

Oddy Test Methods Chart – Updated September 2020

| Oddy Method Number | Cu source; purity | Ag source; purity | Pb source; purity | Rinse Method | Holder Type | O-ring Type | Water Volume | Coupon Sanding | Sand Paper Grit | Coupon Configuration | Component Wash Method | Lid Tightening | Extra Notes |
|--------------------|-------------------------|-------------------------|-------------------------|-------------------------------|---|-----------------|--------------|-----------------|-----------------|---------------------------------|-----------------------|----------------|-------------|
| 20160620_OT | | | low purity | | stopper | None | 0.5 mL | none | n/a | parallel | hand wash | hand tightened | |
| 20160623_OT | Alfa Aesar, high purity | Alfa Aesar, high purity | Alfa Aesar, high purity | | stopper | None | 0.5 mL | lead | 3200 grit | parallel | hand wash | hand tightened | |
| 20160629_OT | Alfa Aesar, high purity | Alfa Aesar, high purity | Alfa Aesar, high purity | | stopper | silicone o-ring | 0.5 mL | lead, one side | 3200 grit | parallel | hand wash | hand tightened | |
| 20160630_OT | Alfa Aesar, high purity | Alfa Aesar, high purity | Alfa Aesar, high purity | | stopper | silicone o-ring | 0.5 mL | all, both sides | 3200 grit | parallel | hand wash | 4 Nm torque | |
| 20160705_OT | Alfa Aesar, high purity | Alfa Aesar, high purity | Alfa Aesar, high purity | | stopper | None | 0.5 mL | all, both sides | 3200 grit | parallel | hand wash | hand tightened | |
| 20160722_OT | Alfa Aesar, high purity | Alfa Aesar, high purity | Alfa Aesar, high purity | | stopper | silicone o-ring | 0.5 mL | lead | 2400 grit | parallel | hand wash | 4 Nm torque | |
| 20160822_OT | Alfa Aesar, high purity | Alfa Aesar, high purity | Alfa Aesar, high purity | | stopper; phase where some stoppers were not officially platinum Cured | o-ring | 0.5 mL | lead | 3200 grit | triangle & parallel config. | hand wash | 4 Nm torque | |
| 20160926_OT | Alfa Aesar, high purity | Alfa Aesar, high purity | Alfa Aesar, high purity | Cu and Ag rinsed with acetone | stopper; phase where some stoppers were not officially platinum Cured | silicone o-ring | 0.5 mL | lead | 3200 grit | triangle & parallel config. | hand wash | 4 Nm torque | |
| 20161004_OT | Alfa Aesar, high purity | Alfa Aesar, high purity | Alfa Aesar, high purity | Cu and Ag rinsed with acetone | stopper; phase where some stoppers were not officially platinum Cured | silicone o-ring | 0.5 mL | lead | 3200 grit | coupons interleaved with fabric | hand wash | 4 Nm torque | |
| 20161004b_OT | Alfa Aesar, high purity | Alfa Aesar, high purity | Alfa Aesar, high purity | Cu and Ag rinsed with acetone | stopper; phase where some stoppers were not officially platinum Cured | silicone o-ring | 0.5 mL | silver | 2400 grit | triangle & parallel config. | hand wash | 4 Nm torque | |
| 20161007_OT | Alfa Aesar, high purity | Alfa Aesar, high purity | Alfa Aesar, high purity | Cu and Ag rinsed with acetone | stoppers | silicone o-ring | 0.5 mL | lead | 3200 grit | parallel | hand wash | 4 Nm torque | |
| 20161014_OT | Alfa Aesar, high purity | Alfa Aesar, high purity | Alfa Aesar, high purity | | stoppers | silicone o-ring | 0.5 mL | lead | 3200 grit | triangle & parallel config. | hand wash | 4 Nm torque | |

