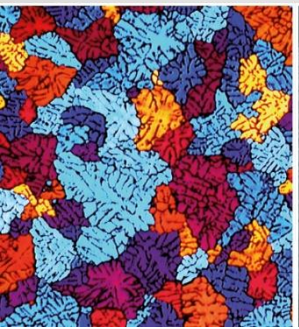


Application lab report

Cutting of a Ball, Cup, Needle and OAP made of Steel



QATM-Preparation method

Objective:


Four components (Ball, Cup, Needle and OAP) were cut in the middle with the Qcut 200 A. Layers and the geometry of the components are to be examined. Detailed preparation steps for cutting and the achieved results can be seen below.



Figure 1: Overview Ball.

QATM-Preparation method - Ball

Cutting

|  Cutting | | | |
|--|---|-------------------------------|---|
| Device | Cut-off disc | Anti-corrosion coolant | Clamping tool |
| Qcut 200 A | Aluminium oxide Rubber bonded. (92002769) | QATM Standard (95014281) | -Easy-clamping base S (Z2236030) -Qtool 40 (Z2270200) -Clamping jaws 45 mm slottet (02270214) -Adaption for sticking balls (See picture 3-5) |
| Cutting method | | | |
| Automatic X-Axis | | | |
| Parameters | | | |
| Feed speed | Pulse parameter | Cut-off disc rotational speed | |
| Zone cutting: 4 mm – 0,01mm/s Rest – 0,06 mm/s | Without puls | 3000 rpm | |
| Notes | | | |
| <ul style="list-style-type: none"> - The ball must be glued into the adaption. As glue we used Loctite 401 or Technovit 2200 (Light curing). - We redesign the adaptation, now it can be used more comfortable (see picture 4 and 5) | | | |

QATM-Preparation method - Ball



Figure 2: Ball after cutting.

