



# Agricultural Water Quality Program

Created by the CSU Agricultural Water Quality Program

Cercospora Bill of Materials

# Sensor Parts

# SHT 31 Sensor Probe



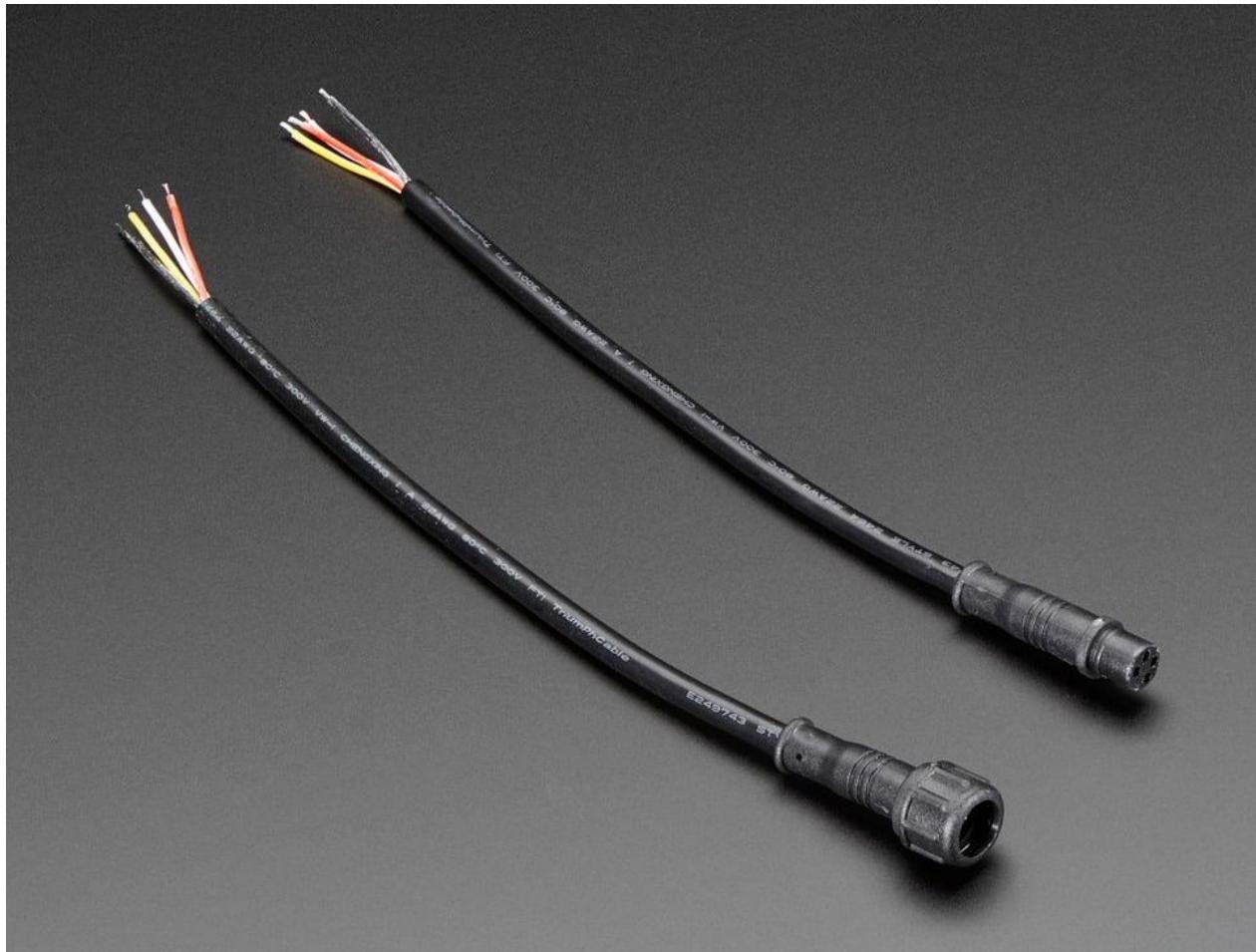
Link:

[https://www.amazon.com/gp/product/B09NYDCKF2/ref=ppx\\_yo\\_dt\\_b\\_search\\_asin\\_title?ie=UTF8&th=1](https://www.amazon.com/gp/product/B09NYDCKF2/ref=ppx_yo_dt_b_search_asin_title?ie=UTF8&th=1)

