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Solutions for Brazing, Welding, and Diffusion-Bonding

Boron Nitride Coatings for General Brazing and Welding Operations

- Stop-Off – to keep bonding material off of unwanted areas
- Weld Spatter Release – to easily remove the spatter from surrounding areas

Yttrium Oxide Coatings for Diffusion-Bonding Operations

- Barrier Layer / Stop-Off – to keep bonding material off of unwanted areas
- Useful to very high temperatures in vacuum and inert atmospheres

USE AREAS

- I. **Wherever Braze Flow needs to be Restricted**
 - a. Water-based [BN Lubriccoat PW-DIL](#) ... pre-diluted and ideal for air-spraying; vacuum to 1400 C / inert to 1800 C / air to 1000 C
 - b. Others: BN Lubriccoat, BN Lubriccoat Blue Spray, BN Lubriccoat Paste, BN Lubriccoat Paste, BN Lubriccoat ZA Paste, BN Releasecoat PM, BNW Paste, BNA Paste, BN Lubriccoat ZV, BN Aerosol Lubriccoat
- II. **Areas Where Welding Spatter Collects**
 - a. Solvent-based [BN Aerosol Lubriccoat](#) (spray-can) - applied before welding; vacuum to 1400 C / inert to 1800 C / air to 1000 C
 - b. Solvent-based [BN Aerosol Brushable](#) (bulk paint) ... vacuum to 1400 C / inert to 1800 C / air to 1000 C
Others: BN Releasecoat PM, BN Lubriccoat, BN Lubriccoat Blue Spray, BN Lubriccoat PW-DIL
- III. **Fixtures Where Material Collects during Bonding** (prevents sticking)
 - a. Water-based [BN Hardcoat](#) ... to 900 C all atmospheres
 - b. Others: BN Hardcoat CM, BN Cera Dip, BN Lubriccoat ZV
- IV. **Gun Nozzles that Clog from Buildup** (prevents sticking)
 - a. Water-based [BN Hardcoat](#) ... to 900 C all atmospheres
 - b. Others: BN Hardcoat CM, BN Cera Dip, BN Lubriccoat ZV
- V. **Diffusion Bonding (Vacuum) of Special Metals (Titanium, Superalloys, etc.), Barrier Layer**
 - a. Water-based [Type Y](#) ... to 2000 C vacuum
 - b. Others: Type YK, Y Aerosol, Y Aerosol Brushable
- VI. **Diffusion Bonding (Air) of Special Metals, Barrier Layer**
 - a. Water-based [Yttria Stop-Off](#) ... to 1000 C air, all atmospheres
 - b. Solvent-based [Y Aerosol](#) (spray-can) ... to 1900 C air/vacuum/inert
 - c. Solvent-based [Y Aerosol Brushable](#) (bulk paint) ... to 1900 C air/vacuum/inert
- VII. **Brazing at High-Temperatures in Air Above 1000 C**
[Do not use Boron Nitride coatings above 1000 C in air atmosphere!]
 - a. Solvent-based [Y Aerosol](#) (spray-can) ... to 1900 C air/vacuum/inert
 - b. Solvent-based [Y Aerosol Brushable](#) (bulk paint) ... to 1900 C air/vacuum/inert
 - c. Solvent-based [A Aerosol](#) (spray-can) ... to 1800 C air/vacuum/inert
 - d. Solvent-based [A Aerosol Brushable](#) (bulk paint) ... to 1800 C air/vacuum/inert

COATINGS

All the above coatings provide nonsticking and easy release with brazing, welding, and diffusion-bonding processes ...

- I. **Brazing**
 - a. Stops molten filler metal from touching and brazing metal parts and from running over into unwanted areas.
 - b. Keeps holes and cut/milled areas from filling with metal
 - c. Provides excellent release
- II. **Welding**
 - a. Stops sticking of weld spatter that would be difficult to remove
 - b. Prevents buildup on fixtures
 - c. Keeps gun nozzles from clogging/buildup
 - d. Easy release
- III. **Diffusion-Bonding**
 - a. Barrier layer stops bonding where not desired
 - b. Does not lead to "alpha case" with Titanium processing
 - c. Utilizes very thermodynamically-stable Yttrium Oxide (Y_2O_3) as active ingredient
 - d. Prevents contamination of the bond region