

# Metal Removal Neat Oils

	PRODUCT	CATEGORY		PROPERTY	Ester	S Content	P Content	Ca Content	Viscosity @ 40 °C cSt	Flash point (COC)	Copper staining	MATERIALS	Ferrous	Aluminium alloys	Copper alloys	Titanium	Carbide tool	BENEFITS	
HONING SUPER-FINISHING	QUAKERCUT® 005 XP (BINOL CUT 5)	Honing Grinding Tools	Ester	Medium Duty	●				5	188	1b	●	●	●	●	●		● Contains or Recommended ○ Some traces MO: Mineral oil SHP: Synthetic High Performance technology based on GTL, CTL, GRILL mineral oils	
	CUT-MAX® 912-5	Honing Grinding	SHP	Light Duty	●	●	●		5	180	1b	●	●	●	●			The below information should only be used as a guide. In order to check the suitability for your particular application please consult a QuakerHoughton representative.	
	CUT-MAX® HO 5	Honing	MO	Light Duty	●				5	140	1b	●	●	●				Label free honing and grinding oil based on renewable vegetable raw materials readily biodegradable in soil and water. Increased tool life, Low consumption, low oil mist, cleaner working environment and good skin compatibility. Easy filtration with with Transor filters. In use at several tool manufacturers like Sandvik.	
	MACRON® 205 M-5	Honing Superfinish Grinding	MO	Light Duty	●	●			4	120	1a		●	●	●				Honing, finishing and grinding oil based on Syn2Oil technology. High flushing power to clean stones and reduce black staining of the machined parts.
GRINDING	CUT-MAX® 905-5	Grinding Tools Grinding	SHP	Medium Duty	●	●	●		5	150	1b	●	●	●	●	●			Honing oil based on sustainable mineral oils low aromatic content. Used as honing and Lapping oil with all kind of abrasives. Has very high flushing power to clean honing and finishing stones.
	MACRON® 2429 S-8	Grinding Tools Grinding	MO	Medium Duty	●	●	●		8	170	1b	●	●	●		●		Universal honing, superfinishing and grinding oil based on hydro treated mineral oil. Used also for fine machining of aluminum and yellow metals. Approval/Recommendations: Gehringer - Traub Index	
	QUAKERCUT® 010 XP (BINOL CUT 10)	Grinding Grinding Tools	Ester	Medium Duty	●				11	232	1a	●	●	●	●	●			Calcium free grinding oil based on Syn2Oil technology. Inhibited against cobalt leaching for the grinding of cemented carbide with diamond wheels. The product is also suitable for steels grinding with CBN and ceramic wheels at high cutting speeds. The selection of additives along with low viscosity allows finest filtration even below 1 µm mesh.
	CUT-MAX® 901-10	Grinding Honing Grinding Tools	SHP	Light Duty	●	●	●	●	9	200	1b	●	●	●		●			Grinding oil based on HC mineral oils very low aromatic content, inhibited against cobalt leaching. Main application is for grinding cemented carbide with diamond wheels. The product is also suitable for grinding steel with CBN and ceramic wheels at high Cutting speeds. The selection of additives along with low viscosity allows finest filtration. Approvals/Recommendations: Walter, Schuette, Junker, Transor, Sandvik.
	CUT-MAX® 906-10	Grinding	SHP	Heavy Duty	●	●	●	●	10	180	1b	●	●	●					Label free high performance grinding and machining oil based on renewable raw materials readily biodegradable in soil and water. Increased tool life, low consumption, low oil mist, cleaner working environment and good skin compatibility.
	MACRON® 2425 S-14	Grinding Tools Grinding	MO	Medium Duty	●	●	●		13	180	3a	●	●	●	●				Honing, grinding and finishing oil based on Syn2Oil technology. The oil is designed for use with fine filtration units. Its air release properties allows high Cutting speeds and feeds. Approval/Recommendation: Junker.
					●	●	●		10	180	1b	●	●	●					Grinding oil based on Syn2Oil technology for steel grinding with CBN or ceramic wheels at high Cutting speeds. Main application in gearbox manufacturing, the EP package is designed for high speed hobbing. Has high electric conductivity as required by some MTMs. Approvals: Kapp Niles.
					●	●	●		13	180	3a	●	●	●	●				Versatile grinding oil based on sustainable MO base oils. Used for flute grinding on high-speed steel as well in combination with ceramic- and diamond- or CBN wheels. Used also for grinding of spiral toothed bevel gears and flat or cylindrical grinding processes on complete range of steels and non-ferrous metals. Approvals: Junker, Liebherr, Klingelberg, Kapp Niles.

