

Friction Welding

When two pieces of Ultra High Molecular Weight Polyethylene – UHMWPE UTEC® are frictioned over one another heating is generated, which is able to melt the contact surfaces. This property, when controlled, yields an excellent method for welding different parts, particularly ones with circular sections. The equipment needed is simple and usually available at workshops. This method is also useful to repair holes opened by mistake.

Equipment:

In most cases, a hand or table drilling machine with speeds between 800 and 2,500 rpm is perfectly adequate.

Procedure:

- Machine the surfaces to be welded so that their surfaces are plain. In the case of hole sealing, one of the surfaces should be conic.
- Clean the surfaces to assure they're free of oils, wax, dust or other machining residues.
- Spin one part against the other, with linear speed between 2 and 8 m/s and pressure in the range of 2 and 6 kgf/cm².
- During the first seconds the spinning happens freely. After that, a fast torque increase indicates welding between the parts.
- Turn off the drilling machine before the welded assembly slips from the fixing system.
- Release the assembly and let it cool smoothly until room temperature before handling it again. Do not cool it in water, because the weld resistance decreases.

The friction welding process, including melt and cooling, is very fast and generates little or no scraps.

The weld strength reaches between 70 and 100%, and because of that this process is particularly indicated for serial production of small pieces.

Note: The information disclosed in this bulletin are merely informative and said in good faith. They express the company lab tests and do not imply in any result or performance warrant.