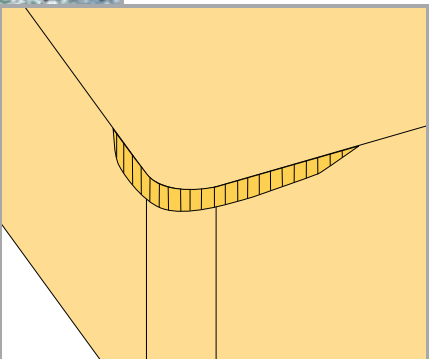


# Indexable Insert Optimization

## Flank face wear



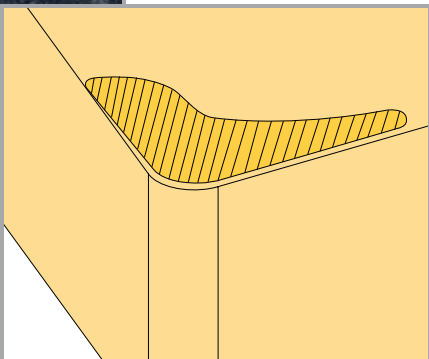
### Characteristics

Abrasion on the flank face of the indexable insert

### Action

- Use a cutting material that is more wear-resistant
- Increase the feed rate
- Reduce the cutting speed
- Insure adequate coolant application

## Crater wear



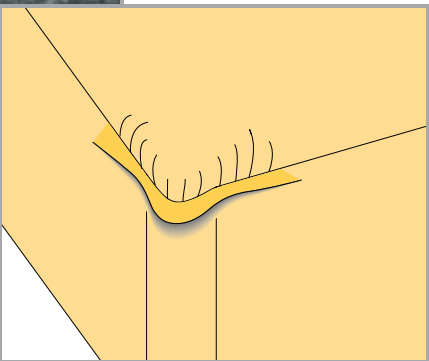
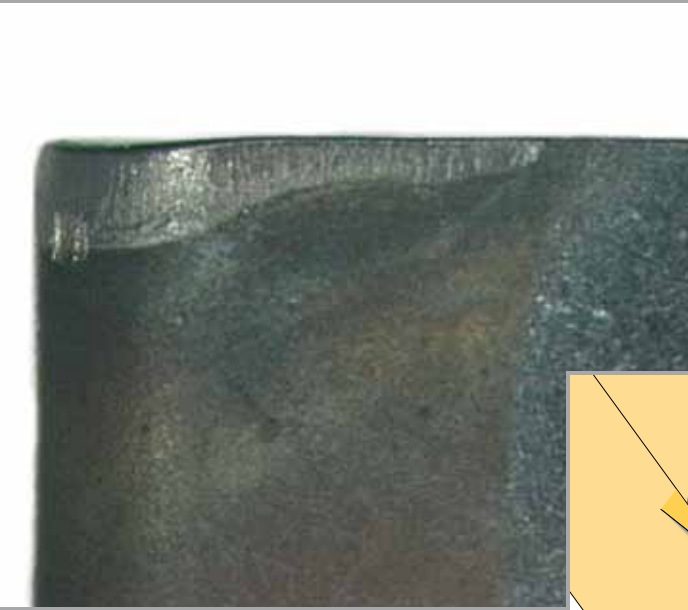
### Characteristics

Crater-shaped cavities on the rake face of the indexable insert

### Action

- Reduce the cutting speed
- Use a geometry with a greater rake angle
- Use a cutting material that is more wear-resistant and with a high proportion of Al<sub>2</sub>O<sub>3</sub> (steel cutting grades)
- Insure adequate coolant application