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MACHINING	GARIA® 201 F-10	Cutting Grinding	MO	Light Duty	●	●	●		10	165	4a		●	●					● Contains or Recommended ○ Some traces MO: Mineral oil SHP: Synthetic High Performance technology based on GTL, CTL, GRILL mineral oils
	CUT-MAX® 903-12	Cutting Deep drilling	SHP	Heavy Duty	●	●	●	○	12	190	4c		●	●	●				The below information should only be used as a guide. In order to check the suitability for your particular application please consult a QuakerHoughton representative.
	CUT-MAX® 913-12	Cutting	SHP	Medium Duty	●	●	●		12	190	1b		●	●	●	●			
	QUAKERCUT® 4150 EPS	Cutting	MO	Heavy Duty	●	●	●	●	15	188	1a		●	●	●	●			
	MACRON® 600 M-16	Cutting	MO	Heavy Duty	●	●	●	●	16	180	1b		●	●	●	●			
	QUAKERCUT® 020 XP (BINOL CUT 20)	Cutting	Ester	Medium Duty	●				20	200	1a		●	●	●	●			
	MACRON® 805 M-20 VEG	Cutting	Ester	Heavy Duty	●	●	●		20	230	1b		●	●	●	●			
	CUT-MAX® 903-22	Cutting	SHP	Heavy Duty	●	●	●		22	220	4c		●	●					
	QUAKERCUT® 4220 EPS	Cutting	MO	Heavy Duty	●	●	●	●	24	198	1a		●	●	●	●			
DEEP DRILLING	GARIA® 601 M-8	Deep Drilling	MO	Heavy Duty	●	●	●		8	160	4c		●	●					
	CUT-MAX® 902-10	Deep drilling Grinding	SHP	Medium Duty	●	●	●	○	11	200	4b		●						
	GARIA® 404 M-10	Deep drilling Grinding	MO	Heavy Duty	●	●	●		10	165	4b		●						
	GARIA® 601 M-12	Deep Drilling	MO	Heavy Duty	●	●	●	○	12	175	4b		●	●					

