



CoolRack® - Thermo-Conductive Tube Modules

CoolRack® thermo-conductive tube modules eliminate variability which originates from tubes placed directly into ice, dry ice, alcohol baths, water baths and other temperature sources. Place the CoolRack module directly onto a temperature source between -196°C to $>100^{\circ}\text{C}$ and it will rapidly adapt to that temperature. CoolRack modules ensure $\pm 0.1^{\circ}\text{C}$ temperature uniformity across all tubes when cooling, snap freezing, heating or thawing. Suggested applications include cooling reagents such as restriction enzymes, dNTPs and antibodies, alcohol-free dry ice snap freezing of tissue, virus and bacteria samples and benchtop cryogenic tube sorting in liquid nitrogen. All CoolRack modules may be autoclaved, high heat sterilized or decontaminated with bleach, alcohol or other disinfectants or lab detergents. Certain CoolRack modules are SBS-compatible.



PROBLEM: SAMPLES IN ICE

- ✓ Non-uniform ice contact results in variable sample temperature
- ✓ Disorganized samples, wet labels
- ✓ Shifting, sinking tubes; contamination risk
- ✓ Non-reproducible method



SOLUTION: SAMPLES IN COOLRACK® MODULE

- ✓ All samples $<4^{\circ}\text{C}$ and uniform in temperature ($\pm 0.1^{\circ}\text{C}$)
- ✓ Samples organized, secure and dry
- ✓ All tubes upright and indexed
- ✓ Reproducible method



HOW IT WORKS

Cooling



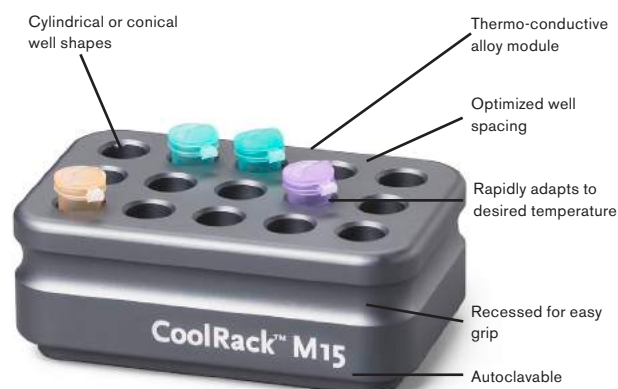
CoolRack on Ice: Heat from the relatively warmer CoolRack module is transferred to cooling source (wet or dry ice, cartridge, LN₂) until equilibrium is reached.

Warming



CoolRack in Water Bath: Heat is transferred from water bath toward relatively cooler CoolRack until equilibrium is reached.

CoolRack® and CoolSink® are precision-engineered sample modules manufactured from a novel thermo-conductive alloy material. Thermo-conductivity is the transfer of heat energy from a higher temperature region to a lower temperature region. CoolRack modules evenly distribute the temperature across all wells providing very uniform and consistent temperature to all samples ($\pm 0.1^{\circ}\text{C}$).



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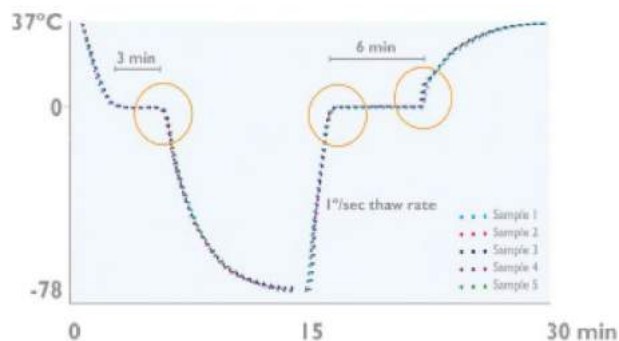
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COOLRACK® REPRODUCIBILITY



Performance test: A temperature probe was placed into a 2.0 mL cryogenic vial containing 1.0 mL of water. The tube was inserted into a CoolRack® CF45 thermo-conductive module. The module was placed onto a ThermalTray platform in a 37°C water bath and allowed to equilibrate. The CoolRack CF45 module was then removed and placed onto dry ice and equilibrated to -78°C (0 - 15 minutes) and then returned to the water bath to re-equilibrate to 37°C (15 - 30 minutes). This experiment was repeated five consecutive times and temperature profiles were recorded.

