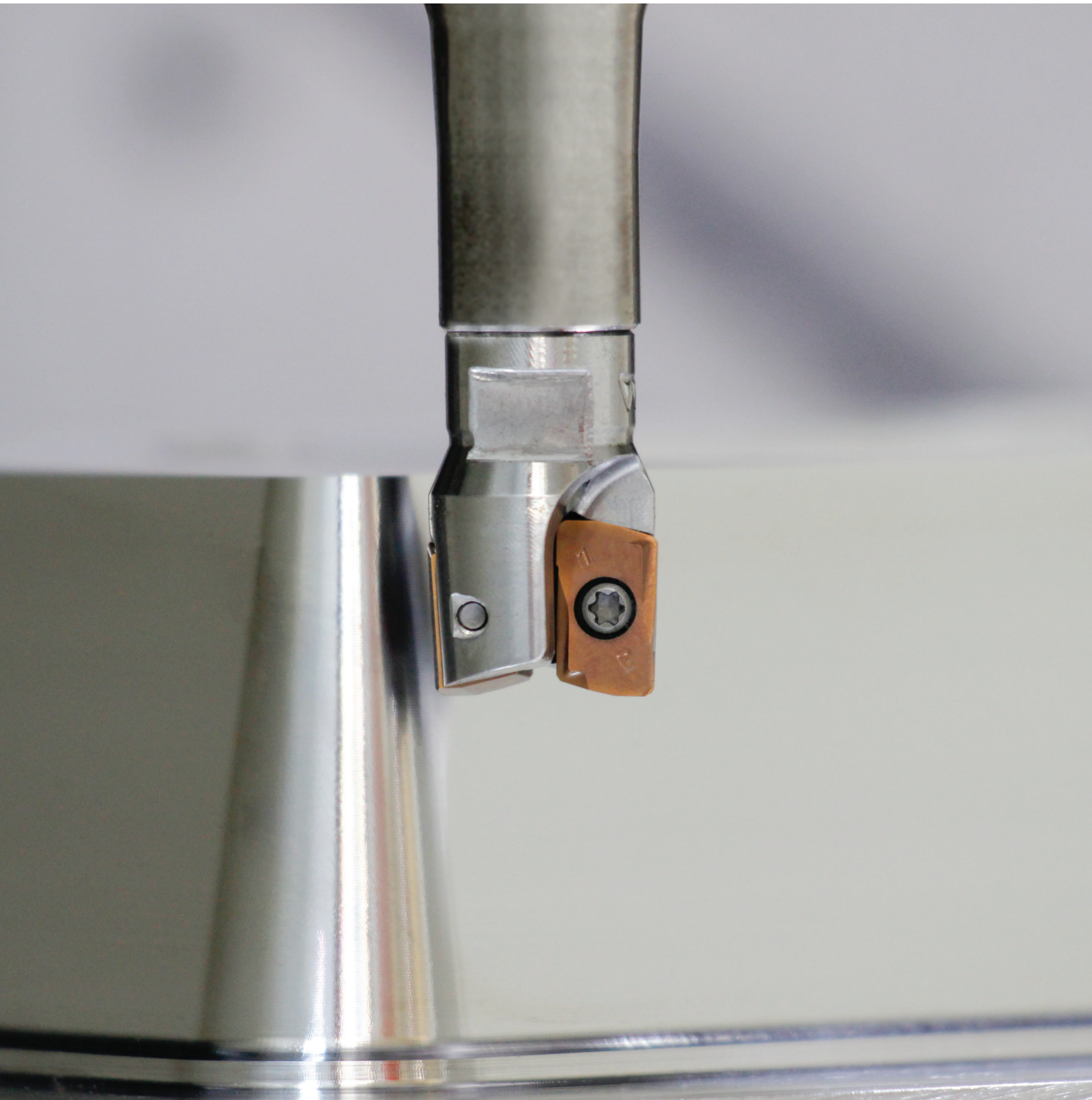
21190

FINEPRO

Premium Tool, Ultimate Finishing!