Alternate if out of stock:  
Sht35: <https://a.co/d/0hgxrgr>

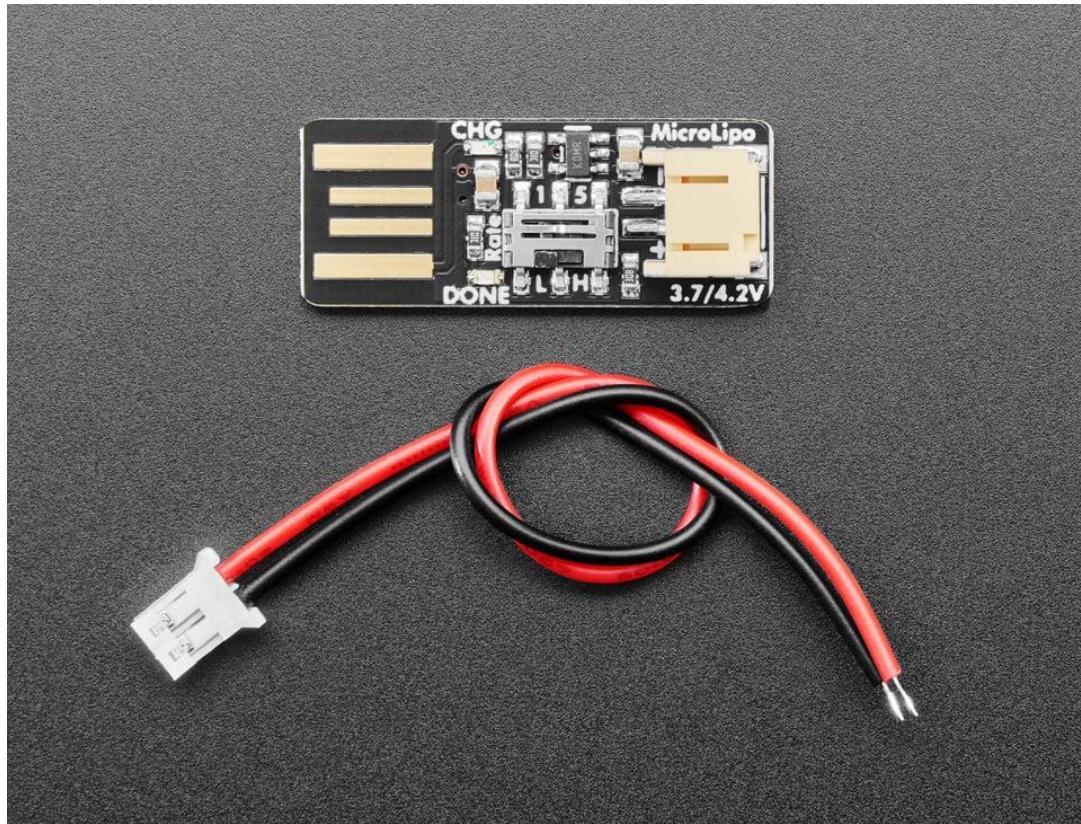


# Waterproof Polarized 4-Wire Cable Set



<https://www.adafruit.com/product/744>

# Adafruit Micro Lipo - USB LiIon/LiPoly Charger



[https://www.adafruit.com/p  
roduct/1304](https://www.adafruit.com/product/1304)

