

SAFER. MORE EFFICIENT. LONGER SYSTEM LIFE.

Cutting fluids that perform longer than standard cutting fluids* – without boron, biocides or formaldehyde-releasing agents.

Around the world, leading manufacturers are enjoying stable machining conditions and pH levels, with fewer additive top-ups – and reaping cost benefits – with Castrol's XBB cutting fluid technology.

* Proven in lab tests and seen in real production conditions.
** Based on Castrol XBB customer feedback.



Castrol® XBB
users have
reported up to a
90%
reduction
in additive
top-ups**.

IT'S MORE THAN JUST OIL. IT'S LIQUID ENGINEERING.®





 **Castrol**
ALUSOL
XBB



 **Castrol**
HYSOL
XBB

MEET XBB: FLUID TECHNOLOGY THAT MEANS YOU CAN CUT THE COMPROMISE.

XBB is a way of formulating cutting fluids that keeps them performing longer, without boron or biocides. Around the world, metalworking engineers are using XBB fluids to save on additive top-ups, and cut the compromise between productivity, safety and cost.

WORK FOR LONGER – WITHOUT ADDITIVES

Every metalworking engineer knows the distinctive smell of bacteria and fungi contaminating the cutting fluid – but the bad odor is the least of your problems. Microbes also produce acidic by-products in cutting fluids, leading to pH depletion, unstable emulsion and poor performance.

Soluble metalworking fluids need particular care to keep them in good working condition – traditionally, by treating them with service additives to keep them within specification.

That management can be a time-consuming and expensive process. It might seem a relatively small expenditure, but the cost and manpower quickly add up over time – and the process itself can sometimes cause health and safety concerns. It's time for a better way.

STABLE PH MEANS CONSISTENT PERFORMANCE

The majority of cutting fluids need a constant pH level of above 8.9; too much acid — from coolant degradation and microbiological contamination — can impair performance and corrode parts and tools alike, compromising productivity and results.

The only way to avoid these pitfalls is to continually monitor pH levels, along with the concentration and the microbiological makeup of the fluid, and make adjustments accordingly. But with Castrol XBB technology you can enjoy stable manufacturing conditions – and consistent results – for far longer.

Castrol® Alusol® and Castrol® Hysol® with XBB technology neutralize up to 44% more acids than conventional fluids* – keeping the fluid within operational parameters, and protecting your productivity and output, for longer.

*Proven in lab tests and seen in real production conditions.

GETTING AHEAD ON SAFETY

If you're currently using biocide additive top-ups in your cutting fluids – or using formulas that use boron or formaldehyde-releasing agents – then you could soon be affected by changes to legislation and best practice.

Recently, Europe's 10th adaption to technical and scientific progress (ATP) classed some formaldehyde-releasing agents as a 1b carcinogen, meaning formulations containing more than 1000ppm of formaldehyde must be labeled as carcinogenic.

Castrol's XBB cutting fluids do not rely on boron, biocides or formaldehyde-releasing agents, so not only does using them protect your team, it also makes it easier to satisfy safety regulations and cut costs – both today and tomorrow.

CONSTANT MANUFACTURING CONDITIONS – WORK HARDER, FOR LONGER

Castrol Alusol XBB and Castrol Hysol XBB fluids use a dual-action chemical buffer that resists changes in pH. The result is better machining performance, for longer than standard cutting fluids* – safeguarding quality, while reducing costs:

- **Reduce** or eliminate the need for expensive treatment additive top-ups
- **Exceed** system lifetime expectations – without biocides, formaldehyde-releasing agents or boron
- **Increase** production efficiency, reduce costs and lessen demands on personnel
- **Extend** fluid life and eliminate unnecessary repairs and interventions

Most importantly, you'll enjoy constant, stable manufacturing conditions – so you can stop worrying about your cutting fluid, and get on with the job.

Cutting fluids with XBB technology achieve longer system life, without boron, biocides or formaldehyde-releasing agents.