# Metal Removal Neat Oils



BROUCHING	PRODUCT	CATEGORY	Ester	Heavy Duty +	PROPERTY			Viscosity @ 40 °C cSt	Flash point (COC)	Copper staining	MATERIALS	Ferrous	Aluminium alloys	Copper alloys	Titanium	Carbide tool	BENEFITS
						S Content	P Content										
BROUCHING	GARIA® 805 M-15 VEG	Broaching Deep Drilling	Ester	Heavy Duty +	●	●	●	15	190	4c	●	●	●			Oil based on synthetic esters from renewable sources. Designed for heavy duty operations such as gear shaping, hobbing, shaving, deep drilling and broaching in a wide range of materials as steel of high tensile strength, stainless steel, aluminium, titanium and nickel alloys. Approvals/Recommendations: TBT Tiefbohrtechnik	
	CUT-MAX® BR 30	Broaching	MO	Heavy Duty +	●	●	●	30	180	4a	●					Chlorine free neat oil recommended for broaching and other severe machining operations. Its special additivition ensures high tool life, superior to chlorine-containing products. Broaching steel up to 1000 N/mm2 and at speeds up to 60 m/min. Based on HT mineral oil with low aromatic content. Approval: Klink	
	CUT-MAX® ML 501	MQL	Fatty Alcohol	Medium Duty				27	190	1a	●	●	●	●		MQL based on high purity fatty alcohols. It is designed to be easy washable when in process or final cleaning is required. It provides good lubricity together with clean environment mainly when machining of aluminium or ferrous materials. Approval/Recommendation: Bielomatik.	
MQL	MACRON® SL 501	MQL	Fatty Alcohol	Medium Duty				27	190	1a	●	●	●	●		MQL based on high purity fatty alcohols. It provides good lubricity together with clean environment mainly when machining of aluminium or ferrous materials. Approvals/Recommendations: Bielomatik, Grob	
	QUAKERCUT® MQL 036 AW	MQL	Ester	Medium Duty	●	●		36	278	1a	●	●	●	●		High performance MQL based on ester technology from renewable raw materials. Containing anti-wear additivition sulfur free. It is designed to be easy washable when in process or final wash is required. Suitable for ferrous and non-ferrous materials.	
	QUAKERCUT® MQL 050 S	MQL	Ester	Heavy Duty	●	●		47	>250	2c	●	●	●	●		MQL based on synthetic esters technology. Containing anti-wear additivition sulfur free. Suitable for ferrous and non ferrous materials.	
ELECTRO-EROSION	GARIA® SL 601	MQL	Ester	Heavy Duty	●	●	●	50	240	4a	●	●	●			MQL based on synthetic esters from renewable sources. Due to the small amount of unsaturated fatty acids the product shows high hydrolytic and oxidation stability. Used for many applications such as sawing, drilling or tapping. It has enhanced lubricity to increase tool life.	
	MACRON® EDM 65	EDM	Solvent					1,2	66	1b	●	●	●	●		Universal spark erosion oil based on synthetic isoparaffinic hydrocarbons with very low content of aromatics for improved working conditions. Shows very good results with both rough and fine machining. Even in very small erosion slots, the product shows a good flushing performance. Approved by leading MTM.	
	MACRON® EDM 110	EDM	Solvent					2,4	100	1a	●	●	●	●		EDM fluid for rough and fine machining. Has high removal rate and good flushing power. Product is also used for EDT texturizing of steel rollers. With the benefits of low electrical conductivity, neutral odor,high oxydation stability, low evaporation. Approvals/Recommendations: Makino, Waldrich.	
	MACRON® EDM 130	EDM	MO					4,0	135	1a	●	●	●	●		EDM for rough machining with high removal rate. Also used for EDT texturizing of steel rollers. With the benefits of low electrical conductivity, neutral odor,high oxydation stability, low evaporation. Approval/Recommendation: Waldrich.	

● Contains or Recommended  
 ○ Some traces  
 MO: Mineral oil  
 SHP: Synthetic High Performance technology based on GTL, CTL, GRILL mineral oils

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# FICHA DE RENDIMIENTO

## SERIE QUAKERCUT® XP

ACEITES DE CORTE EXTRA DE ALTO RENDIMIENTO DE RECURSOS RENOVABLES

### Introducción

Los productos de la serie QUAKERCUT® XP son aceites de corte extra de alto rendimiento basados en tecnología de ésteres avanzada de materias primas renovables. Con más de 20 años de experiencia en Binol, el líder del mercado Nórdico, la Serie QUAKERCUT® XP cuenta con una reconocida trayectoria de aportación de beneficios operativos, en materia de salud y seguridad y medio-ambientales a una extensa cartera de clientes en las industrias automotriz y mecánica.