Conclusion: The CoolRack CF45 module showed identical cooling profiles and phase transition (orange circles) over five consecutive freeze-thaw cycles.

COOLRACK® VERSATILITY AND PERFORMANCE

ON ICE



- ✓ Adapts from ambient (25°C) to <4°C in 60-90 seconds*
- ✓ Samples and labels stay dry, organized
- ✓ Hours of ice cooling without direct ice contact
- ✓ Reproducible method

ON DRY ICE



- ✓ Adapts from ambient (25°C) to <4°C in 5-7 minutes*
- ✓ Eliminates ethanol from snap freezing
- ✓ Samples are upright and organized as they freeze
- ✓ Equal or better freezing rate as compared to direct immersion into dry ice or alcohol slurry
- ✓ Reproducible method

IN LIQUID NITROGEN (LN2)

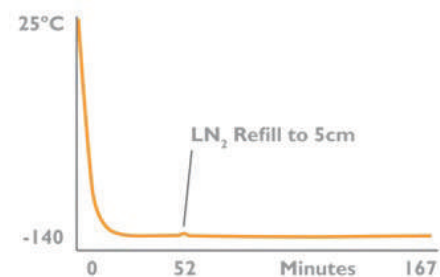
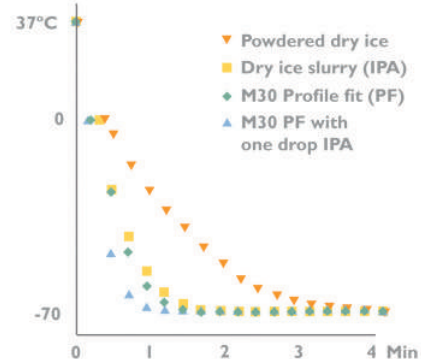
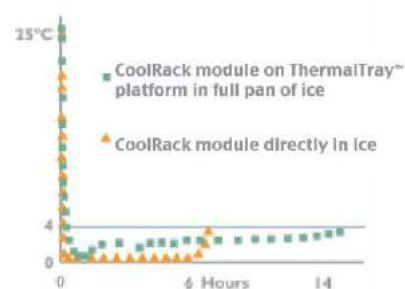


- ✓ Adapts from ambient (25°C) to <4°C in approx. 12-14 minutes*
- ✓ Vapor barrier protects from ambient air
- ✓ Samples are upright and organized as they freeze
- ✓ No direct contact between samples and LN2
- ✓ Reproducible method

WITH HEAT SOURCES

- ✓ Use with water baths, hot plates, incubators and other heat sources to keep samples warm

*Average cooling rate from room temperature



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COOLRACK® SAMPLE TUBE MODULES



