



Product Bulletin

SOLUBLE OIL WITH BIOCIDES

BRAD PENN® Soluble Oil with Biocides is a premium general purpose emulsifying metalworking lubricant that provides excellent cooling and lubricity in a wide range of machining operations where heat dissipation is critical. It is formulated with high-quality base oil, select emulsifiers, and coupling agents to promote the formation of exceptionally stable, non-foaming, homogeneous emulsions in both soft and hard water.

BRAD PENN® Soluble Oil with Biocides is a multi-functional cutting fluid specifically designed to:

- Extend tool life
- Flush chips from the work area
- Dissipate heat from the cutting zone
- Reduce friction at the chip-tool interface
- Protect work and machine from rust and corrosion
- Provide superior dimensional accuracy and surface finish
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BRAD PENN® Soluble Oil with Biocides emulsifies easily to form stable, long lasting milky white emulsions in hot or cold water and shows no apparent separation after long periods of usage or storage. It is easily removed with a water flush and contains a potent biocide to help control bacterial growth and reduce rancid odors. This product is chlorine-free thereby reducing environmental concerns associated with storage and disposal.

BRAD PENN® Soluble Oil with Biocides is an extremely versatile soluble oil recommended for a wide range of applications including: stamping, turning, planing, shaping, milling, drilling, boring, cutting and grinding operations. It can be used for the machining of many ferrous and nonferrous metals for which an emulsifiable oil is preferred, particularly when cutting with carbon, high speed steel or tungsten carbide tip toolings. It is usually diluted to water / oil ratios ranging from 10:1 to 60:1 depending on the application. For example, a typical emulsion ratio of 20:1 is recommended for the light machining of soft to medium hardness steel, whereas a lower emulsion ratio of 40:1 is recommended for grinding applications that require excellent cooling. Although mixture ratios vary for specific applications, in general, the richer emulsions are used for the more difficult cutting operations, the intermediate mixtures for the free-machining operations, and the lean mixtures are used for such operations as grinding, where massive cooling is required.



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MIXING GUIDELINES: ALWAYS ADD OIL TO WATER, OTHERWISE AN INVERT EMULSION MAY RESULT. THE OIL SHOULD BE MIXED INTO 2/3 OF THE TOTAL WATER VOLUME THAT IS GOING TO BE USED WITH CONTINUOUS MIXING. ADD THE REMAINDER OF THE WATER AND CHECK EMULSION RATIO.

MAXIMIZING SERVICE LIFE: THE SERVICE LIFE OF SOLUBLE OIL EMULSIONS CAN BE GREATLY INCREASED THROUGH THE USE OF GOOD FLUID MONITORING PRACTICES. ELIMINATION OF TRAMP OILS, METAL CHIPS OR FINES, AND OTHER CONTAMINANTS IS ESSENTIAL. FOR BEST RESULTS, AVOID EXCESSIVELY HARD WATERS AS THEY MAY DEplete EMULSIFIERS AND LEAD TO THE FORMATION OF SOAP SCUMS. ALWAYS MAINTAIN THE EMULSION STRENGTH AT THE RECOMMENDED LEVEL FOR THE PARTICULAR MACHINING OPERATION. THE PH SHOULD BE DETERMINED FREQUENTLY AND MAINTAINED BETWEEN 8.0 AND 9.5. PROPER FLUID MAINTENANCE OF THE EMULSION STRENGTH AND PH IS NECESSARY TO CONTROL BACTERIAL GROWTH.

HANDLING/STORAGE PRECAUTIONS: BRAD PENN® SOLUBLE OIL WITH BIOCIDES SHOULD NOT BE EXPOSED TO TEMPERATURES BELOW 40°F FOR PROLONGED PERIODS. EXPOSURE MAY EFFECT THE PRODUCT'S DEMULSIBILITY CHARACTERISTICS.

BRAD PENN® Soluble Oil with Biocide – Typical Properties

ISO Viscosity Grade	Test Method	32/46
API Gravity, 60°F	ASTM D-1298	22.5
Density, lbs/gal (g/L)	Calculated	7.67 (919)
Viscosity, cSt @ 40°C	ASTM D-445	39.9
Viscosity, cSt @ 100°C	ASTM D-445	5.3
Viscosity, SUS @ 100°F	ASTM D-2161	208
Viscosity, SUS @ 210°F	ASTM D-2161	44.1
Viscosity Index	ASTM D-2270	43
Flash Point, COC, °F (°C)	ASTM D-92	335 (168)
Color	ASTM D-1500	2.0
Chlorine, wt.%	Calculated	0.0
Emulsion, 9:1	Calculated	1-ml cuff
Product Code		7861