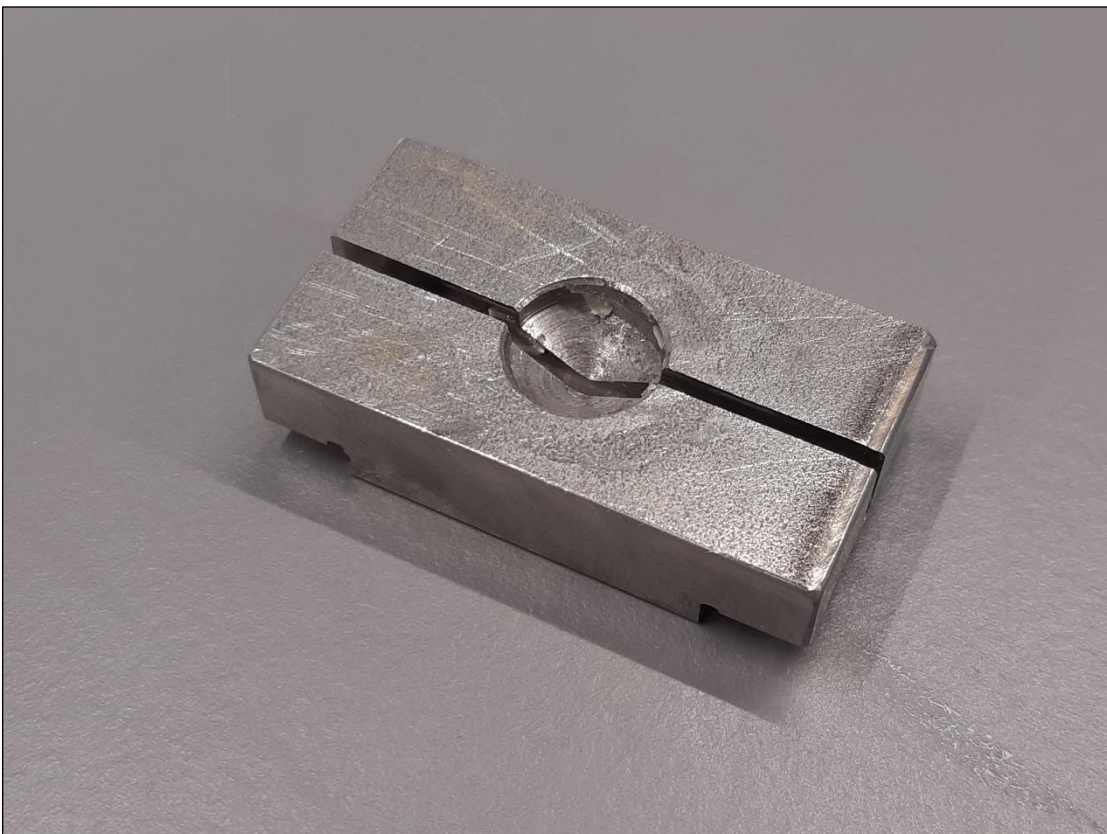


Figure 3: Adaption for sticking ball.

QATM-Preparation method - Ball

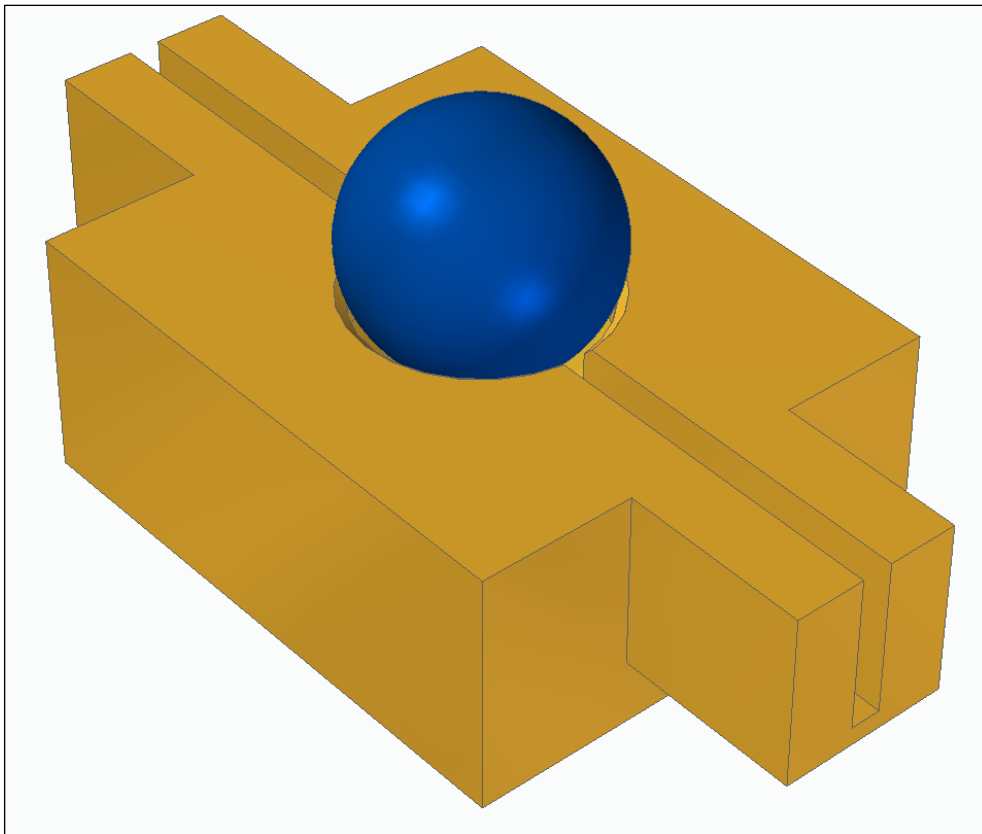


Figure 4: Drawing of the adaption.