## Plastic deformation



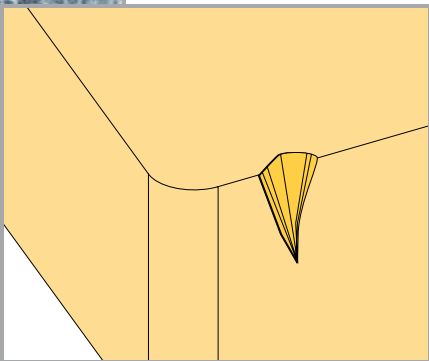
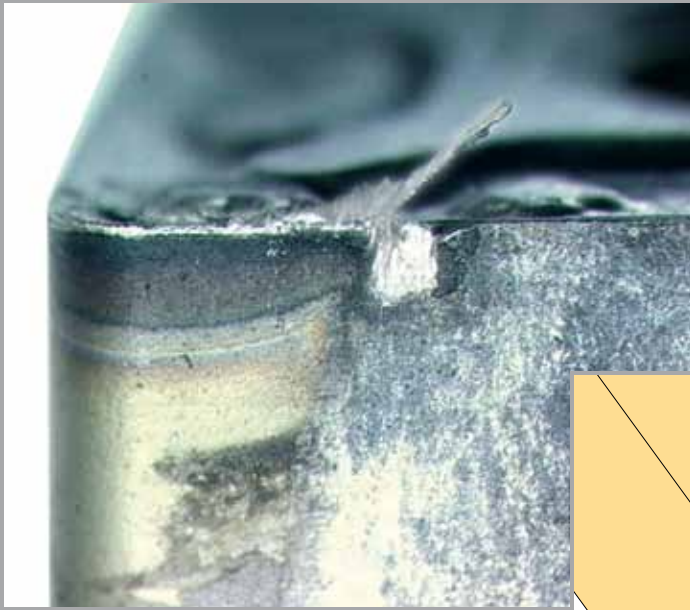
### Characteristics

Deformation of the cutting edge due to thermal overload and high cutting forces

### Action

- Use a cutting material that is more wear-resistant
- Reduce the feed rate
- Reduce the cutting depth
- Insure adequate coolant application
- Reduce the cutting speed

## Notching or oxidation



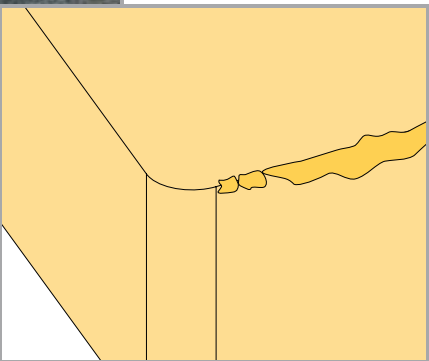
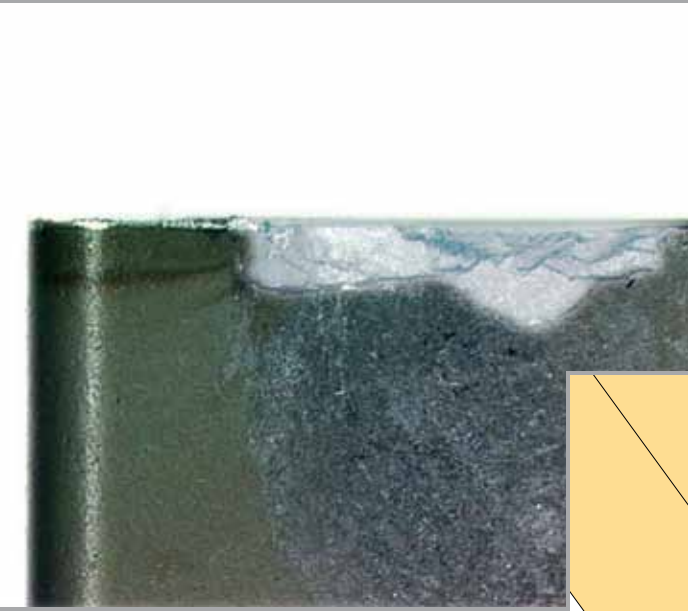
### Characteristics

Notching around the cutting depth on the indexable insert

### Action

- Increase lead angle ( $\kappa = 15^\circ/30^\circ/45^\circ/75^\circ$ ) or use a round insert
- Vary the cutting depth
- Use a tougher cutting material (PVD coated)
- Reduce the cutting speed
- Use a more open geometry
- Insure adequate coolant application
- For notching on the corner radius, select smaller nose radius

