

# product data sheet

## VARCOOL 2110

### A micro emulsion metalworking fluid

**Varcool 2110** is a cost effective, low oil semi-synthetic with low foaming performance, excellent tramp oil rejection and superior system life. Performance advantages include minimal residue and exceptional cleanliness, a micro emulsion coolant specifically formulated for machining and grinding of cast iron and steel.

**Varcool 2110** achieves the highest levels of ferrous rust protection whilst also maintaining low levels of foam even in soft water areas. This clean running formulation also prevents the loading of grinding wheels, ensuring good surface finishes and minimal burning. The product forms a stable emulsion in both soft and hard waters and is inhibited against bacterial growth.

**Varcool 2110** has been developed for moderate to difficult machining operations and it is suitable for use across a wide range of materials, ferrous, non-ferrous and aerospace alloys.

**Varcool 2110** provides both good tool life and surface finish making the product suitable for a whole variety of machining applications whilst maintaining machine cleanliness and excellent operator acceptability and skin compatibility.

#### Applications

- Reaming
- Tapping and threading
- Deep hole drilling and boring
- Turning
- Milling
- Grinding
- General machining

#### Features & Benefits

- Excellent performance characteristics
- Chlorine free
- Does not form sticky deposits
- Suitable on ferrous, non-ferrous, aluminium and aerospace alloys
- Suitable for use in soft to hard water
- High performance in arduous operations
- Micro emulsion provides excellent flushing and cooling
- Secondary amine free

#### Typical Operations

■ Drilling	8% to 12%	■ General machining	6% to 8%
■ Reaming	8% to 12%	■ Boring	8% to 12%
■ Threading, tapping	5% to 10%	■ Grinding	3% to 5%
■ Broaching, sawing	8% to 10%	■ Turning, milling	6% to 8%

#### Varcool 2110

Characteristics	Typical Data	Characteristics	Typical Data
Appearance	Amber liquid	IP287 corrosion breakpoint	3% (v/v)
Odour	Bland	Specific Gravity (@20°C)	1.00
Emulsion Appearance	Translucent	Loadbearing capacity (kg/mm <sup>2</sup> )	1.45
PH (@ 5% concentration)	9.3	Refractive Factor	3.10

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## Additional Technical Information – Varcool 2110

**Varcool 2110** is a truly versatile water soluble metalworking fluid that can be used across a diverse range of metals, applications and water hardnesses. The performance parameters of Varcool 2110 make it an ideal candidate product to be used throughout a machine shop as a high performance general purpose coolant and grinding fluid. If further information is required please consult your local selling agent or Varol Technical Department for further information.

**Bio-stability** - these products give excellent bio-control maintaining bacteria levels well within the HSE (Health and Safety Executive) guidelines.

**Corrosion inhibition** - These products give equivalent corrosion protection, or better than boron containing products.

For maximum service life, coolant systems should be cleaned and sterilised by treatment with **Varclean System Cleaner**. This high performance system cleaner can be used whilst production is continued for up to 24 hours prior to exchange of fluids. Please refer to the **Varclean System Cleaner** data sheet for detailed application information or contact your Varol sales agent.

Varol Metalworking		Varol Machine Lubricants	
■ <b>Varcut</b>	Neat cutting oils, high performance, extensive range of viscosities	■ <b>Varlube S</b> Visc 32 - 320	Slideway
■ <b>Varform</b>	Comprehensive range of neat forming oils, including water extendable versions and vanishing oils	■ <b>Varmulti</b> Visc 32 - 680	Multilube - Slideway, Gear, Hydraulic
■ <b>Varclean</b>	Aqueous based wash fluids, surface cleaners and solvent degreasers	■ <b>Vargear</b> Visc 68 - 460	Industrial Gear
■ <b>Varcool &amp; Vargrind</b>	Comprehensive range of high performance water soluble fluids. Low, medium, high oil content and synthetics	■ <b>Varpress</b> Visc 5 - 150	Hydraulic oil range covering zinc containing, zinc free and high VI

## Operational Recommendations

**Varcool 2110** is designed to be mixed with water; it has been developed to exhibit full multi-metal compatibility and is suitable for use in soft and hard water types.

Mix emulsions of **Varcool 2110** with water by adding concentrate to water and then mixing or use a suitable proportioning mixer unit, these are available on request. The use of an airline to mix the solution is not recommended. Machine top up may require a weaker dilution than the initial machine charge concentration. Recommended concentrations can vary depending on operations, materials, tooling, coolant pressure, coolant flow. The above information is given for guidance. Please contact your representative for further advice.

**Varcool 2110** should always be stored indoors and protected from frost. Good standards of hygiene and housekeeping should always be adopted when using any metalworking fluid. A separate MSDS is available for this product.

As with all modern cutting fluids, concentration control is of paramount importance, therefore regular check by use of a refractometer is recommended for this product. It should be noted that the individual product refractometer correction factor should always be used to ensure accuracy.