* Proven in lab tests and seen in real production conditions.

LOW FOAM IN SOFT WATER CONDITIONS

If your cutting fluid foams in use, it's not lubricating properly. Systems can overflow, bringing production to a halt – and in soft water areas, that's a common problem. Until now.

Both Castrol Alusol SL 61 XBB and Castrol Hysol SL 36 XBB were originally formulated for soft water regions, like Scandinavia, Japan and America's Southern states. Their low-foaming formula means they're especially useful in areas where the water has a low mineral content.

NOW FOR MORE METALS – AND MORE WATER CONDITIONS – THAN EVER

Castrol Hysol SL 35 XBB and Castrol Alusol SL 51 XBB have already become firm favorites among plant managers who were tired of having to choose between quality, safety, productivity and cost.

Now, there are new additions to the family. Castrol Hysol SL 36 XBB and Castrol Alusol SL 61 XBB extend those same benefits to plants working with steel alloys, low-silicon aluminum and soft water conditions – while Castrol Hysol SL 45 XBB is designed for challenging aerospace applications.

KEY BENEFITS:



SOFT WATER
COMPATIBILITY



LONG
SYSTEM LIFE



HIGHER
LUBRICITY



“Both Castrol Alusol SL 61 XBB and Castrol Hysol SL 36 XBB were originally formulated for soft water regions, like Scandinavia, Japan and America’s Southern states”

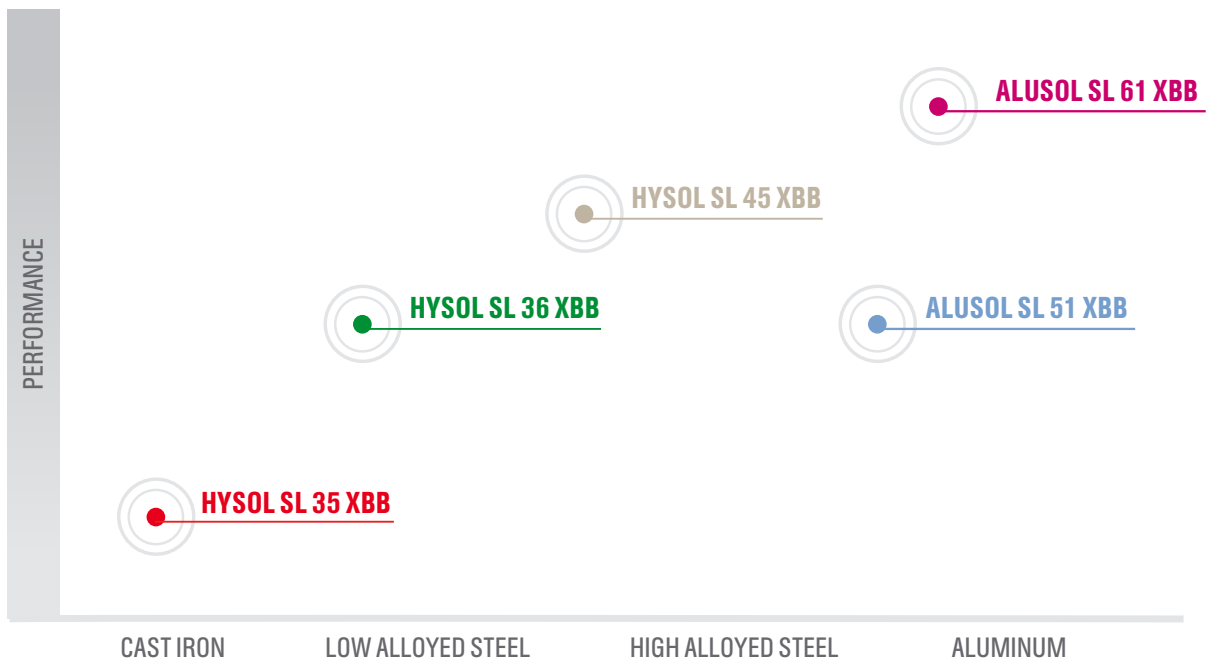
FIND YOUR IDEAL CUTTING FLUID

Castrol's XBB cutting fluid range has been specifically developed to perform better and last longer than conventional alternatives* in a variety of environments.