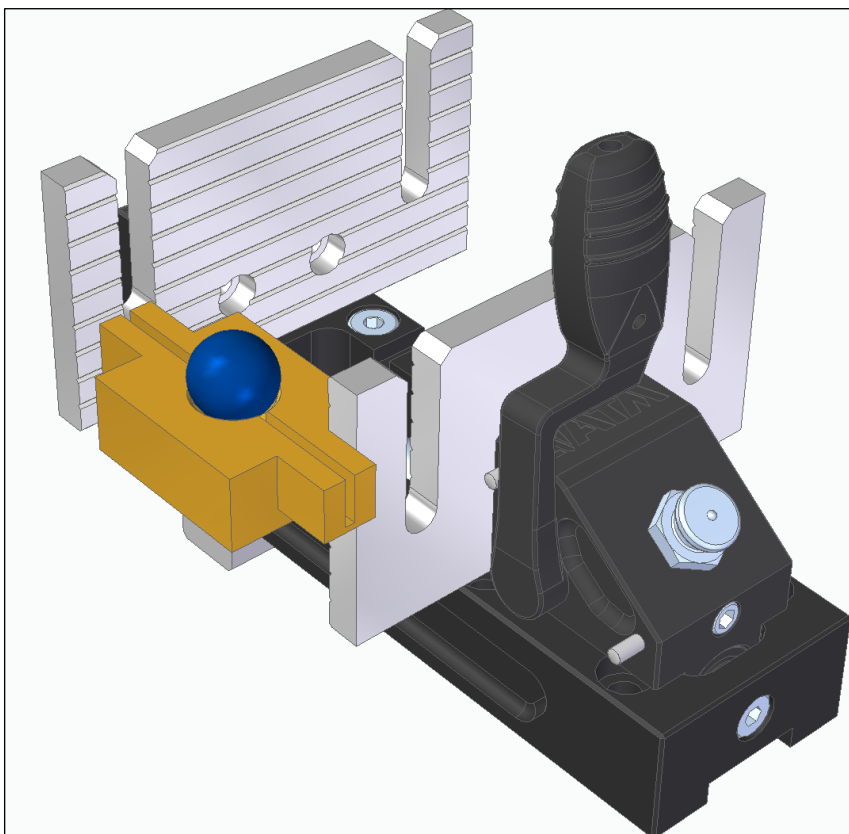


Figure 5: Drawing of the adaption.

