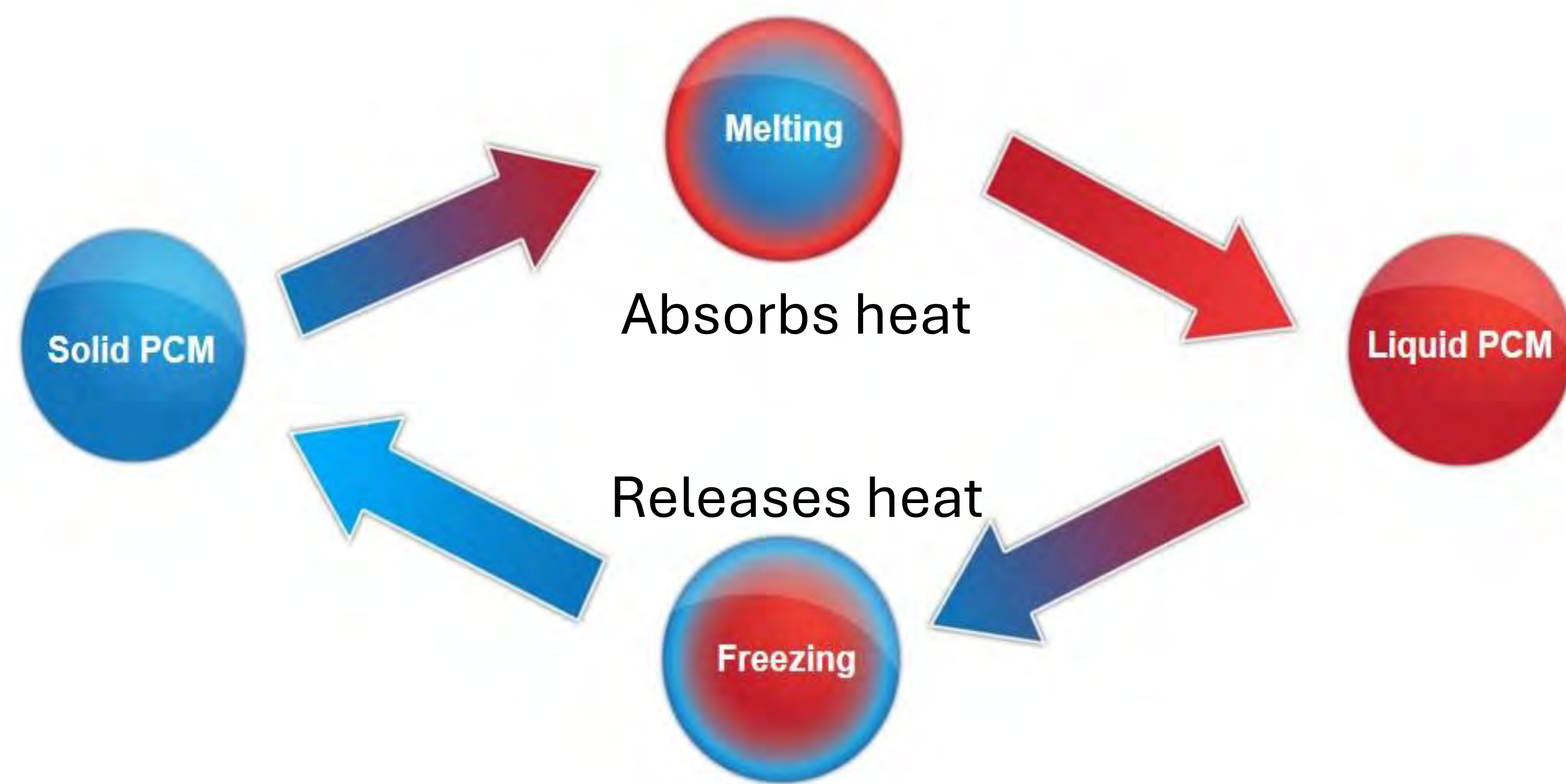


CrodaTherm™ Phase Change Materials

A phase change material absorbs and releases thermal energy at a specific temperature, regulating the surrounding environment