The XBB technology platform has been designed to make production environments safer and keep in line with increasingly stringent health and safety requirements.

By using Castrol's XBB solutions you can reduce costs without sacrificing performance, and simplify all aspects of fluid management. Take a look at the chart below to see the full spectrum of XBB products.

ALUSOL/HYSOL XBB RANGE



* Proven in lab tests and seen in real production conditions.

** Based on titrating 9 fluids until a pH of 8.5 is reached.



CASTROL HYSOL SL 35 XBB

Castrol Hysol SL 35 XBB is a semi-synthetic, boron- and biocide-free metalworking fluid ideal for grinding steel, and machining low alloyed steel and cast iron. It is formulated to help deliver a long system life and remains effective for longer than conventional alternatives* thanks to its resistance to pH change.



CASTROL HYSOL SL 36 XBB

A boron- and biocide-free cutting fluid for ferrous alloys. Tried and tested by plant-managers. Castrol Hysol SL 36 XBB is ideal for machining cast iron and low alloyed steel, and has also been used successfully with aluminum. It's proven to maintain pH levels in both large central systems and single sump machines. This fluid is also designed to reduce foaming in soft water environments.



CASTROL HYSOL SL 45 XBB

Created specifically for the aerospace industry, Castrol Hysol SL 45 XBB gives outstanding machining performance with titanium, aluminum and high-stainless alloys. Approved by major manufacturers, its boron- and biocide-free formulation means there's no need to compromise between safety and surface finish.



CASTROL ALUSOL SL 51 XBB

Proven to maintain pH at a constant level**, Castrol Alusol SL 51 XBB is an excellent all-round cutting fluid particularly suited to machining aluminum with a high silicon content. It's formulated to last longer than conventional fluids and produces a high-quality finish while reducing the need for service additives.



CASTROL ALUSOL SL 61 XBB

Castrol Alusol SL 61 XBB is ideal for multipurpose machining of aluminum alloys through to low-medium alloyed steel, and is suitable for both large central systems and single sump machines. It is designed to work well in soft and water conditions alike.

Each Castrol XBB product has been engineered to suit the needs of a particular cutting environment, so whether you're working with cast iron or aluminum there's a solution for you. To discover the product best suited to your needs, check out our infographic at [Castrol.com/XBB](https://www.Castrol.com/XBB).



CASTROL ALUSOL SL 51 XBB – THERE IS A DIFFERENT APPROACH TO SYSTEM MAINTENANCE.

When producing precision components for the automotive, machinery and fabricated metal goods industries there are many demands and challenges faced. It is a daily requirement to hit increasingly high production targets, deal with pressure to refine schedules and reduce downtime.

MANUFACTURERS ARE FORCED TO MAKE A CHOICE, WHICH OFTEN RESULTS IN A COMPROMISE ON A DAILY BASIS

- Performance balanced with the need for anti-bacterial treatments
- Biocide use balanced with health and safety requirements
- pH stability balanced with fluid maintenance

Castrol's experts have been working to help combat these conflicting challenges to enable you to manage your cutting fluid maintenance

without compromising overall performance. Castrol has formulated Castrol Alusol SL 51 XBB – a technology that is boron- and biocide-free and ensures:

PRODUCTIVITY FOR LONGER

- Stable fluid with pH control technology
- System cleanliness and waste disposal