# Lithium Ion Battery Pack - 3.7V 4400mAh

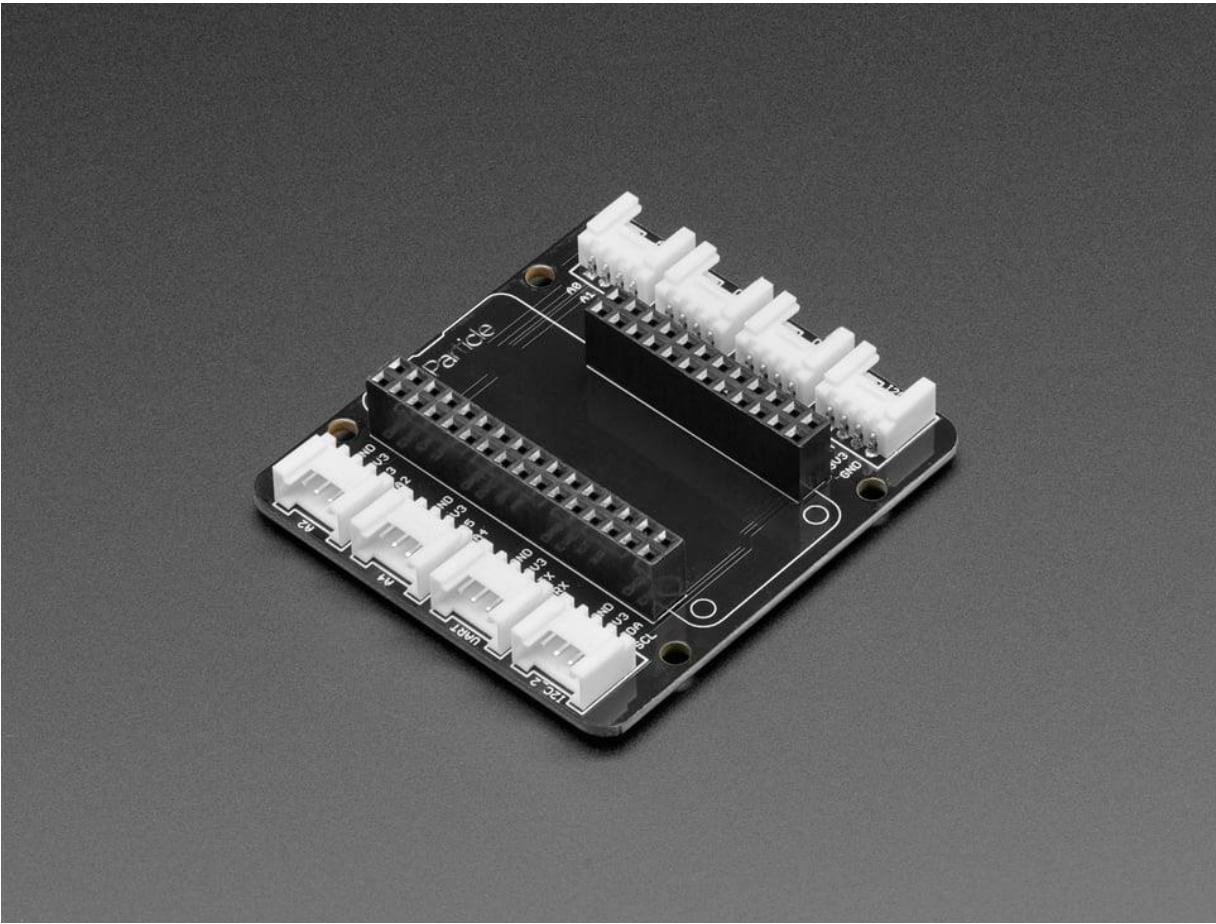


<https://www.adafruit.com/product/354>

Alternate if out of stock:

[https://www.amazon.com/Battery-Packs-Lithium-Pack-3-7V/dp/B0137IRGHG/ref=sr\\_1\\_1?crid=T7V5SLARPWZ3&keywords=Lithium+Ion+Battery+Pack+-+3.7V+4400mAh&qid=1706741942&sprefix=lithium+ion+battery+pack+-+3.7v+4400mah%2Caps%2C131&sr=8-1](https://www.amazon.com/Battery-Packs-Lithium-Pack-3-7V/dp/B0137IRGHG/ref=sr_1_1?crid=T7V5SLARPWZ3&keywords=Lithium+Ion+Battery+Pack+-+3.7V+4400mAh&qid=1706741942&sprefix=lithium+ion+battery+pack+-+3.7v+4400mah%2Caps%2C131&sr=8-1)

# Grove Shield FeatherWing



<https://www.adafruit.com/product/4309>

# Boron LTE CAT-M1 for North America (BRN404X)



<https://store.particle.io/collections/cellular/products/boron-lte-cat-m1-noram-with-ethersim-4th-gen>

# Waterproof Enclosure (NEW)



[https://www.amazon.com/dp/B0BZR3GZ4V/ref=twister\\_B0B87THLGC?encoding=UTF8&psc=1](https://www.amazon.com/dp/B0BZR3GZ4V/ref=twister_B0B87THLGC?encoding=UTF8&psc=1)

