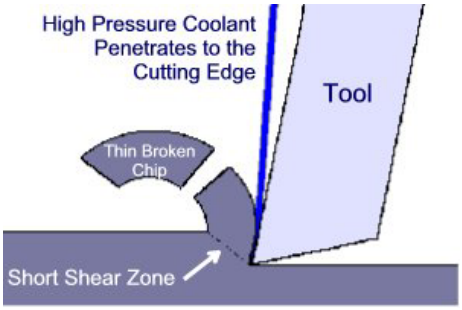
TEMPERATURE IN YOUR PROCESS – THE REAL ENEMY!

How does temperature increase relate to high pressure cooling? The fact is that it is not the heat generated by a machining process that does the damage; it's the increase in temperature. Heat that's allowed to accumulate where the tool meets the work will raise the temperature to a point where tool damage occurs. Heat remaining in the material will cause the shear plane to elongate, resulting in a thick chip that won't break or damaging the structure of the work piece surface.

Heat can be removed by simply pouring the coolant over the tool as it cuts. This is referred to as 'flood' cooling, and has been the standard method for years. The coolant picks up heat as it washes over the area. A problem is that, even with the best operators, the coolant line is rarely aimed at the critical point, even with the most careful coolant application. Plus, at the high performance levels available with modern machine tools, so much heat is generated that the coolant is heated to beyond its boiling point. A blanket of vapor forms over the very area we're trying to cool, insulating it from the coolant. The only way heat can be drawn out of the area is by radiating it through the vapor blanket, and by conduction back through the tool. Either way, only a fraction of the heat-carrying capacity of the coolant is being used.

High pressure coolant used with KoolBlast™ products allows the coolant to be introduced in such a way as to remove the heat at a high enough rate and pressure (1000 PSI) to eliminate the vapor barrier. This allows a direct heat transfer from the mass of the insert to the mass of the coolant. The temperature of the tool, in some cases, is only slightly above the temperature of the coolant.



KoolBlast™ products have coolant holes which are precisely aimed to insert high-pressure, high velocity coolant into the exact spot where the heat is generated.

KOOLBLAST™
by Advanced Industries, Inc.
3955 S. Fletcher Road, Chelsea, MI 48118
phone: (734) 433-1800 fax: (734) 433-1802
WWW.KOOLBLAST.COM
patent #7,134,812