QATM-Preparation method - Ball

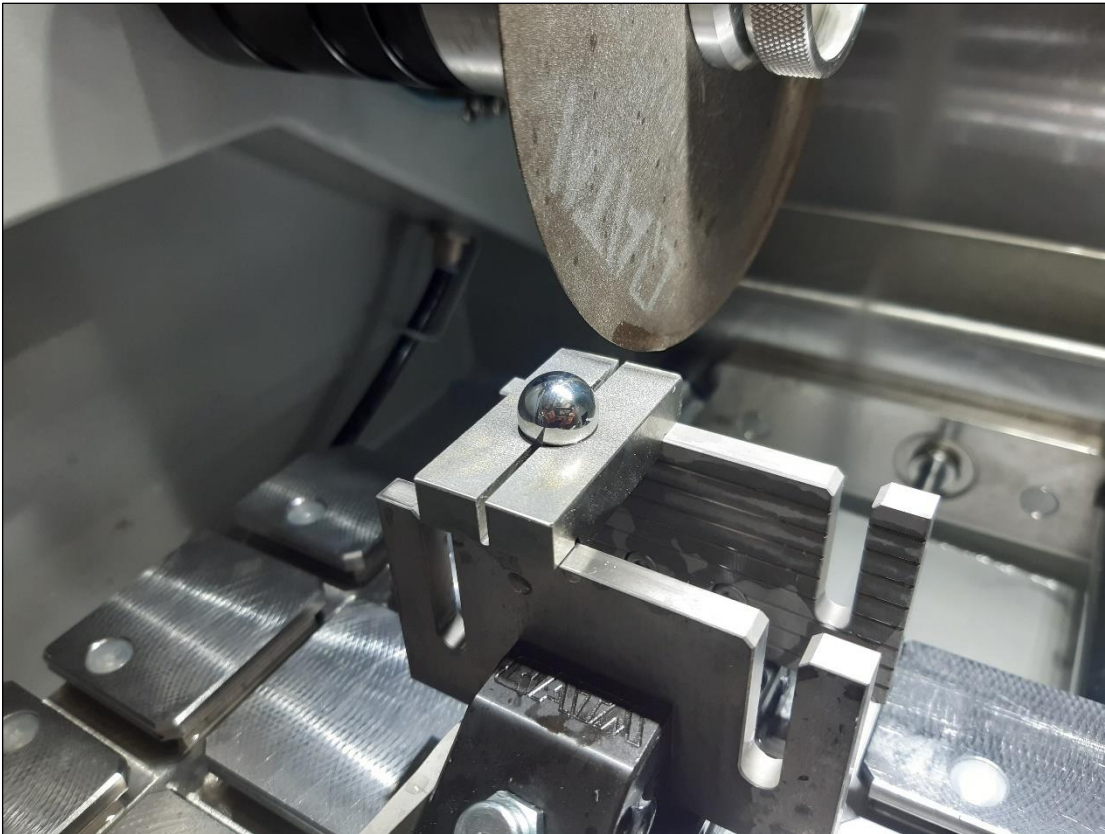


Figure 6: Glued ball and clamped adaption.

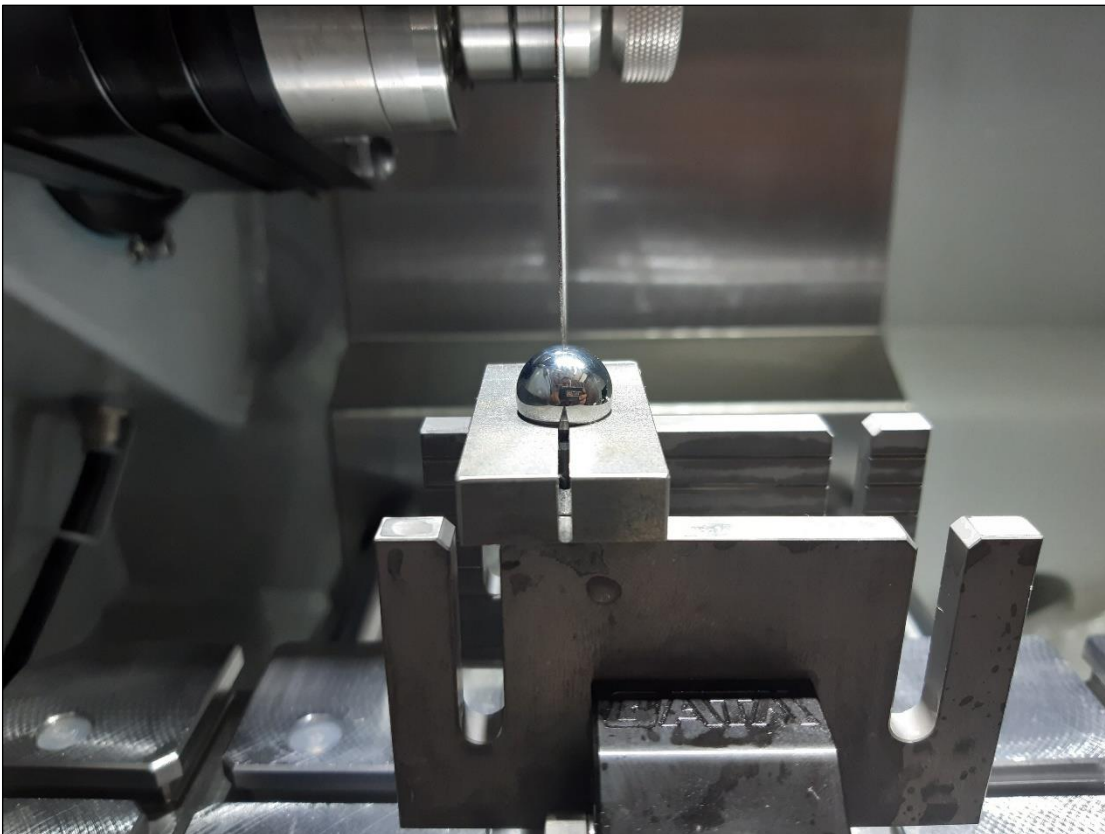



Figure 7: Glued ball and clamped adaption.