# #6 x ½" Sheet Metal Screws



[https://www.amazon.com/Stainless-Phillips-Tapping-Bright-Finish/dp/B08LV1M9FC/ref=sr\\_1\\_3?crid=LCO1S41XKHLI&keywords=%236%2B1%2F2%2Bin%2Bsheet%2Bmetal%2Bscrews&qid=1707341265&sprefix=%2B6%2B1%2F2%2Bin%2Bsheet%2Bmetal%2Bscrews%2Caps%2C112&sr=8-3&th=1](https://www.amazon.com/Stainless-Phillips-Tapping-Bright-Finish/dp/B08LV1M9FC/ref=sr_1_3?crid=LCO1S41XKHLI&keywords=%236%2B1%2F2%2Bin%2Bsheet%2Bmetal%2Bscrews&qid=1707341265&sprefix=%2B6%2B1%2F2%2Bin%2Bsheet%2Bmetal%2Bscrews%2Caps%2C112&sr=8-3&th=1)

# Silica Pack (30 pack)



[https://www.amazon.com/Dry-Premium-Packets-Desiccants-Dehumidifier/dp/B00VJ02VMK/ref=sr\\_1\\_3?crid=27DLR5YA4ZQID&keywords=10g%2Bsilica%2Bgel%2Bpackets&qid=1675185727&sprefix=10%2Bg%2Bsilica%2B%2Caps%2C139&sr=8-3&th=1](https://www.amazon.com/Dry-Premium-Packets-Desiccants-Dehumidifier/dp/B00VJ02VMK/ref=sr_1_3?crid=27DLR5YA4ZQID&keywords=10g%2Bsilica%2Bgel%2Bpackets&qid=1675185727&sprefix=10%2Bg%2Bsilica%2B%2Caps%2C139&sr=8-3&th=1)

# White Solder Seal Wire Connectors AWG26-24



[https://www.amazon.com/gp/product/B09BHW6BWC/ref=ppx\\_yo\\_dt\\_b\\_search\\_asin\\_title?ie=UTF8&psc=1](https://www.amazon.com/gp/product/B09BHW6BWC/ref=ppx_yo_dt_b_search_asin_title?ie=UTF8&psc=1)

# 1/4" Heat Shrink Tubing (50ft)



[https://www.amazon.com/gp/product/B08W7RB32Z/ref=ppx\\_yo\\_dt\\_b\\_search\\_asin\\_title?ie=UTF8&th=1](https://www.amazon.com/gp/product/B08W7RB32Z/ref=ppx_yo_dt_b_search_asin_title?ie=UTF8&th=1)

3:1 Ratio - Adhesive Lined - Marine Grade Heat Shrink - Black - 50 Feet Roll

# Cable Gland (20 Pack) PG7 Waterproof



[https://www.amazon.com/AMPELE-Waterproof-Plastic-Adjustable-3-5-6mm/dp/B08TCFM4C7/ref=sxts\\_b2b\\_sx\\_reorder\\_ac\\_b\\_customer?content-id=amzn1.sym.44ecadb3-1930-4ae5-8e7f-c0670e7d86ce%3Aamzn1.sym.44ecadb3-1930-4ae5-8e7f-c0670e7d86ce&clid=1OH62VJ42NK1U&cv\\_ct\\_cx=pg7%2Bcable%2Bgland&keywords=pg7%2Bcable%2Bgland&pd\\_rd\\_i=B09X4GK3FT&pd\\_rd\\_r=d5becbf4-0c5a-42a5-abc4-9cc85186de9b&pd\\_rd\\_w=O3qY1&pd\\_rd\\_wg=9baEq&pf\\_rd\\_p=44ecadb3-1930-4ae5-8e7f-c0670e7d86ce&pf\\_rd\\_r=2YZKZZNZ8KDT9W166GAZ&qid=1702330671&sbo=RZvfv%2F%2FHxD%2BO5021pAnSA%3D%3D&sprefix=PG7%2B%2Caps%2C132&sr=1-1-62d64017-76a9-4f2a-8002-d7ec97456eea&th=1](https://www.amazon.com/AMPELE-Waterproof-Plastic-Adjustable-3-5-6mm/dp/B08TCFM4C7/ref=sxts_b2b_sx_reorder_ac_b_customer?content-id=amzn1.sym.44ecadb3-1930-4ae5-8e7f-c0670e7d86ce%3Aamzn1.sym.44ecadb3-1930-4ae5-8e7f-c0670e7d86ce&clid=1OH62VJ42NK1U&cv_ct_cx=pg7%2Bcable%2Bgland&keywords=pg7%2Bcable%2Bgland&pd_rd_i=B09X4GK3FT&pd_rd_r=d5becbf4-0c5a-42a5-abc4-9cc85186de9b&pd_rd_w=O3qY1&pd_rd_wg=9baEq&pf_rd_p=44ecadb3-1930-4ae5-8e7f-c0670e7d86ce&pf_rd_r=2YZKZZNZ8KDT9W166GAZ&qid=1702330671&sbo=RZvfv%2F%2FHxD%2BO5021pAnSA%3D%3D&sprefix=PG7%2B%2Caps%2C132&sr=1-1-62d64017-76a9-4f2a-8002-d7ec97456eea&th=1)