CoolRack® M Microfuge Tube Modules

Item No	Description	For Use with	Wells	Well Shape	Dimensions (L x W x H)	Well Dia	Well Depth	Row Spacing	Column Spacing
BCS-163	CoolRack M6	1.5 mL or 2.0 mL tubes	6	Cylindrical	6.0 x 4.3 x 3.8 cm	11.1 mm	32.7 mm	17.8 mm	17.8 mm
BCS-165	CoolRack M6, green								
BCS-164	CoolRack M6, orange								
BCS-125	CoolRack M15	1.5 mL or 2.0 mL tubes	15	Cylindrical	10.2 x 6.4 x 3.8 cm	11.1 mm	32.7 mm	17.8 mm	17.8 mm
BCS-125G	CoolRack M15, green								
BCS-125O	CoolRack M15, orange								
BCS-127	CoolRack M15-PF	1.5 mL conical tubes	15	Conical	10.2 x 6.4 x 3.8 cm	11.1 mm	35.3 mm	17.8 mm	17.8 mm
BCS-535	CoolRack XT M24*	1.5 mL Or 2.0 mL tubes	24	Cylindrical	12.8 x 8.5 x 3.8 cm	11.1 mm	32.7 mm	17.8 mm	17.8 mm
BCS-539	CoolRack XT 5ml*	5.0 mL centrifuge tubes	12	Conical	12.7 x 8.6 x 5.0 cm	16.5 mm	48.7 mm	28.0 mm	28.0 mm
BCS-108	CoolRack M30	1.5 mL or 2.0 mL tubes	30	Cylindrical	12.0 x 10.2 x 3.8 cm	11.1 mm	32.7 mm	17.8 mm	17.8 mm
BCS-108G	CoolRack M30, green								
BCS-108O	CoolRack M30, orange								
BCS-128	CoolRack M30-PF	1.5 mL conical tubes	30	Conical	12.0 x 10.2 x 3.8 cm	11.1 mm	35.3 mm	17.8 mm	17.8 mm
BCS-137	CoolRack M30-PF 500ul	500 uL conical tubes	30	Conical	12.0 x 10.2 x 3.8 cm	11.1 mm	35.3 mm	17.8 mm	17.8 mm
BCS-102	CoolRack M90	1.5 mL or 2.0 mL tubes	90	Cylindrical	26.8 x 11.2 x 3.8 cm	11.1 mm	32.7 mm	17.8 mm	17.8 mm
BCS-116	CoolRack M96ID	1.5 mL or 2.0 mL tubes	96	Cylindrical	25.4 x 15.2 x 3.8 cm	11.1 mm	32.7 mm	17.8 mm	17.8 mm

*SBS-compatible CoolRack M96ID has A-H and 1-12 row and column indexing

CoolRack® CF Cryogenic Vial and FACS Tube Modules



Item No	Description	For Use with	Wells	Well Shape	Dimensions (L x W x H)	Well Dia	Well Depth	Row Spacing	Column Spacing
BCS-126	CoolRack CF15	Cryogenic vials or FACS tubes	15	Cylindrical	10.2 x 6.4 x 3.8 cm	12.7 mm	32.7 mm	17.8 mm	17.8 mm
BCS-534	CoolRack XT CFT24*	Cryogenic vials or FACS tubes	24	Cylindrical	12.8 x 8.5 x 3.8 cm	12.7 mm	32.7 mm	17.8 mm	17.8 mm
BCS-138	CoolRack CFT30*	Cryogenic vials or FACS tubes	30	Cylindrical	12.0 x 10.2 x 3.8 cm	12.7 mm	32.7 mm	17.8 mm	17.8 mm
BCS-105	CoolRack CF45	Cryogenic vials or FACS tubes	45	Cylindrical	17.3 x 9.7 x 3.8 cm	12.7 mm	32.7 mm	17.8 mm	17.8 mm

*SBS-compatible "gripping" wells for one-hand vial opening/closing

CoolRack® PCR Plate, Strip Well or Tube Modules



Item No	Description	For Use with	Wells	Well Shape	Dimensions (L x W x H)	Well Dia	Well Depth	Row Spacing	Column Spacing
BCS-529	CoolRack XT PCR96*	One 96-well PCR plate, strip wells, tubes	96	Tapered	12.7 x 8.6 x 2.5 cm	-	13.2 mm	9.0 mm	9.0 mm
BCS-523	CoolRack XT M-PCR*	6 strip wells and 12 x 1.5 or 2.0 mL microfuge tubes	48(PCR) 12(M)	Tapered(PCR) Cylindrical(M)	12.7 x 8.6 x 3.8 cm	11.1 mm	13.2 mm 32.7 mm	9.0 mm 14.0 mm	9.0 mm 20.3 mm
BCS-538	CoolRack XT PCR384*	One 384-well PCR plate	384	Tapered	12.7 x 8.6 x 1.9 cm	-	7.6 mm	4.5 mm	4.5 mm