### Beneficios

#### OPERATIVOS

- Mayor vida útil de las herramientas
- Bajo consumo de aceite
- Consumo reducido de material de filtro

#### MEDIOAMBIENTALES

- De recursos renovables
- Biodegradable

#### SALUD Y SEGURIDAD

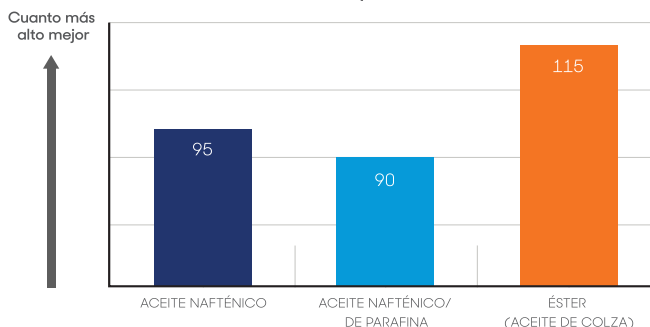
- Reducción de la neblina de aceite
- Reducción del riesgo de incendio
- Buena compatibilidad con la piel
- Entorno de trabajo más limpio
- Sin etiquetado según el reglamento CLP

### Beneficios Operativos

#### MAYOR VIDA ÚTIL DE LAS HERRAMIENTAS

a Serie QUAKERCUT® XP ofrece una mejor lubricidad debido a la enorme adsorción de los fluidos a base de ésteres sobre superficies metálicas. Forman una película lubricante resistente que garantiza una mayor vida útil de las herramientas y mejores acabados superficiales.

% de eficiencia del par motor en el roscado



#### Mejor Lubricidad

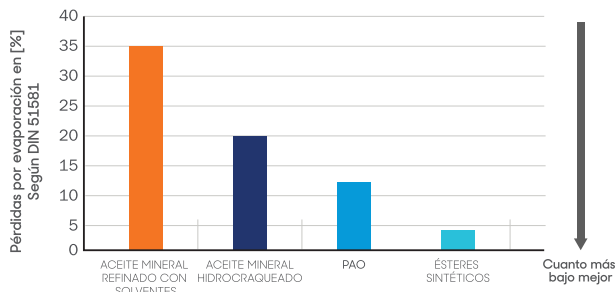
A diferencia de los aceites minerales, los ésteres tienen un carácter polar muy fuerte proporcionando una firme adhesión a la superficie metálica y un mejor rendimiento de lubricación que los aceites minerales estándar.

#### BAJO CONSUMO DE ACEITE

- La Serie QUAKERCUT® XP tiene un grado de evaporación muy bajo en comparación con los aceites minerales, incluso los sintéticos del tipo PAO, cuyo grado es entre 2 y 7 veces más bajo. No solo se reduce el consumo de aceite, sino que también disminuye en gran medida la neblina de aceite proporcionando un entorno de trabajo mucho mejor
- La Serie QUAKERCUT® XP tiene un índice de viscosidad muy alto (180-200), que es superior al de los aceites minerales estándar (80-120) y los aceites hidrocracados (120-150). Por ello, QUAKERCUT® XP tiene una viscosidad a temperatura de funcionamiento menor que la de los aceites minerales, de ahí su mejor filtrabilidad y menor consumo

# SERIE QUAKERCUT® XP

Mejor aún en comparación con los aceites minerales hidrocraqueados o Polialfaolefinas (PAO)



## Baja Evaporación

Según consta en la prueba Noack Este método de prueba determina la pérdida por evaporación de los aceites lubricantes mediante la medición de la pérdida porcentual de masa durante 1 hora a 250 °C (ASTM D5800-DIN51581) Fluidos de base de igual viscosidad



## Una Amplia Gama De Operaciones

La Serie QUAKERCUT® XP puede utilizarse en todas las operaciones de metalmecánica, desde rectificado, rectificado de herramientas, super acabado para los grados de viscosidad bajos hasta las operaciones más intensas de roscado, brochado y tallado de engranajes.