MILLING

Finishing



FINEPRO 21190

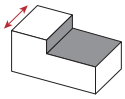
In the precision machining industry, particularly in mould and die making, selecting the right tool is essential to achieving both high quality results and efficient processes. The demand for stability, precision and durability has driven the development of specialised tools that deliver exceptional performance.

Palbit's **FINEPRO 21190** represents the next step up in finishing applications from the LINEPRO 20190. Incorporating advanced technology, these tools are designed to maximise stability and minimise vibration, ensuring superior surface finishes and improved machining efficiency.

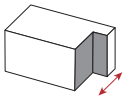
Features & Benefits

- High precision tool for finishing applications in the mould and die industry and general machining.
- Premium toolholder ensuring runout below 0,02 mm.
- Optimized for side operations with excellent surface finishes.
- Threaded toolholder for high rigidity system to improve machining stability.
- Stable, vibration-free machining for precise and consistent results.
- Engineered for XPHW-MH2 inserts, with compatibility for XPET inserts up to a 1,6 mm radius.
- Tool life is extended by the combination of a refined cutting edge and a high performance grade.
- Machining of materials with hardness up to 65 HRC.

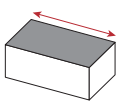
Operations



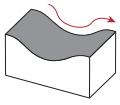
Shouldering



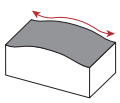
Side Milling



Facing



Profiling



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Compatibility with LINEPRO 20190

Supports XPET inserts up to a 1,6 mm radius, while XPHW fits any radius.

Refined cutting edge

Special feature allows vertical machining with exceptional surface finish.

Optimized pocket

Designed for supreme finishing with XPHW-MH2 inserts.

Precision collar

Ensures stability and minimises runout to less than 0,02 mm.

Finishing premium line

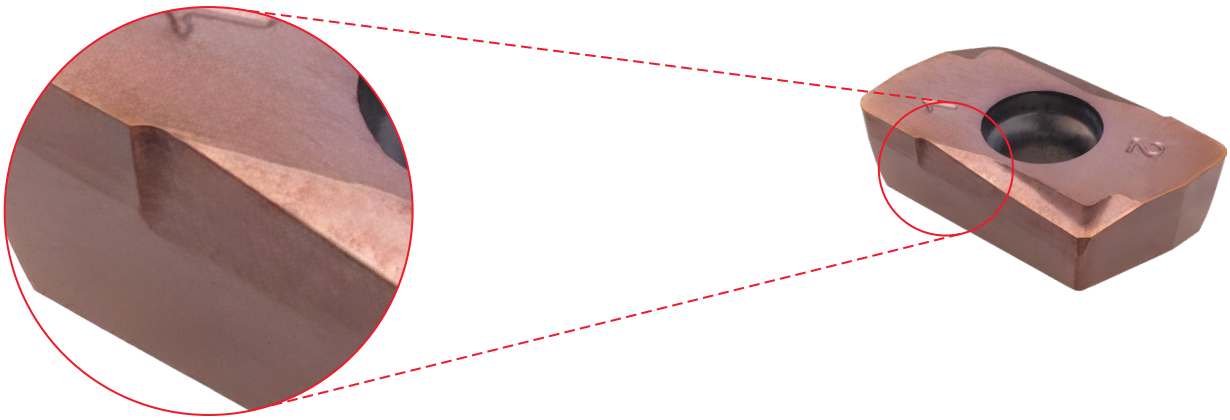
Distinguished by the engraved mark.

FINEPRO 21190

NEW XPHW-MH2

The XPHW-MH2 insert features an advanced cutting edge profile, improving vertical machining performance compared to previous geometries. This innovative design optimizes material engagement, ensuring smoother transitions between multiple passes and superior surface finishes.

Specifically engineered for finishing applications, the XPHW-MH2 effectively minimizes machining marks while maintaining exceptional stability and precision throughout the cutting process. Its unique geometry delivers notable performance enhancements in demanding applications, ensuring consistent, reliable results even when machining the most challenging materials.