*SBS-compatible

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CoolRack® 96 2D Barcode Storage Tube Modules



Item No	Description	For Use with	Wells	Well Shape	Dimensions (L x W x H)	Well Dia	Well Depth	Row Spacing	Column Spacing
BCS-231	CoolRack 96x0.5ml	0.5 mL 2D storage tubes	96	Cylindrical	13.1 x 8.9 x 3.6 cm	8.4 mm	24.6 mm	9.0 mm	9.0 mm
BCS-149	CoolRack 96x1ml	1.4 mL 2D storage tubes	96	Cylindrical	13.2 x 8.9 x 3.6 cm	8.3 mm	32.7 mm	14.0 mm	17.8 mm

CoolRack® SV Cell Therapy Injectable Ampule Modules



Item No	Description	For Use with	Wells	Well Shape	Dimensions (L x W x H)	Well Dia	Well Depth	Row Spacing	Column Spacing
BCS-266	CoolRack SV2	2.0 mL injectable cell therapy ampules	12	Cylindrical	12.7 x 8.6 x 3.8 cm	16.0 mm	24.0 mm	27.0 mm	30.0 mm
BCS-265	CoolRack SV10	10.0 mL injectable cell therapy ampules	12	Cylindrical	12.7 x 8.6 x 3.8 cm	23.6 mm	27.9 mm	25.9 mm	32.1 mm

TALL TUBE MODULES

CoolRack® 15ml and CoolRack® 50ml Tube Modules



Item No	Description	For Use with	Wells	Well Shape	Dimensions (L x W x H)	Well Dia	Well Depth	Row Spacing	Column Spacing
BCS-232	CoolRack L*	15 mL centrifuge tubes	12	Cylindrical	13.7 x 9.5 x 11.8 cm	17.5 mm	105.4 mm	25.4 mm	30.5 mm
BCS-153	CoolRack 15ml	15 mL centrifuge tubes	9	Cylindrical	8.9 x 8.9 x 10.7 cm	17.1 mm	106.7 mm	26.7 mm	26.7 mm
BCS-154	CoolRack 50ml	50 mL centrifuge tubes	4	Cylindrical	8.9 x 8.9 x 10.7 cm	29.5 mm	101.6 mm	40.6 mm	40.6 mm
BCS-532	CoolRack 250ml-PF	250 mL centrifuge tubes	1	Conical	8.9 x 8.9 x 14.0 cm	60.4 mm	133.3 mm	n/a	n/a
BCS-533	CoolRack 250ml	250 mL centrifuge tubes	1	Cylindrical	8.9 8.9 x 7.2 cm	73.6 mm	66.0 mm	n/a	n/a

*SBS-compatible

CoolRack® V Blood Collection Tube Modules



Item No	Description	For Use with	Wells	Well Shape	Dimensions (L x W x H)	Well Dia	Well Depth	Row Spacing	Column Spacing
BCS-235	CoolRack LV*	13 mm or 16 mm blood tubes	12	Cylindrical	13.7 x 9.5 x 9.6 cm	16.6 mm	83.3 mm	25.4 mm	30.5 mm
BCS-157	CoolRack VS13	13x75 mm blood tubes	9	Cylindrical	8.9 x 8.9 x 6.1 cm	13.0 mm	61.0 mm	26.7 mm	26.7 mm
BCS-155	CoolRack V13	13x100 mm blood tubes or 5 mL cryogenic vials	9	Cylindrical	8.9 x 8.9 x 8.4 cm	13.0 mm	83.8 mm	26.7 mm	26.7 mm
BCS-156	CoolRack V16	16x100 mm blood tubes	9	Cylindrical	8.9 x 8.9 x 8.4 cm	16.0 mm	83.8 mm	26.7 mm	26.7 mm

* Thermo-conductive base and insulative exterior

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