## Beneficios En Materia De Salud Y Seguridad

### SIN ETIQUETADO CON EL NUEVO REGLAMENTO CLP

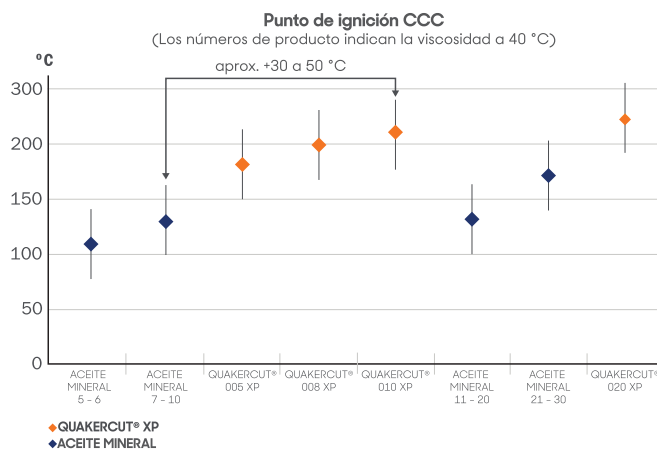
- Con referencia al nuevo reglamento CLP (Clasificación, Etiquetado y Envasado de sustancias químicas), los aceites minerales con una viscosidad inferior a 20,5 cSt (mm<sup>2</sup>/s) a 40 °C están clasificados dentro de la categoría 1 de toxicidad por aspiración (H304, Pueden ser mortales en caso de ingestión y penetración en las vías respiratorias)
- Los productos basados en ésteres como la Serie QUAKERCUT® XP proporcionan una alternativa segura ya que no están clasificados, independientemente de la viscosidad

## BUENA COMPATIBILIDAD CON LA PIEL

- Los estudios sobre piel irritada muestran que el aceite de colza puede ayudar a la piel a proporcionar lípidos a una barrera dañada

## REDUCCIÓN DEL RIESGO DE INCENDIO

- Los aceites minerales, cuyo punto de ignición baja a 110 °C (prueba Cleveland de copa cerrada, CCC, por sus siglas en inglés) para los productos de baja viscosidad (5-6 mm<sup>2</sup>/s), pueden ser un foco de incendio y causar rápidamente costosos períodos de inactividad, costosas reparaciones, posibles lesiones corporales y daños a plantas y equipos
- La Serie QUAKERCUT® XP tiene un punto de ignición de 30 a 50 °C más alto que los aceites minerales de viscosidad equivalente, por lo que reduce considerablemente el riesgo de incendios, especialmente en las aplicaciones que requieren aceites de baja viscosidad



## PUNTO DE IGNICIÓN MÁS ALTO

La Serie QUAKERCUT® XP tiene un punto de ignición de 30 a 50 °C más alto que los aceites minerales de viscosidad equivalente, según consta en la prueba Pensky-Martens de copa cerrada (CCC).



# SERIE QUAKECUT® XP

## Estudio De Caso - Rectificado Con QUAKECUT® 010 XP

### Desafío:

- Aplicación: Rectificado de transmisiones para vehículos pesados
- Máquina: Junker Quickpoint 5002
- Material: Acero endurecido de alta aleación

### Solucion:

- Sin cambio de aceite durante 12 años
- Consumo más bajo (-66 %)
- Neblina de aceite que cae de > 1mg/m<sup>3</sup> a < 0,05 mg/m<sup>3</sup>
- Sin notificaciones de irritación de la piel o las vías respiratorias
- Limpieza de filtro de una vez cada quince días a una vez cada tres meses
- Ahorro de costos total: 5400 € /año / máquina

## Estudio De Caso - Corte De Engranajes Con QUAKECUT® 020 XP

### Desafío:

- Aplicación: Corte de engranajes
- Máquina: Pfauter P 900 CNC (Máquina talladora vertical de engranajes)
- Material: Acero SIS 2541 (acero CrMoNi)

### Solucion:

- Mayor vida útil de las herramientas (+15 %)
- Consumo más bajo (-30 %)
- Aumento de la productividad (+20 %)
- La neblina de aceite disminuye considerablemente
- Sin notificaciones de irritación de la piel o las vías respiratorias
- Ahorro de costos total: 465 € /año / máquina