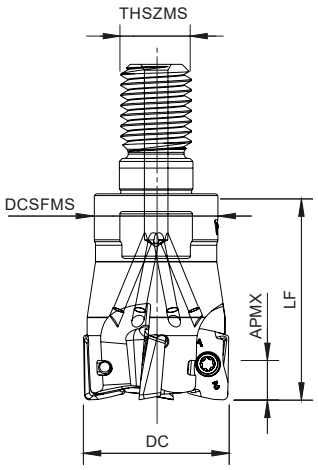
LINEPRO 20090 | 20190 | 20290

The LINEPRO range offers a complete solution for all stages of machining, from roughing to finishing. Featuring the premium FINEPRO 21190 with XPHW-MH2 inserts and the versatile LINEPRO 20090, 20190 and 20290 with XPET | XPHW inserts, our tools deliver unmatched performance, stability and surface finish.

Precision and versatility for every step of your process.

Check the QrCode
for more information

FINEPRO 21190
XPHW 10



Threaded Coupling

KAPR=90° | GAMP=+5°~8°

Order code Código	Reference Referência Referencia	CICT	Dimensions | Dimensões | Dimensiones (mm)				WT	Specifications	Insert Pastilha Inserto	Stock
			DC	THSZMS	DCSFMS	LF		APMX (mm)		
181198400	016R21190-02-05-M08025	2	16	M8	13	25	0,023	2,80	XPHW 10..	◈
181203700	020R21190-03-05-M10030	3	20	M10	18	30	0,048	2,80	XPHW 10..	◈
181203800	025R21190-04-05-M12035	4	25	M12	21	35	0,090	2,80	XPHW 10..	◈
181203900	032R21190-05-06-M16035	5	32	M16	21	35	0,170	2,80	XPHW 10..	◈
181204000	040R21190-06-08-M16043	6	40	M16	29	43	0,250	2,80	XPHW 10..	◈

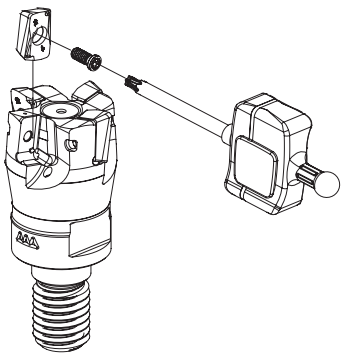
◈ Stock item | Produto de stock | Itens de stock

◯ Available under request | Disponível sobre consulta | Disponible bajo consulta

SPARE PARTS Acessórios | Repuestos

Order separately

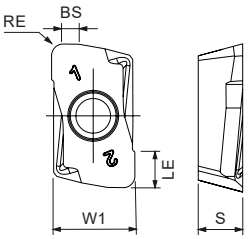
Cutter DC	Insert Screw	Key (Torx)	Key (Torx - Nm)	Torque Value
				
