E4E Soldering Workshop

December 4, 2023

Engineers for Exploration, UC San Diego

Obligatory Meme

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Applicable Standards

- IPC J-STD-001
- NASA Workmanship Standards
- E4E Soldering Standards

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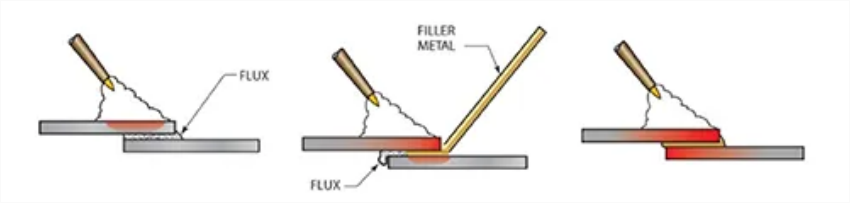
What is soldering?



[1]

[1] https://www.uti.edu/blog/welding/brazing-soldering-welding

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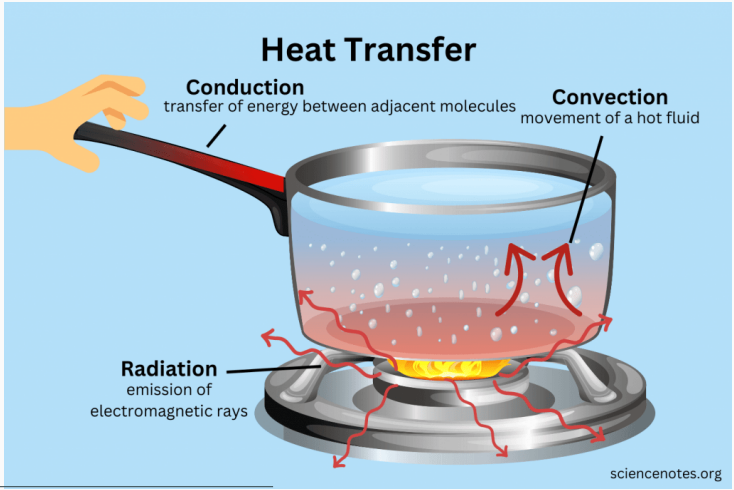
Review of Thermodynamics



[2]

[2] https://sciencenotes.org/heat-transfer-conduction-convection-radiation/

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Fundamentals of Soldering

1. Clean
2. Tin
3. Heat
4. Flow
5. Repeat

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Types of Soldering

- Wire to Wire (low and high power)
- Wire/Through Hole to Connector/Board (low power)
- Wire to Board (high power)
- Surface Mount (exposed lead, no lead)
- Wire to Device (low power)
- Rework/Desoldering Through Hole
- Rework/Desoldering Surface Mount

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Initial Training Scope

- Wire to Wire (low power)
- Wire/Through Hole to Connector/Board (low power)
- Wire to Device (leaded coarse pitch)

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Exercise #1

Build a 22 AWG wire ring 1” in diameter

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Fundamentals of Soldering

1. Clean
2. Tin
3. Heat
4. Flow
5. Repeat

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Exercise #2

Solder D1, D2 on EK1950

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Fundamentals of Soldering

1. Clean
2. Tin
3. Heat
4. Flow
5. Repeat

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Exercise #3

Solder leads to JP1 on EK1950

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Fundamentals of Soldering

1. Clean
2. Tin
3. Heat
4. Flow
5. Repeat

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