

CUTTING FLUID TERMINOLOGY GUIDE

Our quick-reference list of commonly used terms to help you choose, use and maintain your coolant, to get the very best return from your fluid investment

Additive

Chemical or compound included in a coolant formulation or added during use to provide a specific function or quality to the product, or to inhibit or protect against some anticipated effect of use.

Aerobic (bacteria)

Requiring oxygen to survive and multiply.

Anaerobic (bacteria)

Requiring an absence of oxygen to survive or multiply.

Anti-foam

Inhibits the tendency of a coolant to produce persistent bubbles.

altdorf Arctic 420

Foaming is detrimental to cutting fluid performance, stopping the cutting fluid from reaching surfaces and tools, accelerating the degradation of the fluid chemistry and encouraging airborne contaminants. Altdorf Arctic 420 has excellent anti-foam and anti-microbial properties and is a very cost-effective soluble semi-synthetic option.

Bacteria

Any of a diverse group of microscopic, single-celled organisms that rapidly multiply to form colonies in the right conditions.

Bacterial load

A term for expressing the relative amount of bacteria present in a given quantity of an environment, the higher the bacterial load, the greater the concentration of bacteria present.

Bactericide

A chemical or compound designed to kill one or more types of bacteria.

Biocide

A chemical or compound designed to kill one or more types of living organism.

Biofilm

A broad but very thin coating of a culture of one or more organisms that can cover surface of liquids or other materials. Often forms at the interface between a coolant and the system pipes and hoses, or on the machinery. Can cause serious problems through blocking filters and pipes, interfering with flow and circulation or causing a persistent re-infection cycle through being difficult to eradicate.

Biolube

A term used to describe any lubricant that is biodegradable and environment-friendly.

altdorf Alpine 428

Altdorf Alpine 428 is an advanced biodegradable soluble cutting fluid for all materials that provides excellent ageing/ degradation resistance, improved tool life and extreme lubricity, all while satisfying the latest environmental concerns from potential spillages or contamination.

Biostability

the ability of a formulation or compound within it to maintain its physical and chemical integrity during storage and use.

CFU

Colony Forming Units. A unit of measure used in microbiology to estimate the number of viable bacteria or fungi in a sample.

Conductivity

The measurement of a solution's ability to conduct electricity, which increases the likelihood of corrosion.

Contaminant

Anything that gets into the coolant unintentionally from the environment or direct contact with machinery, staff, tools, etc.

Corrosion inhibitor

Additives designed to reduce the likelihood of corrosion to machines, tools and parts where the coolant is being used.

altdorf Glacier 424

Mineral-oil based formulations generally provide excellent corrosion resistance. Altdorf Glacier 424 is a very cost-effective general-purpose soluble mineral cutting fluid that has the advantage of being health-&-environment neutral.

Culture

A sustainable or growing colony of microbes in the cutting fluid or on surfaces contacted by the fluid.

Demulsification

The breakdown of an emulsion where the suspended oil droplets accumulate to form separate masses of water and oil, resulting in lack of cooling or lubrication.

Delamination

Describes emulsions that have separated either partially or wholly into water and oil as distinct regions rather than a homogenous mixture. Also known as splitting.

Dipslide

Specially designed immersible testing product with one or more sterile layers of agar used to determine the level of bacteria, fungi and yeast in a liquid sample.

Emulsifier

Additive designed to surround and suspend microdroplets of oil in water to ensure an even distribution throughout the mixed cutting fluid.

Emulsion

A stable, evenly distributed mixture of oil microdroplets in water.

EP or Extreme Pressure

The requirement for, or capability of, a cutting fluid to both withstand higher pressure cutting zone operation (e.g. on precision CNC machinery or working with high temperature alloys and other hardened materials) and provide sufficient lubricity and cooling under those conditions.

EPA or Extreme Pressure Additive

Additive designed to provide EP performance in a cutting fluid, often through a combination of lower surface tension, increased lubricity and other factors.

altdorf Alaska 428

Altdorf Alaska 428 is the top performer in aluminium and ferrous metals. It offers the best-in-range EP capabilities and infection resistance through its advanced fully-synthetic formulation and is classified environmentally friendly and health neutral.

Ester

Organic compounds that form the basis of many lubricants. The molecular structure of esters has a high impact on the conformation (how well the fluid gets all into the surface details) of the lubricant film which, in turn, has an impact on the fluid's lubricity.

Flood (coolant)

Cutting fluid designed to function by washing over the entire cutting region and surrounding area.

Formulation

A specifically designed mix of chemicals selected to fulfil a particular set of priorities, e.g. to have high EP performance over lowest cost, or greater lubricity ahead of cooling.