QATM-Preparation method – Cup

Cutting

|  Cutting | | | |
|--|---|-------------------------------|--|
| Device | Cut-off disc | Anti-corrosion coolant | Clamping tool |
| Qcut 200 A | Aluminium oxide Rubber bonded. (92002769) | QATM Standard (95014281) | -Easy-clamping base S (Z2236030) -Qtool 40 (Z2270200) -Clamping jaws 45 mm slottet (02270214) |
| Cutting method | | | |
| Automatic X-Axis | | | |
| Parameters | | | |
| Feed speed | Pulse parameter | Cut-off disc rotational speed | |
| Zone cutting: 4 mm – 0,01mm/s Rest – 0,06 mm/s | Without puls | 3000 rpm | |
| Notes | | | |
| | | | |

QATM-Preparation method – Cup



Figure 8: Overview Cup.



Figure 9: Cutted cup.

QATM-Preparation method – Cup




Figure 10: Clamped sample.



Figure 11: Detailed picture of the clamped sample.

QATM-Preparation method – Needle

Cutting

|  Cutting | | | |
|--|---|-------------------------------|--|
| Device | Cut-off disc | Anti-corrosion coolant | Clamping tool |
| Qcut 200 A | Aluminium oxide Rubber bonded. (92002769) | QATM Standard (95014281) | -Easy-clamping base S (Z2236030) -Qtool 40 (Z2270200) -Clamping jaws 45 mm slottet (02270214) |
| Cutting method | | | |
| Automatic X-Axis | | | |
| Parameters | | | |
| Feed speed | Pulse parameter | Cut-off disc rotational speed | |
| 0,08mm/s | Without puls | 3000 rpm | |
| Notes | | | |
| | | | |

QATM-Preparation method – Needle



Figure 12: Overview needle.



Figure 13: Cutted needle.

QATM-Preparation method – Needle




Figure 14: Clamped sample.



Figure 15: Detailed picture of the clamped sample.

QATM-Preparation method – OAP

Cutting

|  Cutting | | | |
|---|--|-------------------------------|---|
| Device | Cut-off disc | Anti-corrosion coolant | Clamping tool |
| Qcut 200 A | Aluminium oxide Resin bonded. (92004155) | QATM Standard (95014281) | -Easy-clamping base S (Z2236030) -Qtool 40 (Z2270200) -Clamping jaws 45 mm slottet (02270214) |
| Cutting method | | | |
| Automatic X-Axis | | | |
| Parameters | | | |
| Feed speed | Pulse parameter | Cut-off disc rotational speed | |
| 0,08mm/s | Without puls | 3000 rpm | |
| Notes | | | |
| <ul style="list-style-type: none"> - Due to the internal stress, the sample can block the cutting wheel during the process. A plastic plug can help here. The diameter should match the sample diameter. | | | |

