

## When To Use Electrical Discharge Machining

When to EDM by Geometry	
When	Why
Very thin walls	No contact, no force, no deformation.
Internal radii equal to or less than 1/32 inch parallel to tool axis	Radius is as small as the spark gap. Generally, tool is not rotated.
High ratios of cavity depth to width, for example: slots and ribs	No force means very thin, long electrodes can be used.
Non-round cavities/openings	Electrodes do not have to rotate.
Intermittent cuts	Stress free.
Very small parts (fits in a 0.25-inch cube)	Easy to fixture since no stress or vibration is involved.
Recessed cuts	Cutting tools can not reach cutting area or generate desired shape.
Requires special/unique cutting tools	Electrodes often less costly than special cutting tools. Electrode is easy to machine, unlike carbide. Wire is available standard.
Capable of high tolerance machining	Can EDM conductive material of any hardness.
Different geometry at top and bottom	Wire EDM cuts ruled surfaces with a simpler program and machine than milling.
Complex shapes	Easier to program because you are using a tool of constant dimension instead of a variety of different diameter milling cutters.
Requires multiple component assemblies	Use taper or recess or depth: diameter capability to make it one piece.
Angled cuts	Ability to 3-D orbit in space.

<b>When to EDM by Material</b>	
<b>When</b>	<b>Why</b>
Hardness above Rc 38: hardened steel, Stellite, tungsten carbide	EDM vaporizes material rather than cutting it.
Toughness: Inconel, Monel, Hastelloy, Nitralloy, Waspaloy, Nimonic, Udimet	EDM is non-contact, therefore no adhesion of work piece to tool.
Tends to leave tough burrs when machined conventionally	Vaporized material is flushed away leaving no burr.
Frail/fragile (can't take stress of machining)	No contact, no force.
Expensive material	Lower chip/work piece mass ratio. Slugs from Wire EDM may be reusable whereas chips from conventional machining are recyclable at best.
Certain explosive or flammable materials	EDM takes place under water.
Materials with hazardous dust particles	Particles are flushed away to the filter. Reduced risk of fumes.