## Chipping



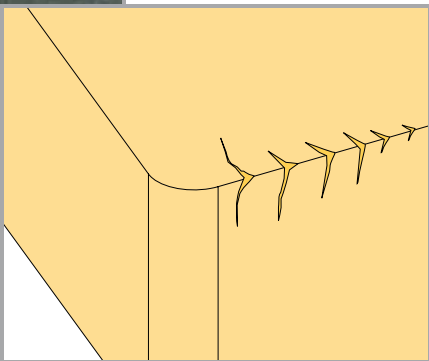
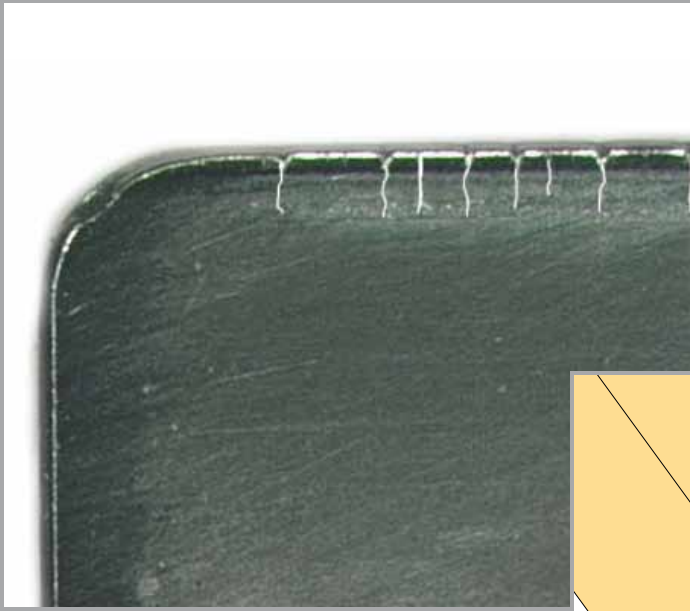
### Characteristics

Chipping along the cutting edge

### Action

- Use a tougher carbide grade
- Check setup rigidity
- Reduce overall tool overhang
- Select a stronger chipbreaker geometry
- Reduce the speed if vibration is present
- Reduce the feed rate

## Thermal cracks



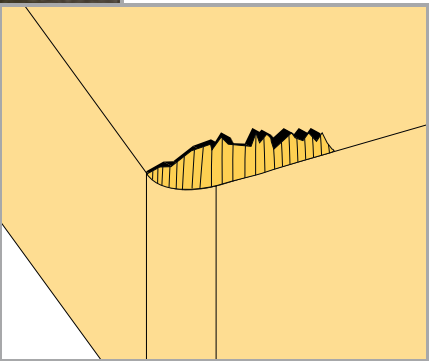
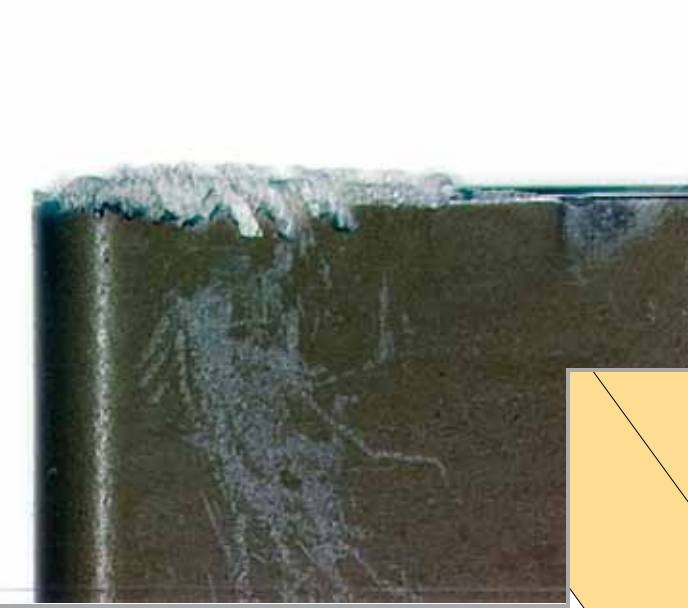
### Characteristics

Multiple cracks running vertical to the cutting edge, due to thermal shock

### Action

- Use a tougher cutting material
- Increase the cutting speed
- Reduce the feed rate
- Eliminate coolant in interrupted and milling cuts
- Select a stronger chipbreaker geometry