QATM-Preparation method – OAP

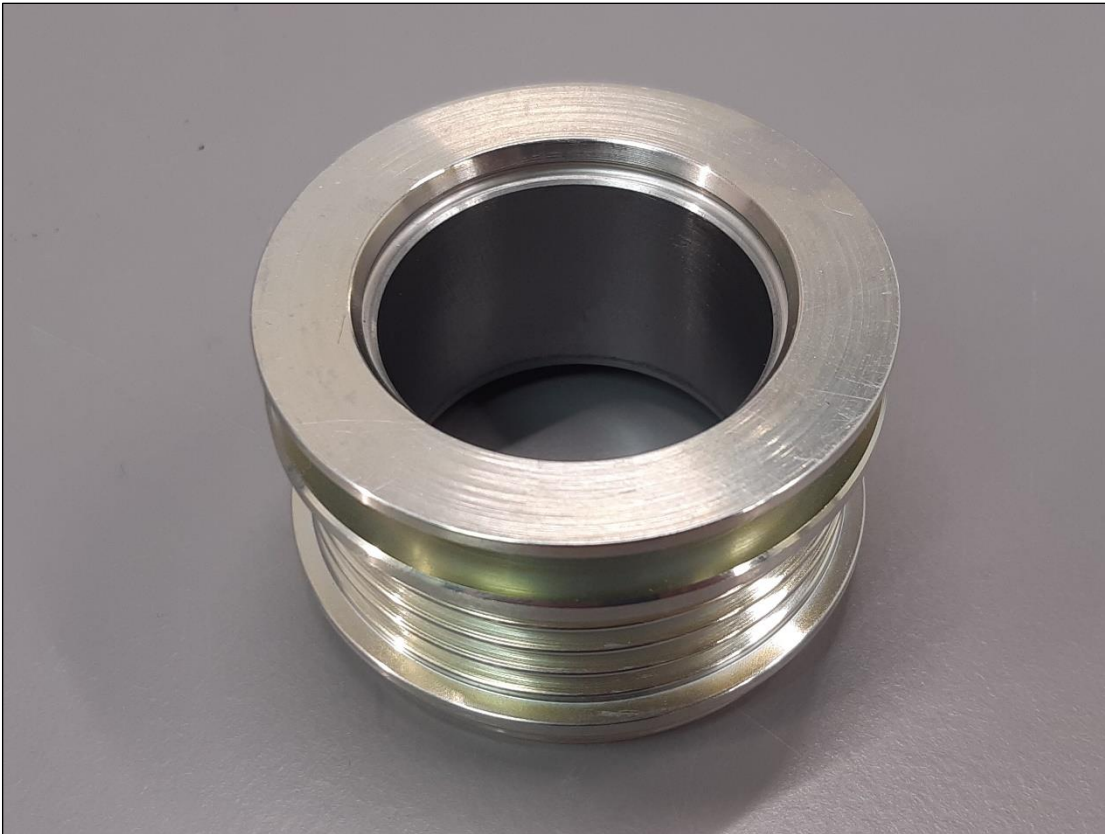


Figure 16: Overview OAP.



Figure 17: OAP after sectioning.