R21190 - 16	P0250503	XT08	DT0812	1,2
R21190 - 20-40	P0250704	XT08	DT0812	1,2



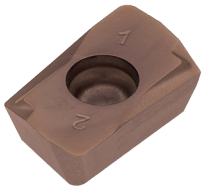
FINEPRO 21190

XPHW 1003... Inserts | Pastilhas | Plaquitas

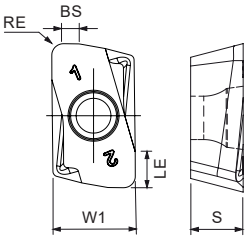
NEW XPHW-MH2



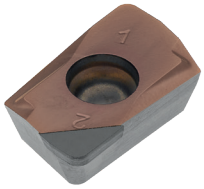
NEW XPHW-MH2



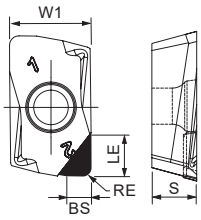
XPHW-MH



XPHW-MH



XPHW-R Z1



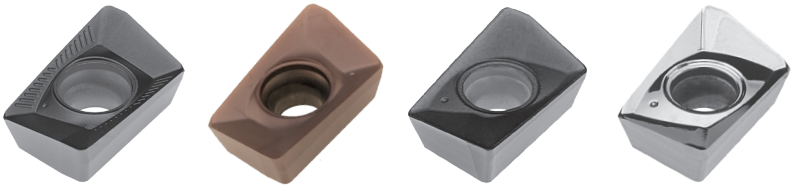
XPHW-R Z1

		P		M	N	S	H				Dimensions Dimensões Dimensiones (mm)				
		PVD		PVD	PCD	PVD	PVD								
	(2) Grade code	8F	4F	4F	D6	4F	X4	8F	X6	4F					
(1) Geometry code	ISO Reference	PHF603	PHF910	PHF910	PDP410	PHF910	PHH603	PHF603	PHH910	PHF910	W1	S	LE	RE	BS
NEW 1113427	XPHW 100308 ZER-MH2	●	◈	◈		◈		●		◈	6,94	3,59	3,00	0,80	2,30
NEW 1113458	XPHW 100310 ZER-MH2	●	◈	◈		◈		●		◈	6,94	3,59	3,00	1,00	2,30
NEW 1113459	XPHW 100320 ZER-MH2	●	◈	◈		◈		●		◈	6,94	3,59	3,00	2,00	2,30
1112500	XPHW 100308 ZER-MH						●		◈		6,95	3,60	3,00	0,80	1,50
1112736	XPHW 100310 ZER-MH						●				6,95	3,60	3,00	1,00	1,30
1112735	XPHW 100320 ZER-MH						●				6,95	3,60	3,00	1,20	0,30
1112556	XPHW 100308 R Z1				◈						6,95	3,60	3,80	0,80	1,50

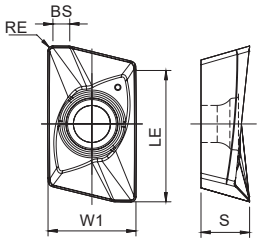
● First choice | Primeira opção | 1ª opción ◈ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

XPET 1003... Inserts | Pastilhas | Plaquitas



XPET-LP XPET-LS XPET-MP XPET-LN



XPET-LP | LS | MP | LN

		P				M	K					N	S	Dimensions Dimensões Dimensiones (mm)				
		CVD	PVD			PVD	CVD		PVD			UNC	PVD					
	(2) Grade code	T9	X5	T1	P4	X9	L5	L9	X5	T1	P4	10	X9					
(1) Geometry code	ISO Reference	PHS740	PHP910	PHP920	PHP930	PHH930	PH5705	PH5740	PHP910	PHP920	PHP930	PH0910	PHH930	W1	S	LE	RE	BS
1113132	XPET 100302 PDER-LP					◈							◈	6,95	3,96	10,50	0,20	1,50
1111980	XPET 100304 PDER-LP			◈	◈	◈				◈	◈		◈	6,95	3,96	10,50	0,40	1,30
1111981	XPET 100308 PDER-LP	◈		◈	◈	◈				◈	◈		◈	6,95	3,96	10,50	0,80	1,40
1112022	XPET 100316 PDER-LP			◈	◈	◈				◈	◈		◈	6,95	3,96	10,50	1,60	0,80
1113365	XPET 100304 PDER-LS			◈		◈				◈			◈	6,95	3,96	10,50	0,40	1,90
1112197	XPET 100308 PDER-LS			◈		◈				◈			◈	6,95	3,96	10,50	0,80	1,50
1113358	XPET 100312 PDER-LS			◈		◈				◈			◈	6,95	3,96	10,50	1,20	1,00
1113366	XPET 100316 PDER-LS			◈		◈				◈			◈	6,95	3,96	10,50	1,60	0,80
1111982	XPET 100304 PDSR-MP		○	◈	◈		◈	◈	○	◈	◈			6,95	3,96	10,50	0,40	1,10
1111983	XPET 100308 PDSR-MP	◈	◈	◈	◈		◈	◈	◈	◈	◈			6,95	3,96	10,50	0,80	1,35
1111984	XPET 100304 PDFR-LN											◈		6,95	3,96	10,50	0,40	0,75
1112906	XPET 100308 PDFR-LN											◈		6,95	3,96	10,50	0,80	1,05
1111985	XPET 100312 PDFR-LN											◈		6,95	3,96	10,50	1,20	0,75

◈ First choice | Primeira opção | 1ª opción ◈ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