Full synthetic

Advanced synthetically formulated cutting fluids derived from chemical processes and containing no mineral oils.

Fungi

Spore-producing organisms that feed on organic matter and organic chemical compounds. Typically multi-cellular and significantly larger than bacteria.

Fungicide

Additive designed to eradicate or inhibit fungi in cutting fluid formulations.

LEV

Local exhaust ventilation. Systems designed to capture dust, vapours and fumes at their source to minimise risk of inhalation and exposure to workers.

Lubricity

The property or measure of the reduction in friction and/or wear by a lubricant.

Microemulsion

A fine and stable emulsion, technically a temperature-stable dispersion of two immiscible liquids consisting of tiny droplets of one liquid in the other, stabilised by a surrounding film of surface-active molecules.

Mineral oil

An oily, almost tasteless, water-insoluble liquid consisting of mixtures of hydrocarbons obtained from petroleum by distillation.

Misting

Misting fluid, misting oils, minimum quantity lubricants or MQLs are neat oil cutting fluids intended for direct, minimised application at a highly localised area around the cutting process.

Mixer

Mechanical or otherwise automated device to accurately and reliably mix cutting oil concentrate into water to produce cutting fluids of the required concentration.



Remove the possibility of human error and ensure your coolant is always at the correct ratio with one of our automatic cutting fluid mixers.

Mould

Filamentous mass of fungal hyphae (cellular threads) and spore-releasing fruiting bodies.

MQL

Minimum Quantity Lubricant or Minimum Quantity Lubrication. Another term for Misting fluid.

MSDS

Material Safety Data Sheet. Non-standardised information sheet containing advice on the handling, storage, use and disposal of any product. (compare with SDS)

MWF

Metal Working Fluid. A semi-standardised term applied to engineering cutting fluids, coolants and lubricants that play an active part in metal removal or alteration processes.

Opaque

Non-transparent, can be completely non-transparent or partially transparent (semi-opaque). Microemulsions are typically at least semi-opaque and can be completely opaque in many mineral oil based cutting fluids.

pH

Standardised scale for measuring the acidity/alkalinity of solutions.

PPE

Personal Protective Equipment. Often specified as a requirement for handling some formulations.

Refractometer

A measuring device for checking how much a solution or liquid refracts light (alters the direction light travels through it). Can be manual or digital. Used in conjunction with the Refractometer Index to determine the concentration of a cutting fluid concentrate in a coolant and, in emulsion-forming coolant mixes, the quality of the mixture.



For full control over your coolant, you need to know its concentration, Nothing makes this easier than a refractometer and we have both analogue and digital options available.

Refractometer index

A number given on cutting fluid concentrates to allow accurate assessment of the concentration within a diluted coolant when using a calibrated refractometer.

SDS

Safety Data Sheet. Information sheet containing advice on the handling, storage, use and disposal of any product in a standardised, controlled format. Prescribed only for materials deemed to be dangerous goods and not required for other materials, although occasionally provided optionally by suppliers. (compare with MSDS)

Semi-synthetic

Cutting fluid formulations made up of both synthetic chemistry and mineral oils, to combine some of the benefits of both in a single product.

Soluble

Mixes reasonably readily with water to produce either a solution or a stable microemulsion.

Solution

A mixture of two or more substance in amounts that can be varied continuously up to the saturated limit of solubility and that be separated without addition of other substances.

Spent (coolant)

Describes coolant that has reached the end of its effective life, either through accumulated contamination from use or natural degradation over time, or a combination of both. Can be detected with a manual refractometer.

Split

Describes emulsions that have separated either partially or wholly into water and oil as distinct regions rather than a homogenous mixture. Also known as delamination.

Surface tension

Property of a liquid that enables the formation and retention of droplets. Greater surface tension inhibits the coolant's ability to penetrate into smaller spaces, thereby reducing its cooling capability and reducing its lubricity. Various coolant formulation additives are used to modify the surface tension of a mixed coolant to provide enhanced properties such as EP capability.

Test strip

Small chemically-impregnated paper strips used to test pH and hardness of water and coolant.

Tramp oil

Any oils or greasy contaminants that get into a coolant through use, often from contact with leaks or deposits on machinery or tooling, that can reduce the effectiveness and shorten the working life of coolants. Can also provide a vector for infection and a source of nutrients for microbes.

Translucent

Allows light to pass through, either partially or completely. Semi-opaque emulsions are partially translucent.

Transparent

100% translucent, no opacity present.

Yeast

Single-celled fungi

