

Multifamily Chapter Restructuring

Submeasure Tables

Presented on May 7, 2020

Multifamily Unification: Roof Products

2019

 Low-Rise Residential Code

Category	Prescriptive Roof Product Requirement
Low-sloped roofs	CZ 13 and 15 0.63 solar reflectance 0.75 thermal emittance
Steep-sloped roofs	CZ 10 -15 0.20 solar reflectance 0.75 thermal emittance

2019

 High-Rise Non-Residential Code

Category	Prescriptive Assembly U-factor Range
Low-sloped roofs	CZ 9 -11, 13 -15 0.55 solar reflectance 0.75 thermal emittance
Steep-sloped roofs	CZ 2 -15 0.20 solar reflectance 0.75 thermal emittance



2022

 Unified Multifamily Code

Category	Prescriptive Assembly U-factor Range
Low-sloped roofs	CZ 13 and 15 0.63 solar reflectance 0.75 thermal emittance CZ 9-11,14 0.55 solar reflectance 0.75 thermal emittance
Steep-sloped roofs	CZ 2-15 0.20 solar reflectance 0.75 thermal emittance

Multifamily Unification: Roof/Ceiling Insulation



2019
Low-Rise
Residential
Code

Category	Mandatory Assembly U-factor	Prescriptive Assembly U-factor or R-value
Attic Roof, Option B	0.043	CZ 1,2: R-38+0 CZ 3,5-7: R-30+0 CZ 4, 8-16: R-38+19
Attic Roof, Option C	0.043	CZ 1,11-16: R-38 CZ 2-10: R-30

2019



High-Rise
Non-
Residential
Code

Category	Mandatory Assembly U-factor	Prescriptive Assembly U-factor
Metal Building	0.098	0.041
Wood Framed and Others	0.075	CZ 1,2,4,8-16: 0.028 CZ 3,5,6: 0.034 CZ 7: 0.039



2022
Unified
Multifamily
Code

Category	Mandatory Assembly U-factor	Prescriptive Assembly U-factor or R-value
Attic Roof (high performance attic applies)		
Option B	0.043	CZ 1,2: R-38+0 CZ 3,5-7: R-30+0 CZ 4, 8-16: R-38+19
Option C	0.043	CZ 1,11-16: R-38 CZ 2-10: R-30
Non Attic Roof		
Metal Buildings	0.098	0.041
Wood Framed and Others	0.075	TBD to match Opt.C flat roof equivalent CZ 1,11-16: ~0.024 CZ 2-10: ~0.030

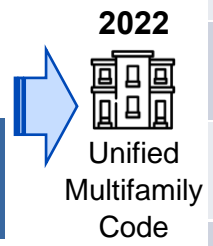
Multifamily Unification: Wall U-factor



Category	Mandatory Assembly U-factor	Prescriptive Assembly U-factor Range	CZ 12 U-factor
Building Envelope	2x4 frame 0.102 2x6 frame 0.071 Non-framed 0.102	0.051 – 0.065	0.051
Mass Interior	Masonry walls to meet prescriptive requirements	0.059 – 0.077	0.077
Mass Exterior		0.077 – 0.125	0.125
Below Grade Interior	Masonry walls to meet prescriptive requirements	0.067 – 0.077	0.077
Below Grade Exterior		0.053 – 0.200	0.200



Category	Mandatory Assembly U-factor	Prescriptive Assembly U-factor Range	CZ 12 U-factor
Metal Building	0.113	0.057 – 0.061	0.057
Curtain Wall	0.280		
Metal Framed	0.151	0.048 – 0.105	0.069
Wood Framed	0.110	0.042 – 0.059	0.059
Mass Heavy	0.690	0.160 – 0.690	0.253
Mass Light	0.440	0.170 – 0.227	0.170



Category	Mandatory Assembly U-factor	Assembly U-factor Range	CZ 12 U-factor
Metal Buildings	0.113	0.057 – 0.061	0.057
Spandrel Panels and Curtain Wall	0.280		
Metal Framed, > 1-hour	0.151	0.048 – 0.105	0.069
Wood Framed, > 1-hour	2x4 frame 0.102 2x6 frame 0.071 Non-framed 0.102	0.042 – 0.059	0.059
Framed (wood or metal) and other, ≤1-hour		0.051 – 0.065	0.051
Heavy Mass	0.690	0.160 – 0.690	0.253
Light Mass	0.440	0.059 – 0.077	0.077
Below Grade	Meet prescriptive requirement	0.067 – 0.077	0.077