FEWER INTERVENTIONS

- Less additive top-ups
- Eliminates or reduces biocide use
- Less manpower

PRECISION PERFORMANCE WITH STABILITY

- Lubricity – tool life, surface finish
- Reduced scrap



PRODUCT ADVANTAGES

- Boron-free to meet boron-free waste requirements
- Organic chlorine- and formaldehyde-free formula that may help you to fulfill aspects of legislative requirements and waste treatment requirements that specify that these chemicals are excluded
- Extended fluid life can help reduce maintenance and machine downtime
- Low foam in recommended water conditions
- Lubrication package designed to try to help to enhance tool life and improve surface finish on aluminum machining
- Good wetting properties can help reduce coolant drag out and help deliver cleaner machine tools and components
- Suitable for a wide range of materials and applications, providing opportunity for product consolidation

PRODUCT APPLICATION

Application	Cast iron	Low alloyed steel	High alloyed stainless steel	Aluminum alloys	Magnesium alloys	Yellow metals
Grinding		●	●	●		●
Milling and turning (general machining)	●	●●	●●	●●		●
Drilling	●	●●	●	●●		●
Reaming and tapping	●	●●	●	●●		●
Broaching	●			●●		●

● Possible application, please consult Castrol prior to use ●● Suggested core application

To learn more about Castrol Alusol SL 51 XBB, and how it can help you perform better for longer, talk to your Castrol sales engineer.



CASTROL ALUSOL SL 61 XBB – CUT OUT THE INTERRUPTIONS WITH A FLUID THAT PERFORMS, LONGER.

Castrol Alusol SL 61 XBB builds on the success of Alusol SL 51 XBB, extending the capabilities of this leading product for those working with a wider range of metals or in soft water areas.

Castrol's unique boron- and biocide-free formula has been proven to maintain pH at a constant level (neutralize up to 44% more acidic material*), ensuring Alusol SL 61 XBB performs better for longer.

It is ideal for demanding aluminum work, including low-silicon applications, with the high lubricity keeping the cutting edge clean, reducing downtime and improving surface quality. With Castrol Alusol SL 61 XBB, not only can you achieve great results at lower concentrations – you can also make big savings.

Ultimately you have less maintenance, less expense and a safer working environment, without ever compromising on performance.

PERFORM BETTER, FOR LONGER

Castrol Alusol SL 61 XBB performs better for longer than standard cutting fluids*, thanks to a pioneering formulation designed to be more resistant to changes in pH caused by microbiological build-up. This means fewer additive top-ups, better results and more efficient production at a lower cost.