PCMs act as a heat battery because they have a high capacity for storing thermal energy which is absorbed and released as they melt and freeze at a defined temperature. In this way, PCMs can be employed for thermal regulation and for the compact storage of thermal energy

Applications



- Active/Passive cooling systems
- Telecoms / Datacenters
- Building materials



- Clothing (sports & leisure)
- Uniform services
- Bedding (sheets & mattresses)



- Consumer electronics
- Industrial power systems
- Battery cooling



- Food/pharma supply chain
- Temperature sensitive goods
- Controlled room temp. applications



- Waste heat recovery
- Cold storage and space cooling
- Hot water systems / Heatins systems



CrodaTherm PCM biowax

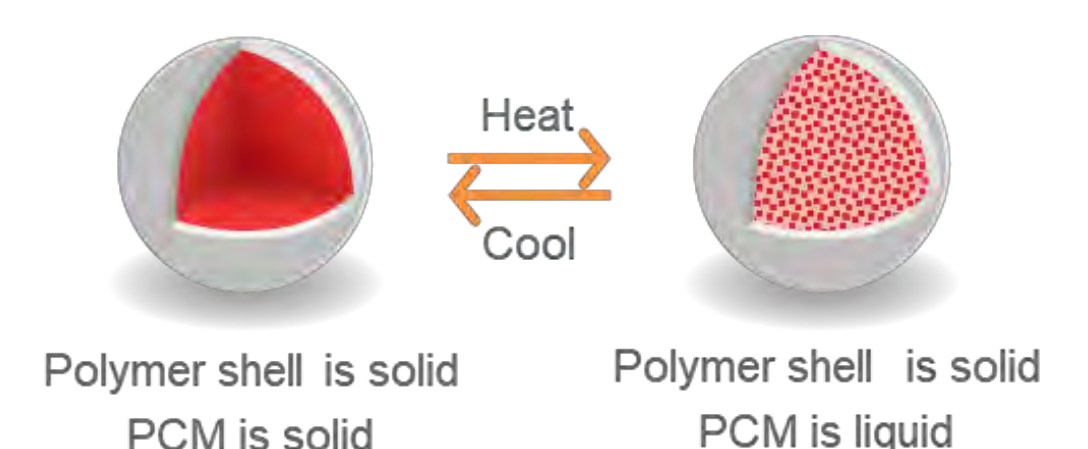
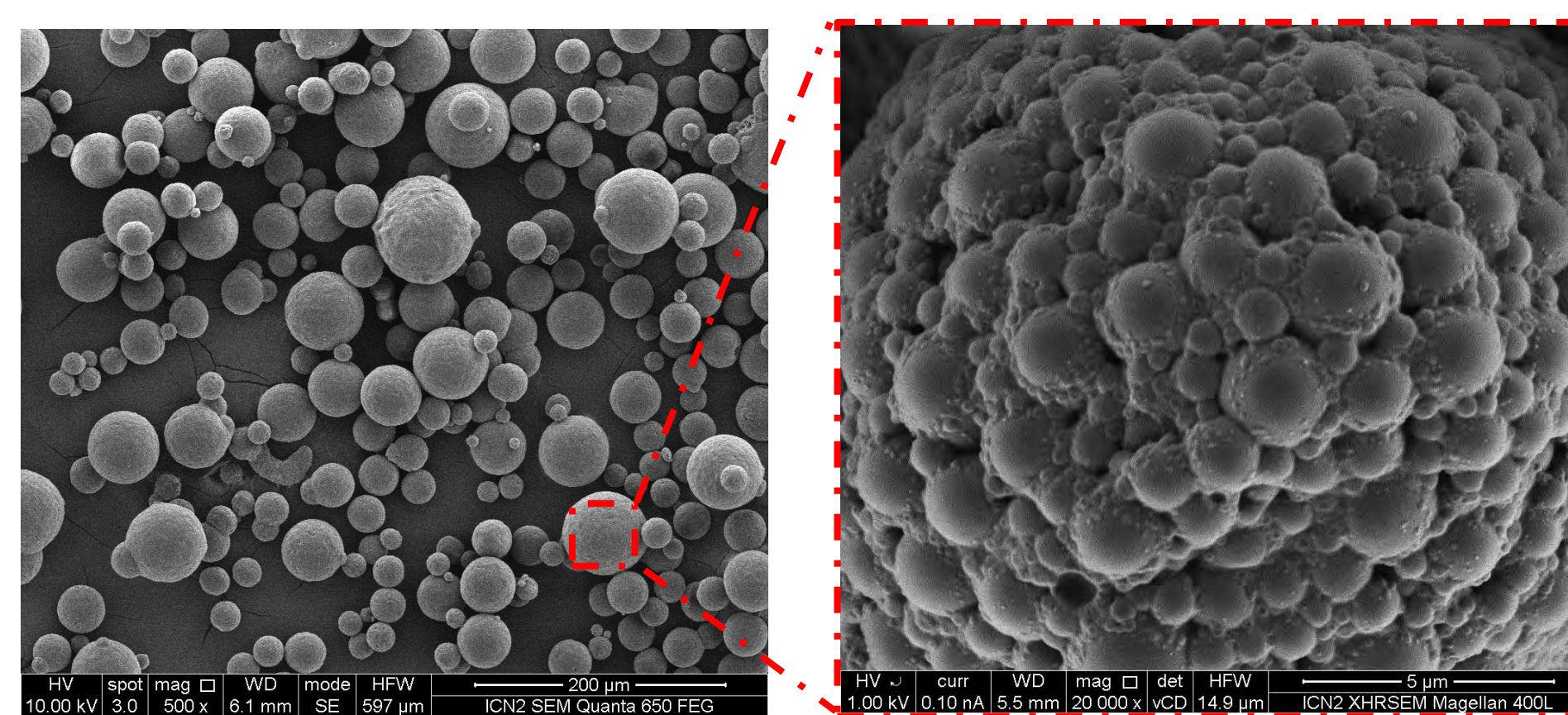
Product	Melting (°C)	Crystal. (°C)	Heat Capacity (J/g)	Flash Point (°C)	Density Liq. (kg/l)
CrodaTherm 5	5	4	218	191	0,86
CrodaTherm 6.5	7	5	223	200	0,86
CrodaTherm 9.5	9	9	218	200	0,86
CrodaTherm 15	13	12	210	206	0,90
CrodaTherm 19	18	18	207	202	0,85
CrodaTherm 21	20	20	213	208	0,85
CrodaTherm 24W	23	23	210	226	0,84