Multifamily Unification: Fenestration Properties

2019

 Low-Rise Residential Code

Category	U-factor SHGC VT
All Fenestration	0.30 0.23 (or NR*) NR*

2019

 High-Rise Non-Residential Code

Category	U-factor SHGC VT
Fixed Window	0.36 0.25 0.42
Operable Window	0.46 0.22 0.32
Curtainwall	0.41 0.26 0.46
Glazed Doors	0.45 0.23 0.17




2022

 Unified Multifamily Code


Category	U-factor SHGC VT
Curtainwall	Align with 2022 Non-Res requirement
All others	0.30 0.23 (or NR*) NR* Except Class AW products may follow 2019 Non-Res requirements

*NR = No Requirement

Multifamily Unification: Window Area Limits

2019

 Low-Rise Residential Code

Metric	Threshold
Max Total Area - % of conditioned floor area	20%
Max West Facing Area	5%

2019

 High-Rise Non-Residential Code

Metric	Threshold
Max Window-to-Wall (WWR) ratio	40%




2022


 Unified Multifamily Code

Metric	Threshold
Max Total Area - % of conditioned floor area	20%
Max Window-to-Wall (WWR) ratio	40%

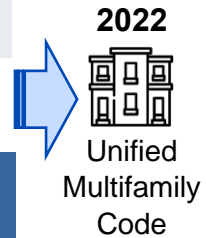
Multifamily Unification: Duct Insulation R-value

2019

 Low-Rise Residential Code

Category	Mandatory	Prescriptive
Ducts in conditioned space (verified low leakage ducts)	R-4.2	R-6.0
Ducts in all other locations	R-6.0	CZ 3,5-7: R-6 CZ 1-2,4,8-16: R-8




2019

 High-Rise Non-Residential Code

Category	Mandatory	Prescriptive
Ducts in conditioned space	R-4.2	N/A
Ducts in unconditioned space	R-8.0	N/A



Category	Mandatory	Prescriptive
Dwelling Unit with Individual Ducts		
Ducts in conditioned space (verified low leakage ducts)	R-4.2	N/A
Ducts in conditioned space (visual inspection)	R-6.0	N/A
Ducts in unconditioned space	R-8.0	N/A
Common Use Areas / Central System Ducts		
Ducts in conditioned space	R-4.2	N/A
Ducts in unconditioned space	R-8.0	N/A

Multifamily Unification: Duct Sealing/Leakage Testing

2019  Low-Rise Residential Code	Category	Mandatory Requirement	Prescriptive Requirement	2022  Unified Multifamily Code	Category	Mandatory Requirement	Prescriptive Requirement
	All ducted systems	12% total or 6% to outside (of nominal airflow)	N/A			Dwelling unit individual ducting	12% total or 6% to outside (of nominal airflow)
2019  High-Rise Non-Residential Code	Category	Mandatory Requirement	Prescriptive Requirement		Common use areas with single zone systems serving <5,000 ft ² with >25% ducts in unconditioned space	N/A	6% total (of nominal airflow)
	Systems serving single zones <5,000 ft ² with >25% of ducts in unconditioned space	N/A	6% total (of nominal airflow)		Central multi-zone systems	N/A	N/A

Multifamily Unification: Space Conditioning Airflow Rate and Fan Efficacy



Category	Mandatory Requirement
Fan Efficacy Verification	0.45 W/cfm gas furnace 0.58 W/cfm other air handlers
Airflow Rate Verification	≥ 350 cfm/ton



No equivalent requirement



Category	Mandatory Requirement
Systems serving individual dwelling units with ducted cooling	
Fan Efficacy Verification	0.45 W/cfm gas furnace 0.58 W/cfm other air handlers
Airflow Rate Verification	≥ 350 cfm/ton
Central systems and common area spaces	
No requirement	

Multifamily Unification: Refrigerant Charge/Fault Indicator Display



Category	CZs Required (Prescriptive)
Refrigerant charge verification	2, 8-15



No equivalent requirement



Category	Requirement
Systems serving individual dwelling units	
Refrigerant charge verification	Prescriptive in CZ 2, 8-15
Central systems and common area spaces	
No requirement	