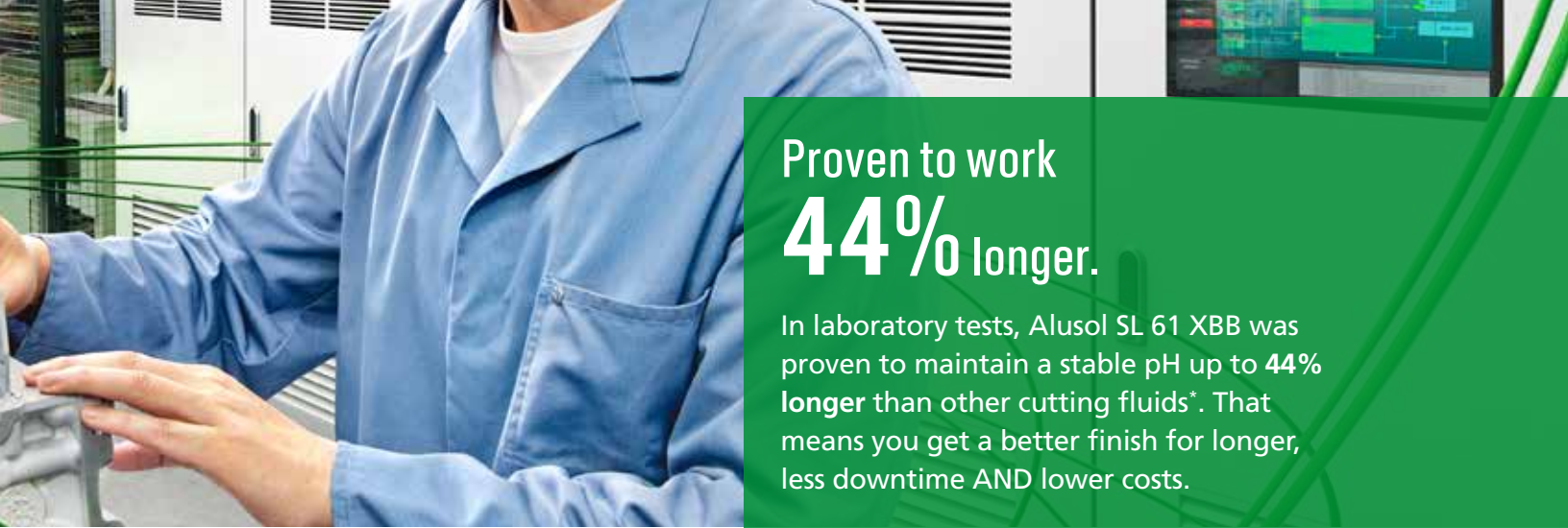
GIVE PRODUCTIVITY A BOOST

The big benefit of extended fluid life is less downtime and fewer interventions. Many cutting fluids need topping up with additives to maintain fluid condition. But Castrol's Alusol SL 61 XBB has been proven to perform continuously without these measures for longer than conventional alternatives**.

This not only gives you constant working conditions, so you can achieve consistently good results, but also safeguards the health and safety of your workers.

* Based on titrating 10 fluids until a pH of 8.5 is reached.

** Proven in lab tests and seen in real production conditions.



Proven to work 44% longer.

In laboratory tests, Alusol SL 61 XBB was proven to maintain a stable pH up to **44% longer** than other cutting fluids*. That means you get a better finish for longer, less downtime AND lower costs.

EXPERIENCE PRECISION PERFORMANCE

Because Castrol Alusol SL 61 XBB performs for longer, it preserves the cutting edge and helps to prevent build-up on the tool resulting in a cleaner, more accurate finish. Ultimately this results in lower scrappage rates and tooling costs and improved production quality.

WHAT OUR USERS SAY

With Castrol Alusol SL 51 XBB, the predecessor to Castrol Alusol SL 61 XBB, a European automotive manufacturing company was able to:

- Make savings on biocides of around **11 Tonnes**
- Make savings on fungicides of around **1.8 Tonnes**
- Reduce the lubricant usage by **34%**

PRODUCT APPLICATION

Application	Cast iron	Low alloyed steel	High alloyed stainless steel	Aluminum alloys	Magnesium alloys	Yellow metals
Grinding		●	●	●		●
Milling and turning (general machining)	●	●●	●●	●●		●
Drilling	●	●●	●	●●		●
Reaming and tapping	●	●●	●	●●		●
Broaching	●			●●		●

● Possible application, please consult Castrol prior to use ●● Suggested core application

To learn more about Castrol Alusol SL 61 XBB, and how it can help you perform better for longer, talk to your Castrol sales engineer.



CASTROL HYSOL SL 35 XBB – CONTROLLING PH JUST GOT EASIER.

Ferrous alloys like cast iron are robust materials that can corrode and often cause difficulty and costly problems to resolve on the shop floor. Leaching of alloy components and bacterial growth can lead to instability in fluid emulsion.

It is a daily requirement to hit increasingly high production targets, deal with pressure to refine schedules and reduce downtime.

MANUFACTURERS ARE FORCED TO MAKE A CHOICE, WHICH OFTEN RESULTS IN A COMPROMISE ON A DAILY BASIS

- Performance balanced with the need for anti-bacterial treatments
- Biocide use balanced with health and safety requirements
- pH stability balanced with fluid maintenance

Castrol's experts have been working to help combat these conflicting challenges to enable you to manage your cutting fluid maintenance without compromising overall performance.

