

Safety Notes for Cutting Tools

1. Introduction

Kyocera has put a “caution” or a “warning” label on the package of the cutting tool products, but it is not on the tool itself.

Before using and handling any cutting tool products and cutting tool materials, be sure to read this guideline so they are used correctly.

Also, as part of your safety education, please make sure to familiarize all of your actual operators with the contents of this guideline.

2. Basic Information for Cutting Tool Materials

2-1. Technical Terms

Cutting Tool Material: Terminology for cutting tool materials, such as Cemented Carbide, Coated Carbide, Cermet, Coated Cermet, Ceramics, CBN and PCD

Carbide Material : Cemented Carbide with WC (Tungsten Carbide) as the main component

2-2. Physical Properties

Appearance: Depends on materials. (e.g. Gray, Black, Gold, etc.)

Smell : None

Hardness : Carbide / Cermet 5 ~ 30GPaHV, Ceramic 10 ~ 40GPaHV
CBN 20 ~ 50GPaHV, PCD 80 ~ 120GPaHV

Sp. Gr. : Carbide 9 - 16, Cermet 5 - 9, Ceramic 2 - 7, CBN / PCD 3 - 5

2-3. Composition

Carbide, Nitride, Carbon-nitride and Oxide with W, Ti, Al, Si, Ta, B, etc. and additionally, metals such as Co, Ni, Cr, Mo are included in some cutting materials.

3. Notes for Handling Cutting Tool Materials

- These cutting tool materials are very hard, but also brittle. Therefore, they may break by shock or excessive clamp force.
- Carbide base material, in particular, can be very heavy. Handle with care when transferring and storing large size products or large quantities as heavy load.
- Carbide base material has a different rate of thermal expansion to that of normal metals. When brazing the cutting tool material, use the proper temperature to prevent the tool from breaking.

4. Notes for Cutting Tools

- The cutting edge is very sharp; wear gloves when handling or installing tools to prevent injury.
- When cutting, cutting tools may break due to shock, excessive tool wear or improper conditions.
It is essential to wear protective clothing such as safe guards, safety eyeglasses, and gloves to prevent injury.
- Depending on workpiece material and cutting conditions, sparks or fire may occur. Use protective material such as safe guards, safety eyeglasses and gloves.
- When cutting, flying chips or metal pieces may be dangerous. Use protective materials such as safe guards and safety eyeglasses to prevent injury.