QATM-Preparation method – OAP

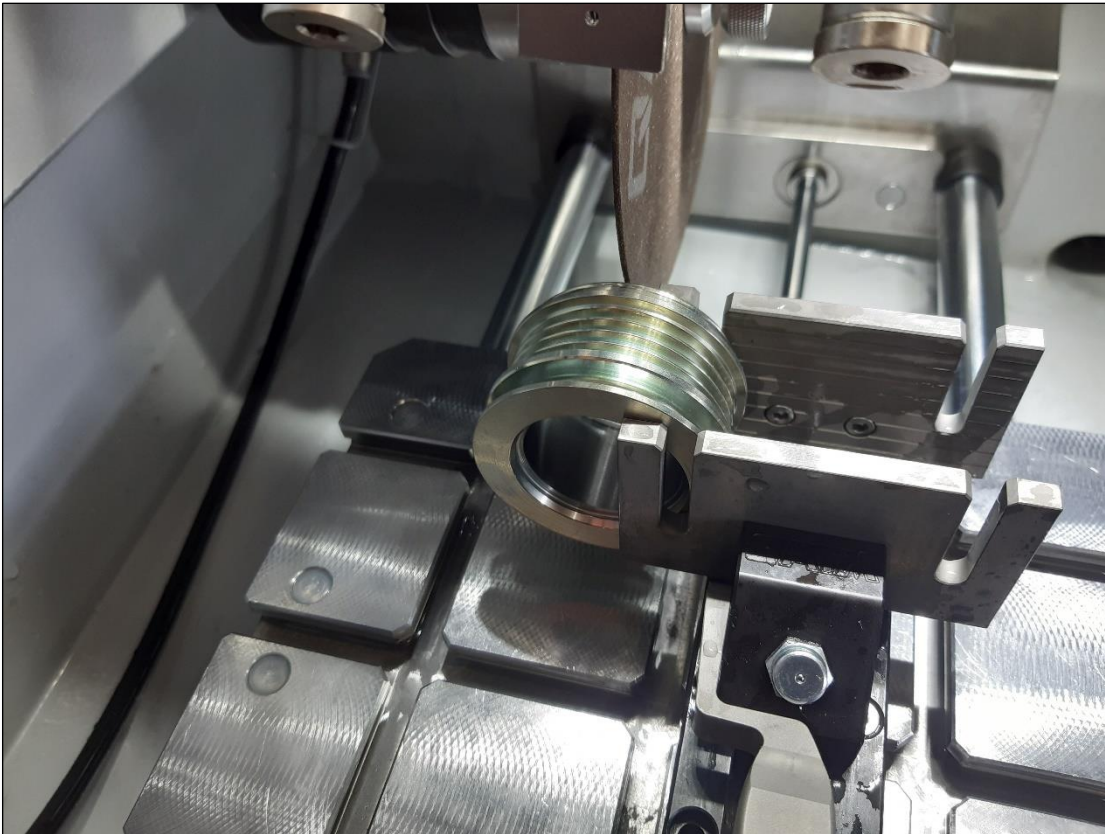


Figure 18: Clamped sample.

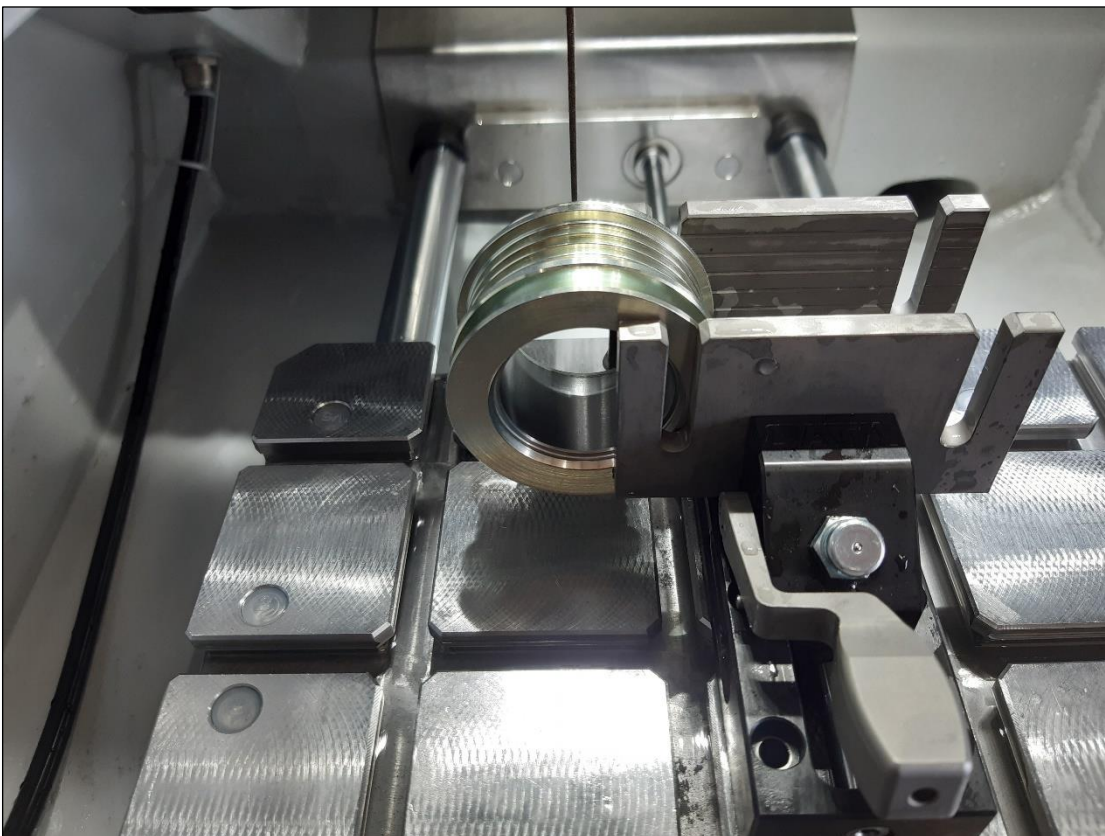


Figure 19: Clamped sample.