Castrol has formulated Castrol Hysol SL 35 XBB – a technology that is boron- and biocide-free and ensures:

PRODUCTIVITY FOR LONGER

- Stable fluid with pH control technology
- System cleanliness and waste disposal

FEWER INTERVENTIONS

- Can help to reduce fluid additive top-ups
- Eliminates or reduces biocide use
- Lesser manpower



PRODUCT ADVANTAGES

- Extended fluid life can help to reduce maintenance and downtime
- Low foam in recommended water conditions
- Excellent anti-corrosion properties to protect machine tools and parts
- Good wetting properties can help to reduce coolant drag out and help deliver cleaner machine tools and components
- Boron-free to meet boron-free waste requirements where applicable
- Formulated without organic chlorine and formaldehyde-releasing agents, which helps you to fulfill aspects of legislative requirements and waste treatment requirements where applicable

PRODUCT APPLICATION

Application	Cast iron	Low alloyed steel	High alloyed stainless steel	Aluminum alloys	Magnesium alloys	Yellow metals
Grinding	● ●	● ●	● ●			
Milling and turning (general machining)	● ●	● ●	●			
Drilling	● ●	●				
Reaming and tapping	● ●	●				
Broaching	● ●					

● Possible application, please consult Castrol prior to use ●● Suggested core application

To learn more about Castrol Hysol SL 35 XBB, and how it can help your plant perform better for longer, talk to your Castrol sales engineer.



CASTROL HYSOL SL 36 XBB – NO BIOCIDES? NO PROBLEM.

Based on the success of Castrol Hysol SL 35 XBB, this latest addition to the XBB range provides a solution perfect for those machining cast iron and alloyed steel in soft water areas.

Its dual-buffer technology resists pH changes caused by bacterial build-up in your cutting fluid, meaning it performs better for longer than standard cutting fluids*.

Castrol Hysol SL 36 XBB is also both boron- and biocide-free, meaning your working environment is not only more efficient and more competitive, but also safer.

TAKE CONTROL OF pH

Castrol Hysol SL 36 XBB is a cutting fluid that is shown to perform better for longer, thanks to a formula that is more resistant to changes in pH than conventional alternatives*.

This means your production environment is less often interrupted by fluid performance issues and unscheduled maintenance, corrosion is less of an issue and it's far easier to meet your production goals and keep down costs.

TOP PERFORMANCE. FEWER TOP-UPS

The boron- and biocide-free Castrol Hysol SL 36 XBB improves operator conditions and your health and safety profile, but also results in fewer interventions and less monitoring and management of cutting fluids.

Where other coolants need topping up with service additives to keep working well, cutting fluids with Castrol's XBB technology have been proven to perform without these measures for longer than conventional alternatives**.

The fluid's excellent emulsion stability properties result in lower costs, and less time spent maintaining standards – which means more time for production.

* Based on titrating 7 fluids until a pH 7 is reached.

** Proven in lab tests and seen in real production conditions.



REDUCE CORROSION

Castrol Hysol SL 36 XBB's carefully engineered formula helps to protect against corrosion even at lower concentrations, resulting in less machine maintenance, lower costs and fewer rejected products.

PRODUCT APPLICATION

Application	Cast iron	Low alloyed steel	High alloyed stainless steel	Aluminum alloys	Magnesium alloys	Yellow metals
Grinding	● ●	● ●	● ●	●		
Milling and turning (general machining)	● ●	● ●	●	●		
Drilling	● ●	●		●		
Reaming and tapping	● ●	●		●		
Broaching	● ●					

● Possible application, please consult Castrol prior to use ● ● Suggested core application

To learn more about Castrol Hysol SL 36 XBB, and how it can help your plant perform better for longer, talk to your Castrol sales engineer.



CASTROL HYSOL SL 45 XBB – SAFE, LONG-LASTING PRODUCTIVITY WITH AEROSPACE ALLOYS.

