

CAHV-R450YA-HPB

CIBSE TM65 Embodied Carbon Mid-level Calculation

Assessment Date: 11th October 2022

**Assessor /
Organisation:**

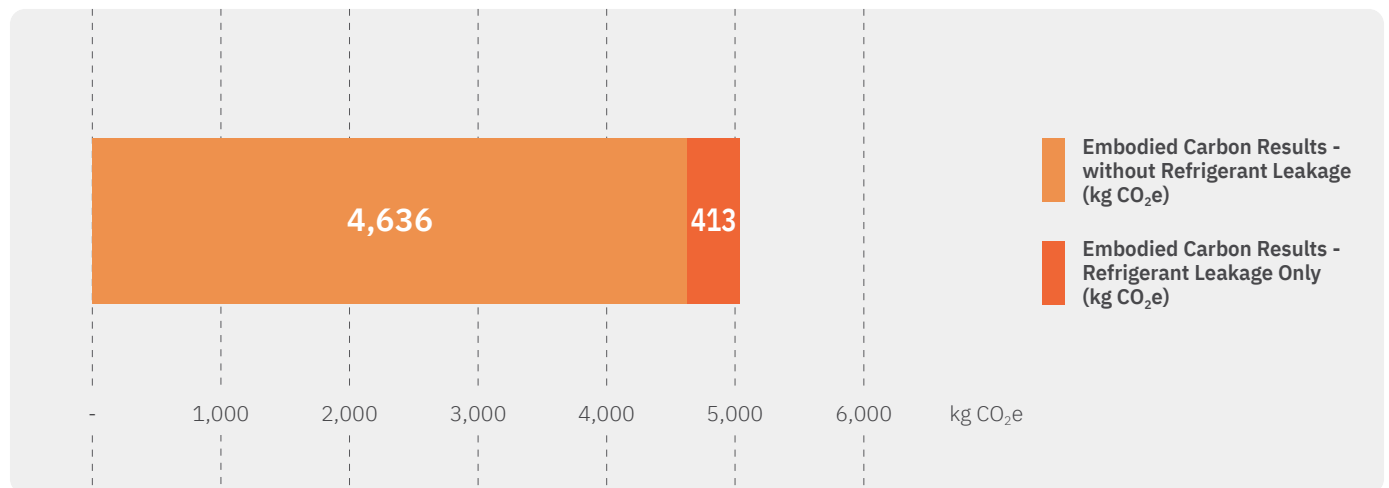
Mitsubishi Electric

Contact:

embodied.carbon@meuk.mee.com

**Embodied Carbon Result with
'Mid-level TM65 Calculation'
Method Total:**

5,049 (kg CO₂e)



CAHV-R450YA-HPB - Product Information

Type of product	A2W Heat Pump
Capacity of equipment (kW)	40
Product weight (kg)	359
Material breakdown for at least 95% of the product weight? (Y/N)	Y
Service life of the product (years)	15
Type of refrigerant	R454C
Refrigerant GWP*	148
Energy consumption of the factory per unit of product (kWh)	15.26
Location of manufacture	Japan
Product Complexity	Category 3: High

*IPCC AR5



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Embodied Carbon Results Breakdown (kg CO₂e)

A1: Material extraction	2,835
A2: Transport	284
A3: Manufacturing	28
A4: Transport to Site	84
B1: Use	400
B3: Repair	324
C1: Deconstruction	13
C2: Transport	5
C3: Waste Processing	4
C4: Disposal	1

Embodied Carbon Results - without Refrigerant Leakage (kg CO₂e)

A1-C4 (excluding B1,C1)	3,566
A1-C4 with Buffer Factor (excluding B1, C1)	4,636

Embodied Carbon Result - Refrigerant Leakage Only (kg CO₂e)

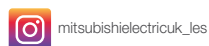
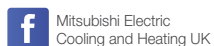
B1 (Refrigerant leakage during use) + C1 (Refrigerant leakage end of life)	413
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Assumptions

A1: Material carbon coefficient source	TM65 Table 2.1 & The ICE Database
B1: Refrigerant annual leakage rate (%)	2 (TM65 Assumption)
C1: Refrigerant end of life recovery rate (%)	99 (TM65 Assumption)
B3: Materials replaced as part of repair (%)	10 (TM65 Assumption)
C4: Percentage of product going to landfill (%)	30 (TM65 Assumption)



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Effective as of November 2022

