

Safety Notes of Cutting Tools

1. Introduction

Kyocera has put "caution" or "warning" label on the package of cutting tool product, but it is not put on the tool itself.

Before using and handling any of cutting tool product and cutting tool material, make sure to read this guideline to use them 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 of Cutting Tool Material

2-1. Technical Terms

Cutting Tool Material: General term of 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 ingredient

2-2. Physical Property

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 in addition to these, metals such as Co, Ni, Cr, Mo is included for some.

3. Notes for Handling Cutting Tool Material

- These cutting tool materials are very hard, but also brittle. Therefore, they may be broken 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 from that of metal material. When brazing the cutting tool material, use the proper temperature to prevent the tool from breaking.

4. Notes for Machining Cutting Tool

- The cutting edge is very sharp; wear gloves when handling or installing tools to prevent injury.
- When machining, cutting tools may be broken due to shock, excessive tool wear or improper conditions.
Use protective materials 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 machining, flying chips or metal pieces may be dangerous. Use protective materials such as safe guards and safety eyeglasses to prevent injury.