

General Description of Minimum Quantity Lubrication (MQL)

Cutting tool coolant lubricants are sometimes problematic factors in metal cutting, especially in machining advanced and difficult-to-cut materials. For economic, employee health and ecological reasons, as well as because of increasing legislation, efforts are being made to reduce the use of coolants. On account of this, the introduction of dry machining and minimum quantity lubrication (MQL) techniques in machining processes is increasing.

The complete elimination of cutting fluid in dry machining applications can provide significant cost savings in terms of coolant handling and disposal but in many applications, dry machining is not a practical solution due to significant reductions in tool life and productivity. In comparison to entirely dry machining, MQL can reduce machining temperatures considerably and increase tool life. Therefore MQL has become the viable solution in machining a wide variety of materials for many manufacturers. Extensive research efforts have gone into the development of new cutting tool substrate, coatings and geometries to maximize the performance of cutting tools under MQL conditions. In addition, new developments in cutting tool holders and coolant delivery systems are available.