RECOMMENDED CUTTING CONDITIONS Condições de corte recomendadas | Condiciones de corte recomendables

ISO	PSM	Material	HB (Brinell)	Vc (m/min) ← Wear Resistance								Toughness →	
				PH0910	PHF603	PHH603	PHP910	PHF910	PHP920	PHP930	PHH930	PH5740	PHS740
P	1	Unalloyed Steel	125-220	-	-	-	180-250	180-250	180-250	160-230	-	-	140-220
	2	Low-Alloyed Steel	220-280	-	-	-	160-240	160-240	160-230	140-210	-	-	120-200
	3	High-Alloyed Steel	280-380	-	180-310	180-310	140-230	140-230	140-220	120-200	-	-	100-190
M	4	SS - Ferritic / Martensitic	200-330	-	-	-	-	140-210	-	-	140-210	-	-
	5	SS - Austenitic	200-330	-	-	-	-	120-170	-	-	120-170	-	-
	6	SS - Austenitic-ferritic (Duplex)	230-260	-	-	-	-	100-150	-	-	100-150	-	-
K	7	Malleable Cast Iron	130-230	-	-	-	180-300	-	160-270	150-250	-	160-260	-
	8	Grey Cast Iron	180-245	-	-	-	160-250	-	140-250	140-230	-	140-240	-
	9	Nodular Cast iron	160-250	-	-	-	150-210	-	120-210	100-200	-	120-200	-
N	10	Aluminium and Non Ferrous	30-130	100-2000	-	-	-	-	-	-	-	-	800-3000
S	11	Heat Resistant Super Alloys	200-320	-	-	-	-	30-110	-	-	-	-	-
H	12	Hardened Steels	40-65 HRC	-	80-120	70-270	-	80-120	-	-	-	-	-

ISO	PSM	Material	HB (Brinell)	Feed fz (mm/t)							NEW
				XPET 10.. LP	XPET 10.. LS	XPET 10.. MP	XPET 10.. LN	XPET 10.. HF	XPHW 10.. R Z1	XPHW 10.. MH	XPHW 10.. MH2
P	1	Unalloyed Steel	125-220	0,08-0,20	-	0,10-0,25	-	0,40-0,80	-	0,10-0,25	0,10-0,15
	2	Low-Alloyed Steel	220-280	0,08-0,20	-	0,10-0,20	-	0,40-0,80	-	0,10-0,25	0,10-0,15
	3	High-Alloyed Steel	280-380	0,08-0,15	-	0,10-0,20	-	0,40-0,60	-	0,10-0,25	0,10-0,12
M	4	SS - Ferritic / Martensitic	200-330	0,08-0,20	0,08-0,20	0,10-0,20	-	0,40-0,70	-	-	0,10-0,15
	5	SS - Austenitic	200-330	0,08-0,20	0,08-0,20	0,10-0,20	-	0,40-0,70	-	-	0,10-0,15
	6	SS - Austenitic-ferritic (Duplex)	230-260	0,08-0,15	0,08-0,15	0,10-0,20	-	0,40-0,60	-	-	0,10-0,15
K	7	Malleable Cast Iron	130-230	0,08-0,20	-	0,10-0,25	-	0,50-0,80	-	-	-
	8	Grey Cast Iron	180-245	0,08-0,20	-	0,10-0,25	-	0,50-0,80	-	-	-
	9	Nodular Cast iron	160-250	0,08-0,20	-	0,10-0,20	-	0,50-0,60	-	-	-
N	10	Aluminium and Non Ferrous	30-130	-	-	-	0,07-0,25	-	0,10-0,25	-	-
S	11	Heat Resistant Super Alloys	200-320	0,05-0,07	0,05-0,07	-	-	0,40-0,60	-	-	0,08-0,12
H	12	Hardened Steels	40-65 HRC	-	-	-	-	-	-	0,08-0,15	0,05-0,10

(Note 3) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:
- When using long shank;
- When application has poor clamping rigidity or when using a low rigidity machine.