# 22 Gauge 4 Conductor Wire (65 ft)



[https://www.amazon.com/gp/product/B0BV2QHVMB/ref=ppx\\_yo\\_dt\\_b\\_search\\_asin\\_title?ie=UTF8&psc=1](https://www.amazon.com/gp/product/B0BV2QHVMB/ref=ppx_yo_dt_b_search_asin_title?ie=UTF8&psc=1)

# SeeedStudio Grove - Universal 4 Pin Buckled 20cm Cable (5 PCs Pack)



<https://www.amazon.com/Seeedstudio-Grove-Universal-Buckled-Cable/dp/B01CNZ9RJO?th=1>

[https://www.amazon.com/SeeedStudio-Grove-Universal-Buckled-Cable/dp/B07PWVY9YD/ref=sr\\_1\\_14?crid=1JQ43YSRAY9SX&keyw=Seeed+Studio+Grove&qid=1706115274&s=electronics&sprefix=seeed+studio+grove%2Celectronics%2C150&sr=1-14](https://www.amazon.com/SeeedStudio-Grove-Universal-Buckled-Cable/dp/B07PWVY9YD/ref=sr_1_14?crid=1JQ43YSRAY9SX&keyw=Seeed+Studio+Grove&qid=1706115274&s=electronics&sprefix=seeed+studio+grove%2Celectronics%2C150&sr=1-14)

# Fastening Cable Ties Reusable



[https://www.amazon.com/gp/product/B07V73G556/ref=ppx\\_yo\\_dt\\_b\\_search\\_asin\\_title?ie=UTF8&psc=1](https://www.amazon.com/gp/product/B07V73G556/ref=ppx_yo_dt_b_search_asin_title?ie=UTF8&psc=1)

# 3/4 in. 1-Hole Strap



[https://www.homedepot.com/p/Halex-Universal-3-4-in-1-Hole-Strap-4-Pack-22107/314968705?source=shoppingads&locale=en-US&pla&mtc=SHOPPING-BF-CDP-GGL-D27-027\\_006\\_CONDUIT\\_FIT-NA-NA-NA-PMAX-NA-NA-NA-NA-NBR-NA-NA-NEW-NA\\_D27Transition&cm\\_mmc=SHOPPING-BF-CDP-GGL-D27-027\\_006\\_CONDUIT\\_FIT-NA-NA-NA-PMAX-NA-NA-NA-NBR-NA-NA-NEW-NA\\_D27Transition-71700000113157690--&gad\\_source=1&acs\\_info=ZmluYWxfdXJsOiAiaHR0cHM6Ly93d3cuaG9tZWRIcG90LmNvbS9wL0hhbGV4LVVuaXZlcnNhbc0zLTQtaW4tMS1lb2xILVN0cmFwLTQtUGFjayOyMjEwNy8zMTQ5Njg3MDUiCg&gclid=Cj0KCQiAh8OtBhCQARIsAIkWb6-ZNUGk4DF6\\_8K9b\\_SG3twg-4rTYJGDSozB688e1TayXbsJCpro0laAm47EALw\\_wcB&gclsrc=aw.ds](https://www.homedepot.com/p/Halex-Universal-3-4-in-1-Hole-Strap-4-Pack-22107/314968705?source=shoppingads&locale=en-US&pla&mtc=SHOPPING-BF-CDP-GGL-D27-027_006_CONDUIT_FIT-NA-NA-NA-PMAX-NA-NA-NA-NA-NBR-NA-NA-NEW-NA_D27Transition&cm_mmc=SHOPPING-BF-CDP-GGL-D27-027_006_CONDUIT_FIT-NA-NA-NA-PMAX-NA-NA-NA-NBR-NA-NA-NEW-NA_D27Transition-71700000113157690--&gad_source=1&acs_info=ZmluYWxfdXJsOiAiaHR0cHM6Ly93d3cuaG9tZWRIcG90LmNvbS9wL0hhbGV4LVVuaXZlcnNhbc0zLTQtaW4tMS1lb2xILVN0cmFwLTQtUGFjayOyMjEwNy8zMTQ5Njg3MDUiCg&gclid=Cj0KCQiAh8OtBhCQARIsAIkWb6-ZNUGk4DF6_8K9b_SG3twg-4rTYJGDSozB688e1TayXbsJCpro0laAm47EALw_wcB&gclsrc=aw.ds)