## Build-up on the cutting edge

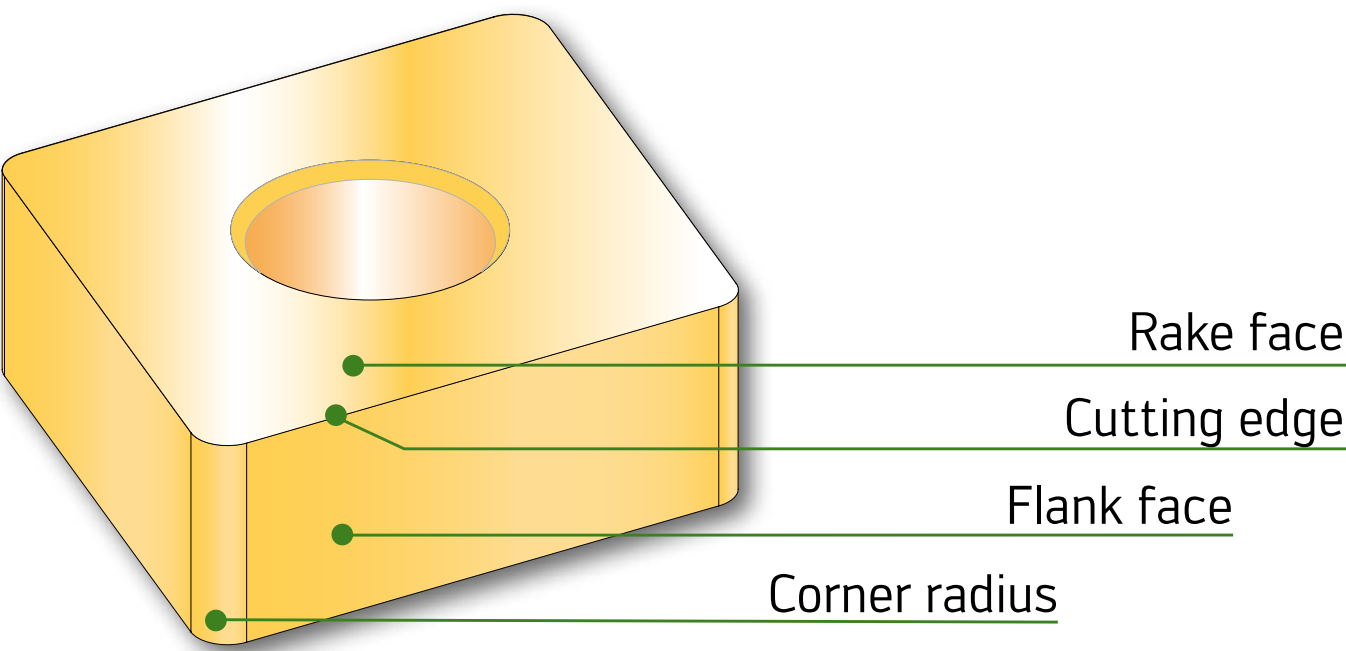


### Characteristics

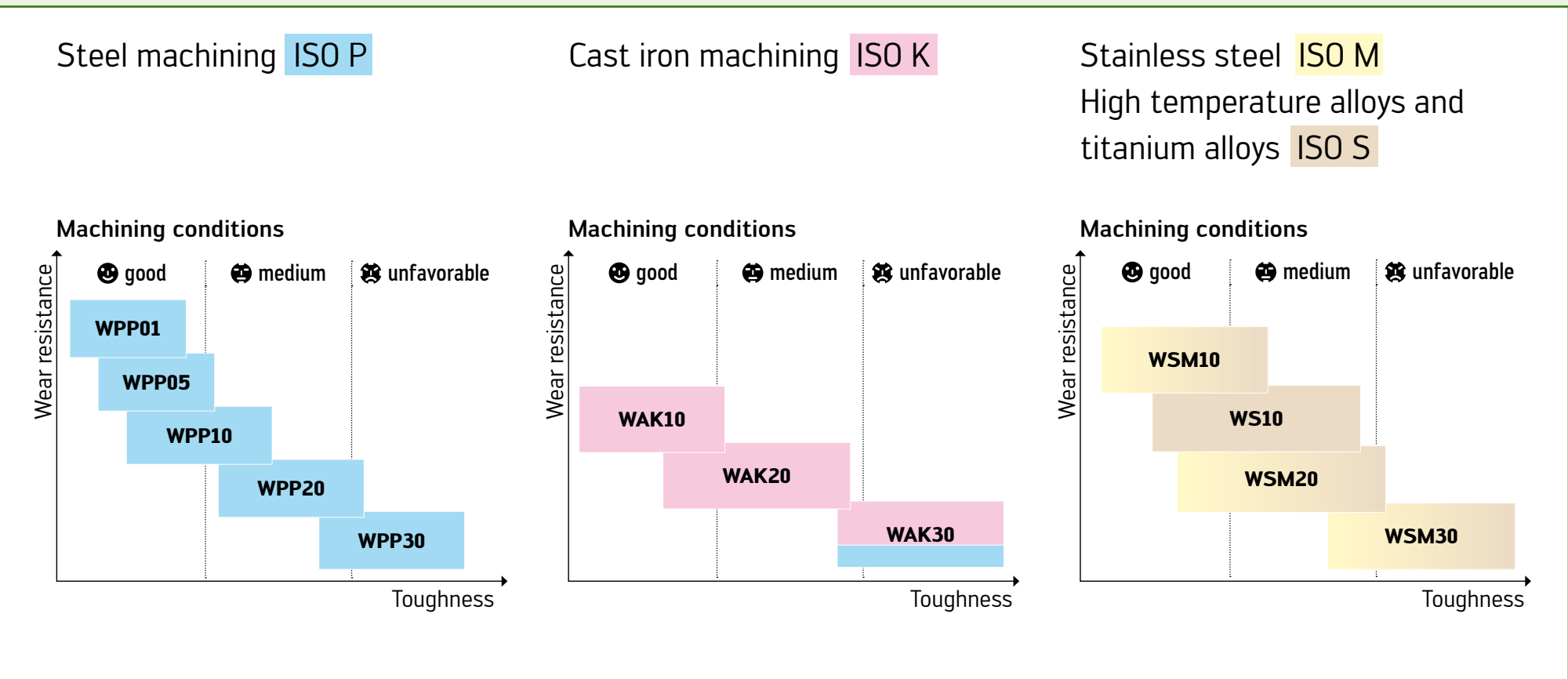
Adhesion of material along the cutting edge on the rake face

### Action

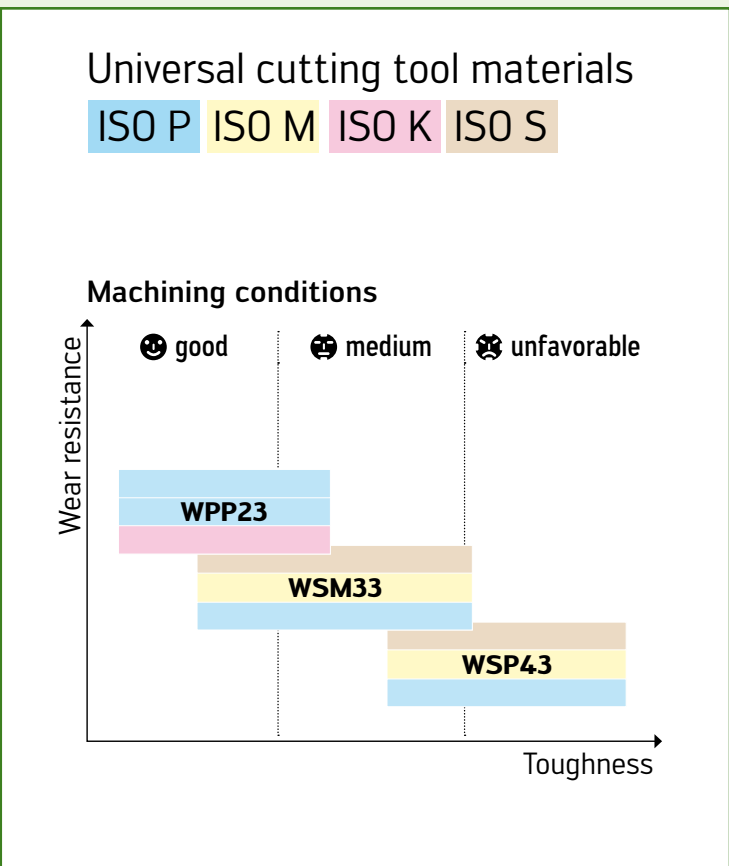
- Increase the cutting speed and/or reduce feed rate
- Use a sharper geometry with greater rake angle
- Insure adequate coolant application
- Use an insert with a treated rake surface (Tiger-tec®) or a PVD coated grade



## Cutting tool materials Turning



## Cutting tool materials Grooving



## Cutting tool materials Milling