CHIP BREAKER SELECTION GUIDE Guia para aplicações do quebra-aparas | Guía para aplicación del rompevirutas

ISO	PSM	Material	HB (Brinell)	Chip breaker application	
				1st choice	2nd choice
P	1	Unalloyed Steel	125-220	XPHW 10 ... MH2	XPHW 10 ... MH
	2	Low-Alloyed Steel	220-280	XPHW 10 ... MH2	XPHW 10 ... MH
	3	High-Alloyed Steel	280-380	XPHW 10 ... MH2	-
M	4	SS - Ferritic / Martensitic	200-330	XPHW 10 ... MH2	XPHW 10 ... MH
	5	SS - Austenitic	200-330	XPHW 10 ... MH2	XPHW 10 ... MH
	6	SS - Austenitic-ferritic (Duplex)	230-260	XPHW 10 ... MH2	XPHW 10 ... MH
K	7	Malleable Cast Iron	130-230	XPET 10 ... LP	XPET 10 ... MP
	8	Grey Cast Iron	180-245	XPET 10 ... MP	-
	9	Nodular Cast iron	160-250	XPET 10 ... MP	-
N	10	Aluminium and Non Ferrous	30-130	XPET 10 ... LN/R Z1	-
S	11	Heat Resistant Super Alloys	200-320	XPHW 10 ... MH2	XPHW 10 ... MH
H	12	Hardened Steels	40-65 HRC	XPHW 10 ... MH2	XPHW 10 ... MH

GRADES SELECTION GUIDE Guia para selecção de graus | Tabla para selección de calidades

ISO	PSM	Material	HB (Brinell)	Grades								
				← Wear Resistance								Toughness →
				PHF603	PHH603	PHP910	PHF910	PHP920	PHP930	PHH930	PH5740	PHS740
P	1	Unalloyed Steel	125-220			✓	✓	✓	✓			✓
	2	Low-Alloyed Steel	220-280			✓	✓	✓	✓			✓
	3	High-Alloyed Steel	280-380	✓	✓	✓	✓	✓	✓			✓
M	4	SS - Ferritic / Martensitic	200-330				✓			✓		
	5	SS - Austenitic	200-330				✓			✓		
	6	SS - Austenitic-ferritic (Duplex)	230-260				✓			✓		
K	7	Malleable Cast Iron	130-230			✓		✓	✓		✓	
	8	Grey Cast Iron	180-245			✓		✓	✓		✓	
	9	Nodular Cast iron	160-250			✓		✓	✓		✓	
N	10	Aluminium and Non Ferrous	30-130									
S	11	Heat Resistant Super Alloys	200-320				✓					
H	12	Hardened Steels	40-65 HRC	✓	✓		✓					

Good Conditions Average Conditions Difficult Conditions

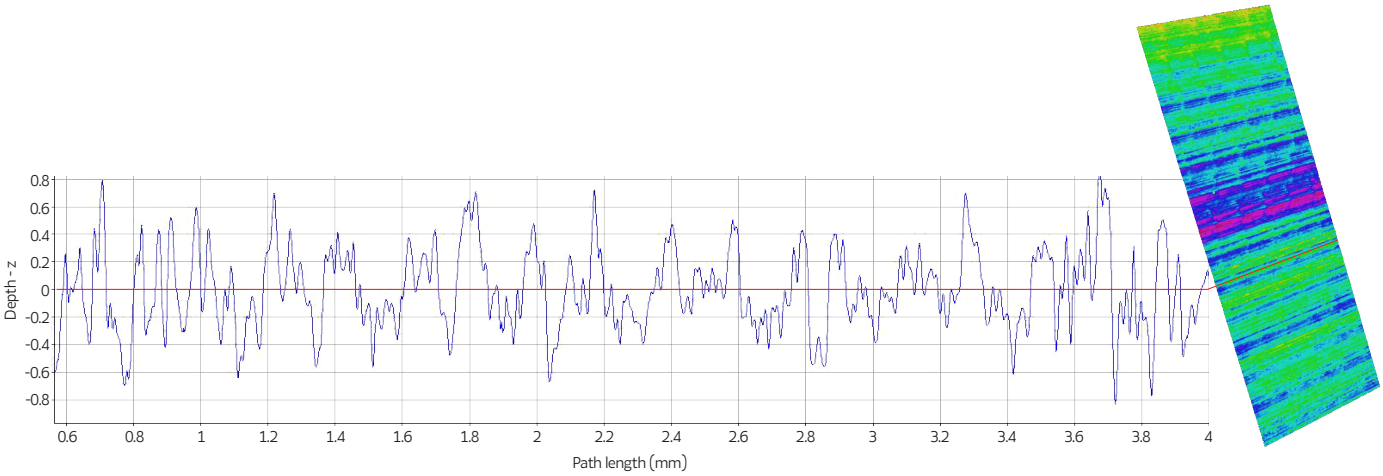
TEST REPORT Relatório de Teste | Informe de Prueba