# Radiation Shield



- For 3D printed version:
  - contact Manny Deleon
- For amazon version:
  - <https://a.co/d/9YjHxkh>

## Disclaimer:

The instructions for sensor assembly only cover the use of the 3D-printed radiation shield, and using the amazon version may require some individual effort to figure out mounting for each deployment.

# Recommended Tools

# Cone Drill bit

(note that  $\frac{1}{2}$ " will also work, just make sure you use an appropriate bit for plastic)



Link: <https://a.co/d/d9EyOLx>

# Magnetic Soldering Alligator Clips



[https://www.amazon.com/KOTTO-Soldering-Magnetic-Flexible-Workshop/dp/B083SFWLW7/ref=sr\\_1\\_97?crid=1W1WI7KFN5MOK&keywords=magnetic%2Balligator%2Bclips&qid=1707339995&sprefix=magnetic%2Balli%2Caps%2C106&sr=8-97&th=1](https://www.amazon.com/KOTTO-Soldering-Magnetic-Flexible-Workshop/dp/B083SFWLW7/ref=sr_1_97?crid=1W1WI7KFN5MOK&keywords=magnetic%2Balligator%2Bclips&qid=1707339995&sprefix=magnetic%2Balli%2Caps%2C106&sr=8-97&th=1)

# Wire Stripper



[https://www.amazon.com/IRWIN-VISE-GRIP-2078300-Self-Adjusting-Stripper/dp/B000OQ21CA/ref=sr\\_1\\_15?crid=379UHPQLB7G9D&keywords=wire%2Bstripper&qid=1707340653&sprefix=wire%2Bs%2Caps%2C123&sr=8-15&th=1](https://www.amazon.com/IRWIN-VISE-GRIP-2078300-Self-Adjusting-Stripper/dp/B000OQ21CA/ref=sr_1_15?crid=379UHPQLB7G9D&keywords=wire%2Bstripper&qid=1707340653&sprefix=wire%2Bs%2Caps%2C123&sr=8-15&th=1)

# Mini Heat Gun



[https://www.amazon.com/SEEKONE-Handheld-Reflector-Embossing-Stripping/dp/B08VFY8THD/ref=sr\\_1\\_5?crid=3R62NG61UYLY0&keywords=mini+heat+gun&qid=1707340837&sprefix=mini+heat+gun%2Caps%2C94&sr=8-5](https://www.amazon.com/SEEKONE-Handheld-Reflector-Embossing-Stripping/dp/B08VFY8THD/ref=sr_1_5?crid=3R62NG61UYLY0&keywords=mini+heat+gun&qid=1707340837&sprefix=mini+heat+gun%2Caps%2C94&sr=8-5)

# Magnifying Glass w/ Light



[https://www.amazon.com/Magnifying-Reading-Dimmable-Eye-Caring-Headboard/dp/B09M9YYSGB/ref=sr\\_1\\_42?crid=39IAFATUH0IKY&keywords=magnifying%2Bglass%2Bwith%2Blight&qid=1707342855&sprefix=magni%2Caps%2C112&sr=8-42&th=1](https://www.amazon.com/Magnifying-Reading-Dimmable-Eye-Caring-Headboard/dp/B09M9YYSGB/ref=sr_1_42?crid=39IAFATUH0IKY&keywords=magnifying%2Bglass%2Bwith%2Blight&qid=1707342855&sprefix=magni%2Caps%2C112&sr=8-42&th=1)