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|---------------|-------------------------|-------------------------|-------------------------|-----------------------------------|--|-----------------|--------|------|-----------|--|-----------|-------------|--|
| 20161110_OT | Alfa Aesar, high purity | Alfa Aesar, high purity | Alfa Aesar, high purity | all metals rinsed with acetone | stoppers (used); Sanitech and not Sanitech | silicone o-ring | 0.5 mL | lead | 3200 grit | 1 triangle Sanitech; 1 parallel not Sanitech | hand wash | 4 Nm torque | |
| 20161110_OT_B | Alfa Aesar, high purity | Alfa Aesar, high purity | Alfa Aesar, high purity | rinsed with acetone | stoppers (used); Sanitech | silicone o-ring | 0.5 mL | lead | 3200 grit | triangle & parallel config. | hand wash | 4 Nm torque | |
| 20161110_OT_B | Alfa Aesar, high purity | Alfa Aesar, high purity | Alfa Aesar, high purity | coupons rinsed with acetone | 1 triangle Sanitech (used); 1 parallel Sanitech (used) | silicone o-ring | 0.5 mL | lead | 3200 grit | triangle & parallel config. | hand wash | 4 Nm torque | |
| 20161121_OT | Alfa Aesar, high purity | Alfa Aesar, high purity | Alfa Aesar, high purity | rinsed coupons with acetone | Sanitech stoppers; used/unused state unknown | silicone o-ring | 0.5 mL | lead | 3200 grit | triangle & parallel config. | hand wash | | |
| 20161121_OT | Alfa Aesar, high purity | Alfa Aesar, high purity | Alfa Aesar, high purity | all coupons rinsed with acetone | Sanitech stoppers, used/unused state unknown | silicone o-ring | 0.5 mL | lead | 3200 grit | triangle & parallel | hand wash | 4 Nm | |
| 20161208_OT_B | Alfa Aesar, high purity | Alfa Aesar, high purity | Alfa Aesar, high purity | Cu and Ag not rinsed; lead rinsed | Sanitech stoppers; B new, A used | silicone o-ring | | lead | 3200 grit | triangle & parallel config. | hand wash | 4 Nm torque | |
| 20161215_OT | Alfa Aesar, high purity | Alfa Aesar, high purity | Alfa Aesar, high purity | Cu and Ag not rinsed; lead rinsed | Sanitech stoppers (new) | silicone o-ring | | lead | 320 grit | triangle & parallel config. | hand wash | 4 Nm torque | |
| 20161215_OT_B | Alfa Aesar, high purity | Alfa Aesar, high purity | Alfa Aesar, high purity | | Sanitech stoppers (used) | silicone o-ring | | lead | 3200 grit | triangle & parallel config. | hand wash | 4 Nm torque | |
| 20161218_OT | Alfa Aesar, high purity | Alfa Aesar, high purity | Alfa Aesar, high purity | only lead rinsed | one new one used Sanitech | silicone o-ring | 0.5 mL | lead | 3200 grit | not noted | hand wash | 4 Nm torque | |
| 20170111_OT | | | | no rinsing | Sanitech stoppers (new) | | | lead | 3200 grit | triangle config. | hand wash | 4 Nm torque | |
| 20170118_OT | | | | | | | | lead | 3200 grit | | hand wash | 4 Nm torque | |
| 20170310_OT | High | Low | High | Cu and Pb cleaned with acetone | Ne | Silicone o-ring | 0.5 mL | Lead | 3200 | Triangle config. | Not noted | 4 Nm torque | |

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|---------------|-------------------------|-------------------------|-------------------------|---|--|-----------------------------|--------|------|-----------|---|--|-------------|--|
| 20170918_OT | Alfa Aesar, high purity | Alfa Aesar, high purity | low - 99.95% | coupons rinsed with acetone & isopropanol | new stoppers | black Viton (Global O-ring) | 0.5 mL | lead | 3200 grit | coupons touching sample, not in stopper | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | |
| 20170922_OT | alfa aesar, high purity | fine metals, 99.998% | alfa aesar, high purity | coupons rinsed with acetone & isopropanol | A stopper - McMaster-Carr; B stopper - Sanitech | black Viton (global o-ring) | 0.5 mL | lead | 3200 grit | triangle config. | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | |
| 20171002_OT | | Fine Metals, 99.998% | | all coupons rinsed with HPLC acetone and HPLC isopropanol | one stopper (McMaster-Carr, new), one Shapeways star (more solid) holder | black Viton (Global O-ring) | 0.5 mL | lead | 3200 grit | star formation in stopper | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | |
| 20171024_OT | | Fine Metals, 99.998% | | all coupons rinsed with HPLC acetone and HPLC isopropanol | one stopper (McMaster-Carr, new), one Shapeways star (more solid) holder | black Viton (Global O-ring) | 0.5 mL | lead | 3200 grit | triangle config. | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | |
| 20171030_OT | Fine Metals, 99.998% | Fine Metals, 99.998% | Alfa Aesar, high purity | all coupons rinsed with HPLC acetone and HPLC isopropanol | one stopper (McMaster-Carr, new), one Shapeways star (more solid) holder | black Viton (Global O-ring) | 0.5 mL | lead | 3200 grit | triangle config. | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | |
| 20171116_OT | Fine Metals, 99.998% | Fine Metals, 99.998% | Alfa Aesar, high purity | all coupons rinsed with HPLC acetone and HPLC isopropanol | Shapeways nylon holders | black Viton (Global O-ring) | 0.5 mL | lead | 3200 grit | triangle config. | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | |
| 20171116_OT_B | Fine Metals, 99.998% | Fine Metals, 99.998% | Alfa Aesar, high purity | all coupons rinsed with HPLC acetone and HPLC isopropanol | ultimaker nylon holders (met printed) | black Viton (Global O-ring) | 0.5 mL | lead | 3200 grit | triangle config. | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | |

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|---------------|----------------------------------|-------------------------|-------------------------|---|-------------------------|------------------|--------|------|-----------|------------------------|--|-------------|---|
| 20171120_OT | Fine Metals, 99.998% | Fine Metals, 99.998% | Alfa Aesar, high purity | all coupons rinsed with HPLC acetone and HPLC isopropanol | Shapeways nylon holders | brown faux viton | 0.5 mL | lead | 3200 grit | triangle config. | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | |
| 20180305_OT | Fine Metals, 99.998% | Fine Metals, 99.998% | Alfa Aesar, high purity | all coupons rinsed with HPLC acetone and HPLC isopropanol | Shapeways nylon holders | NA | 0.5 mL | lead | 3200 grit | triangle configuration | dishwasher: glassware chemical wash, plastic just water wash | NA | Oddy coupons crimped onto Shapeways nylon holders, placed in sealed pouch with kimax water vial and heat sealed into barrier foil package for testing. Coupons were placed vertically with Shapeways holder on floor of ~125mL 4-sided pyramidal pouch. Original, Cut-out was 8.5" x 8.5". Seals were approx 1/2" wide. |
| 20180525_OT | Fine Metals, 99.998% | Alfa Aesar, high purity | Alfa Aesar, high purity | all coupons rinsed with HPLC acetone and HPLC isopropanol | Shapeways nylon holders | Viton (black) | 0.5 mL | lead | 3200 grit | triangle configuration | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | |
| 20180614_OT | Fine Metals, 99.998%; unannealed | Alfa Aesar, high purity | Alfa Aesar, high purity | all coupons rinsed with HPLC acetone and HPLC isopropanol | Shapeways nylon holders | Viton (black) | 0.5 mL | lead | 3200 grit | triangle configuration | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | |
| 20180626_B_OT | Fine Metals, 99.998%; unannealed | Alfa Aesar, high purity | Alfa Aesar, high purity | all coupons rinsed with HPLC acetone and HPLC isopropanol | Shapeways nylon holders | Viton (black) | 0.5 mL | lead | 3200 grit | triangle configuration | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | half-sized coupons on material |

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|---------------|------------------------------------|----------------------------------|----------------------------------|---|-------------------------|---------------|--------|------|-----------|------------------------|--|-------------|---|
| 20180626_OT | Fine Metals, 99.998%; unannealed | Alfa Aesar, high purity | Alfa Aesar, high purity | all coupons rinsed with HPLC acetone and HPLC isopropanol | Shapeways nylon holders | Viton (black) | 0.5 mL | lead | 3200 grit | triangle configuration | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | coupons in holder and half-sized coupons on material |
| 20180628_B_OT | Fine Metals, 99.998%; unannealed | Alfa Aesar, high purity: 99.998% | Alfa Aesar, high purity: 99.998% | all coupons rinsed with HPLC acetone and HPLC isopropanol | Shapeways nylon holders | Viton (black) | 0.5 mL | lead | 3200 grit | triangle configuration | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | A: coupons in holder; B: half-sized coupons on material |
| 20180628_OT | Fine Metals, 99.998%; unannealed | Alfa Aesar, high purity | Alfa Aesar, high purity | all coupons rinsed with HPLC acetone and HPLC isopropanol | Shapeways nylon holders | Viton (black) | 0.5 mL | lead | 3200 grit | triangle configuration | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | A: new and washed nylon holders; B: used, passing, and washed nylon holders |
| 20180704_OT | Fine Metals, 99.998%, , unannealed | Fine Metals, 99.998%, unannealed | Alfa Aesar, high purity: 99.998% | all coupons rinsed with HPLC acetone and HPLC isopropanol | Shapeways nylon holders | Viton (black) | 0.5 mL | lead | 3200 grit | triangle configuration | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | |
| 20180706_B_OT | Fine Metals, 99.998%; unannealed | Fine Metals, 99.998%; | Alfa Aesar, high purity: 99.998% | all coupons rinsed with HPLC acetone and HPLC isopropanol | Shapeways nylon holders | Viton (black) | 0.5 mL | lead | 3200 grit | triangle configuration | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | A: coupons in holder B: coupons in holder & half-sized coupons on material |
| 20180706_C_OT | Fine Metals, 99.998%; unannealed | Fine Metals, 99.998%; | Alfa Aesar, high purity: 99.998% | all coupons rinsed with HPLC acetone and HPLC isopropanol | Shapeways nylon holders | Viton (black) | 0.5 mL | lead | 3200 grit | triangle configuration | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | |

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|---------------|----------------------------------|----------------------------------|----------------------------------|---|---|---------------|--------|------|-----------|------------------------|--|-------------|---|
| 20180706_OT | Fine Metals, 99.998%; unannealed | Alfa Aesar, high purity: 99.998% | Alfa Aesar, high purity: 99.998% | all coupons rinsed with HPLC acetone and HPLC isopropanol | Shapeways nylon holders | Viton (black) | 0.5 mL | lead | 3200 grit | triangle configuration | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | A: coupons in holder; B: half-sized coupons on material |
| 20180821_B_OT | Alfa Aesar, high purity: 99.998% | Fine Metals, 99.998%; | Alfa Aesar, high purity: 99.998% | all coupons rinsed with HPLC acetone and HPLC isopropanol | Shapeways nylon holders | Viton (black) | 0.5 mL | lead | 3200 grit | triangle configuration | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | Hanging coupons & half-sized coupons touching the material. |
| 20180821_OT | Alfa Aesar, high purity: 99.998% | Fine Metals, 99.998%; | Alfa Aesar, high purity: 99.998% | all coupons rinsed with HPLC acetone and HPLC isopropanol | Shapeways nylon holders | Viton (black) | 0.5 mL | lead | 3200 grit | triangle configuration | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | |
| 20181031_OT | Alfa Aesar, high purity: 99.998% | Fine Metals, 99.998%; | Alfa Aesar, high purity: 99.998% | all coupons rinsed with HPLC acetone and HPLC isopropanol | Ultimaker polypropylene holders (Met printed) | Viton (black) | 0.5 mL | lead | 3200 grit | triangle configuration | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | |
| 20181203_A_OT | NA | NA | NA | NA | Shapeways nylon holders | Viton (black) | 0.5 mL | NA | NA | triangle configuration | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | |
| 20181203_B_OT | NA | NA | NA | NA | Shapeways nylon holders | Viton (black) | 0.5 mL | NA | NA | triangle configuration | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | |
| 20181203_C_OT | NA | NA | NA | NA | Shapeways nylon holders | Viton (black) | 0.5 mL | NA | NA | triangle configuration | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | |

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|---------------|----------------------------------|-----------------------|----------------------------------|---|---|---------------|--------|------|-----------|------------------------|--|-------------|---|
| 20190115 | Alfa Aesar, high purity: 99.998% | Fine Metals, 99.998%; | Alfa Aesar, high purity: 99.998% | all coupons rinsed with HPLC acetone and HPLC isopropanol | Shapeways design of nylon coupon holder but without the vertical bars; open configuration | Viton (black) | 0.5 mL | lead | 3200 grit | triangle configuration | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | |
| 20190130_OT | Alfa Aesar, high purity: 99.998% | Fine Metals, 99.998% | Alfa Aesar, high purity: 99.998% | all coupons rinsed with HPLC acetone and HPLC isopropanol | Shapeways nylon holders | NA | 0.5 mL | lead | 3200 grit | triangle configuration | dishwasher: glassware chemical wash, plastic just water wash | NA | Oddy coupons crimped onto Shapeways nylon holders, placed in sealed pouch with kimax water vial and heat sealed into barrier foil package for testing. Coupons were placed vertically with Shapeways holder on floor of ~125mL 4-sided pyramidal pouch. Original, Cut-out was 8.5" x 8.5". Seals were approx 1/2" wide. |
| 20190214_OT_B | Alfa Aesar, high purity: 99.998% | Fine Metals, 99.998% | Alfa Aesar, high purity: 99.998% | all coupons rinsed with HPLC acetone and HPLC isopropanol | Shapeways nylon holders - previously used with permanent results | Viton (black) | 0.5 mL | lead | 3200 grit | triangle configuration | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | |

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|---------------|---|-----------------------|---|---|--|---------------|--------|------|-----------|------------------------|--|-------------|--|
| 20190226_OT | Alfa Aesar, high purity: 99.998%, sourced from Fine Metals – smooth non- striated surface with ‘problematic spotting’ impurities on surface | Fine Metals, 99.998%; | Alfa Aesar, high purity: 99.998% | all coupons rinsed with HPLC acetone and HPLC isopropanol | Shapeways nylon holders | Viton (Black) | 0.5 mL | lead | 3200 grit | triangle configuration | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | |
| 20190226_OT_1 | Alfa Aesar, high purity: 99.998%; sourced from Fine Metals – smooth non- striated surface with occasionally ‘problematic spotting’ impurities on surface. Fine Metals is supplying Alfa Aesar and either source will work. | Fine Metals, 99.998%; | Alfa Aesar, high purity: 99.998% | all coupons rinsed with HPLC acetone and HPLC isopropanol | Shapeways nylon holders | Viton (black) | 0.5 mL | lead | 3200 grit | triangle configuration | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | |
| 20190318_OT_a | Alfa Aesar, high purity: 99.998% | Fine Metals, 99.998%; | Alfa Aesar, high purity: 99.998% | all coupons rinsed with HPLC acetone and HPLC isopropanol | A is NEW nylon holder. B is a used, permanent, washed holder that had yellowed from storing for many months on 60C oven. All Ultimaker polypropylene holders (Met printed) | Viton (black) | 0.5 mL | lead | 3200 grit | triangle configuration | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | |

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|---------------|---|-----------------------|-----------------------------------|---|---|---------------|--------|------|-----------|------------------------|--|-------------|--|
| 20190318_OT_b | Alfa Aesar, high purity: 99.998% | Fine Metals, 99.998%; | Alfa Aesar, high purity: 99.998% | all coupons rinsed with HPLC acetone and HPLC isopropanol | A & B are used, permanent, washed holders. Unclear whether they'd yellowed from storing for many months on 60C oven. All Ultimaker polypropylene holders (Met printed) | Viton (black) | 0.5 mL | lead | 3200 grit | triangle configuration | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | |
| 20190321_OT_a | Thermo/Alpha Aesar/Fine Metals, high purity: 99.998+% | Fine Metals, 99.998%; | Alfa Aesar, high purity: 99.998+% | all coupons rinsed with HPLC acetone and HPLC isopropanol | Stainless steel holder (SS type unknown). Water jet produced by Meer Precision. 0.6mm thick | Viton (Black) | 0.5 mL | lead | 3200 grit | triangle configuration | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | |
| 20190425_OT | Thermo/Alpha Aesar/Fine Metals, high purity: 99.998+% | Fine Metals, 99.998%; | Alfa Aesar, high purity: 99.998+% | all coupons rinsed with HPLC acetone and HPLC isopropanol | Stainless steel holder (SS type 304). Laser cut by Jerry Lui at Printaworld. 0.4mm thick | Viton (Black) | 0.5 mL | lead | 3200 grit | triangle configuration | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | |
| 20190606_OT | Thermo/Alpha Aesar/Fine Metals, high purity: 99.998+% | Fine Metals, 99.998%; | Alfa Aesar, high purity: 99.998+% | all coupons rinsed with HPLC acetone and HPLC isopropanol | Stainless steel holder (SS type 304). Laser cut by Jerry Lui at Printaworld. 0.4mm thick with SHAPEWAYS nylon nested inside after clipping 'wings' and coupon rail. Coupon hung from stainless. | Viton (Black) | 0.5 mL | lead | 3200 grit | triangle configuration | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | |

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|---------------|---|-----------------------|----------------------------------|---|------|---------------|--------|------|-----------|--|--|-------------|--|
| 20191213_B_OT | Alfa Aesar, high purity: 99.998%; sourced from Fine Metals – smooth non-striated surface with occasionally 'problematic spotting' impurities on surface. Fine Metals is supplying Alfa Aesar and either source will work. | Fine Metals, 99.998%; | Alfa Aesar, high purity: 99.998% | all coupons rinsed with HPLC acetone and HPLC isopropanol | none | Viton (black) | 0.5 mL | lead | 3200 grit | half-sized coupons touching the material | dishwasher: glassware chemical wash, plastic just water wash | 4 Nm torque | |
|---------------|---|-----------------------|----------------------------------|---|------|---------------|--------|------|-----------|--|--|-------------|--|