Workpiece Material: Steel 1.2738 (31~36 HRC)

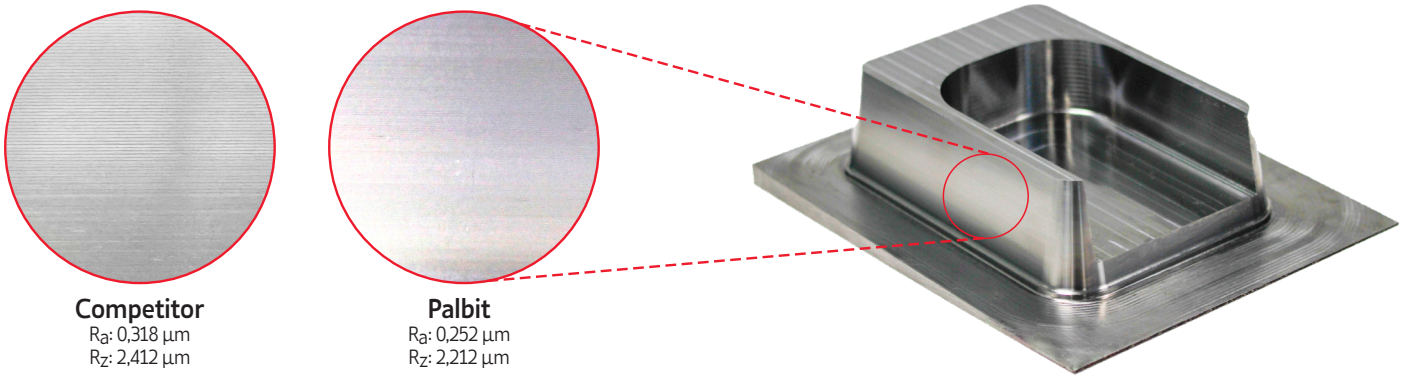
Coolant: Without coolant

SURFACE FINISHING

		Cutting conditions				Roughness	
Insert	Operation	V_c (m/min)	f_z (mm/t)	APMX (mm)	a_e (mm)	R_a (µm)	R_z (µm)
XPHW 100320 ZER-MH2	Facing (Top)	200	0,1	0,2	9,6	**0,40-0,52**	**2,60-3,40**
	80º Wall	200	0,1	0,2	0,2	**0,21-0,32**	**1,80-2,70**
XPHW 100308 ZER-MH2	Facing (Bottom)	200	0,1	0,2	9,6	**0,49-0,59**	**3,10-3,90**
	90º Wall	200	0,1	2,0	0,2	**0,32-0,42**	**2,05-2,90**



The R_a value of 0.212 µm was obtained through experimental determination of surface roughness on an inclined wall case study, performed after 3D analysis of the geometry.



Our FINEPRO 21190 line offers superior cutting accuracy and vibration reduction for inclined wall finishing, providing a smooth, mark-free surface with a polished appearance and ensures a surface roughness reduction to 0,25 µm.