As an aerospace engineer, you deliver precise, lightweight parts – in advanced metals – to the tightest tolerances. But you can't compromise on productivity, or safety on the machining floor.

New environmental constraints and safety regulations, like Europe's 10th Adaption to Technical Progress, are making it harder than ever to deal with bacterial and fungal growth in cutting fluids. Manufacturers increasingly need an alternative to cutting fluids with boron, biocides and formaldehyde-releasing agents – but without sacrificing part quality or system life.

THE IDEAL SOLUTION FOR AEROSPACE

Castrol Hysol SL 45 XBB was specifically created to address these challenges, while delivering outstanding machining performance on a wide range of modern aerospace alloys.

Based on Castrol's proven XBB technology platform, it maintains stable, productive manufacturing conditions for longer than conventional cutting fluids* – without the use of boron or biocides. In tests, aircraft manufacturers have also been able to completely eliminate service additive top-ups, giving a cost saving while improving safety.

And far from compromising part quality, Castrol Hysol SL 45 XBB has demonstrated excellent wetting properties when deployed in the field, resulting in cleaner machines and working environments. It also improves machining performance and surface finish**, while reducing drag out.

CURRENT OEM APPROVALS:

- Airbus – Ref: AIMS 12-10-000 & 12-10-001 Global Approval
- Safran – Ref: Pr-6300 ind.
A approval document
- Bombardier



AN OPPORTUNITY TO IMPROVE

Castrol Hysol SL 45 XBB gives aerospace engineers the opportunity to avoid the compromise between safety, quality, productivity and cost:

- Minimize downtime, cleaning and tool costs by extending your fluid performance
- Enhance productivity with stable, consistent machining conditions
- Comply with current and incoming local disposal regulations around boron, and safety regulations around biocides
- Save money and improve safety by reducing or eliminating service additive top-ups
- Rationalize your cutting fluids, due to Castrol Hysol SL 45 XBB's excellent performance across aluminum, titanium and nickel alloys
- Reduce fluid consumption due to less drag out

PROVEN ON TEST: SAFETY, PERFORMANCE AND COST

A global aircraft manufacturer tested Castrol Hysol SL 45 XBB, to stay ahead of new EU regulations. By eliminating boron and formaldehyde-releasing agents, it found:

- **Higher cutting performance** than the manufacturer's existing cutting fluid
- **Happy machine operators** due to new, safer formula and enhanced surface finish
- **Lower system costs** from eliminating service additive top-ups

PRODUCT APPLICATION ON NEXT PAGE...

* Castrol Hysol SL 45 XBB outperformed other cutting fluids in laboratory emulsion stability tests. Customers have been able to eliminate the use of all biocide and fungicide additives with no adverse effects.

** Tapping torque test shows superior performance than common alternatives – typically improving tool life and surface finish. These results are supported by customer feedback, where Castrol Hysol SL 45 XBB has outperformed other fluids.

PRODUCT APPLICATION

Application	Cast iron	Low alloyed steel	High alloyed stainless steel	Aluminum alloys	Magnesium alloys	Yellow metals
Grinding	•	••	••	••		•
Milling and turning (general machining)	•	••	••	••		•
Drilling	•	••	••	••		•
Reaming and tapping	•	••	•	••		•
Broaching	•	•	•	••		•

• Possible application, please consult Castrol prior to use •• Suggested core application

To learn more about Castrol Hysol SL 45 XBB, and how it can help you improve productivity and safety in aerospace, talk to your Castrol sales engineer.



TRIAL XBB TECHNOLOGY FOR YOURSELF

DON'T TAKE OUR WORD FOR IT; PUT CUTTING
FLUIDS WITH XBB TO THE TEST IN YOUR
OWN PLANT, AND SEE THE DIFFERENCE IT
MAKES. TO ARRANGE A TRIAL, CONTACT
CASTROL TODAY.

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