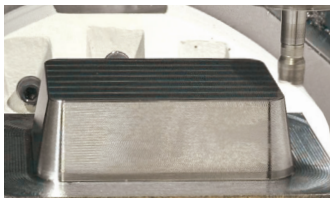
TEST REPORT Relatório de Teste | Informe de Prueba

Workpiece Material: Steel 1.2738 (31~36 HRC)

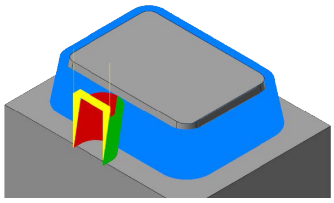
Coolant: Without coolant

TOOL LIFE

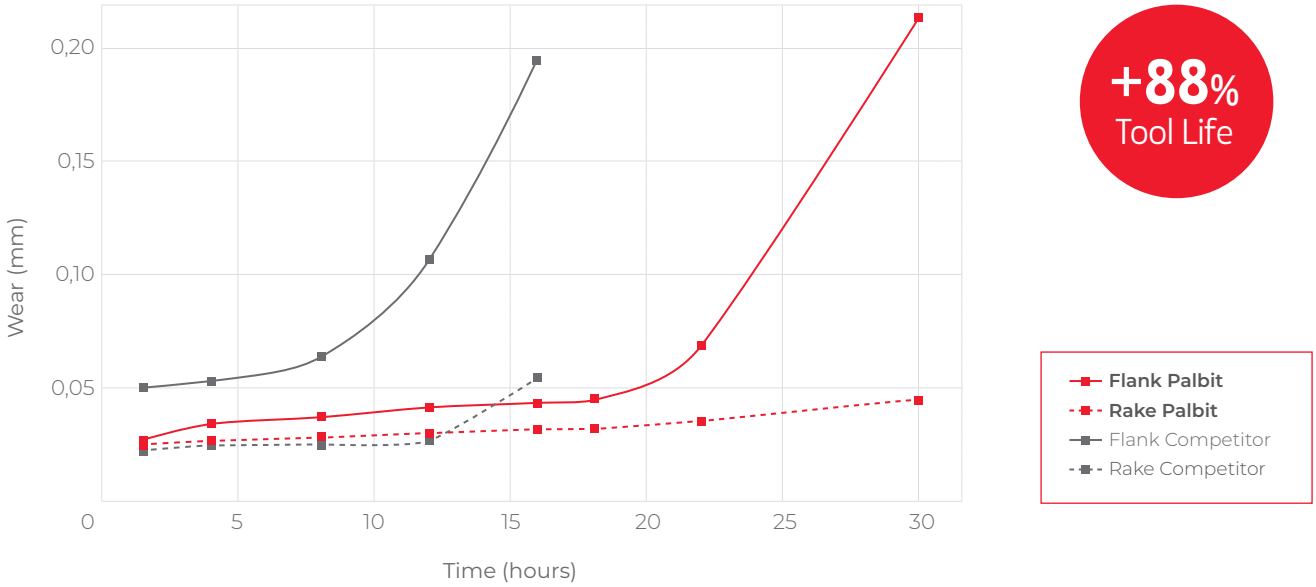
Toolholder	016R21190-02-05-M08025
Insert	XPHW 100308 ZER-MH2 PHF603
Operation	Wall operations at 80°
Cutting speed: Vc	200 m/min
Feed per tooth: fz	0,10 mm/t
Depth of cut: a_p	0,15 mm
Stepover : a_e	a_e = 0,16 mm (1%)
Time	16 hours | 30 hours



Workpiece to machine

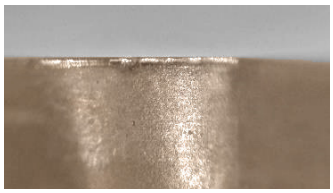


Workpiece CAM program

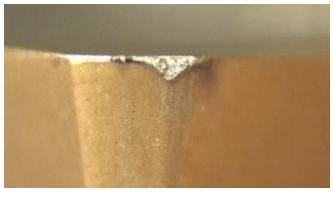


+88%
Tool Life

Palbit XPHW-MH2

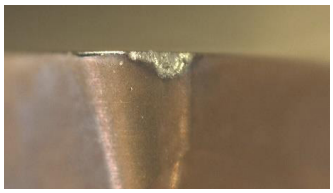


Competitor equivalent



Tool wear after 16 hours of machining

Palbit XPHW-MH2



Tool wear after 30 hours of machining

21190

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