CrodaTherm 29	28	27	223	215	0,85
CrodaTherm 32	32	31	212	-	0,84
CrodaTherm 37	36	36	217	232	0,81
CrodaTherm 53	52	52	221	250	0,83
CrodaTherm 60	60	60	217	272	0,82
CrodaTherm 74	75	71	225	288	0,86

The thermal data were obtained using three-layer calorimetry (3LC)

CrodaTherm Microencapsulated PCM biowax

Product	Form	Shell	Size (µm)*	Melting (°C)	Crystal. (°C)	Heat Cap. (J/g)
CrodaTherm ME 24XD	Dispersion	Thick	10	5	4	218
CrodaTherm ME 29D	Dispersion	Standard	10	7	5	223
CrodaTherm ME 29P	Powder	Thick	250	9	9	218
CrodaTherm ME 29XD	Dispersion	Thick	10	13	12	210
CrodaTherm ME 29DS	Dispersion	Standard	3	18	18	207
CrodaTherm ME 32DS	Dispersion	Standard	3	20	20	213

The thermal data were obtained using Differential Scanning Calorimetry (DSC). *D90.



There are numerous applications for CrodaTherm PCMs, and many support one or more UN Sustainable Development Goals. Some examples:



Temperature Controlled Logistics



Sustainable Buildings



Automotive energy efficiency & battery thermal management

The CrodaTherm Advantage



Green Chemistry: Developed with the 12 principles of green chemistry in mind, CrodaTherm materials are up to 100% USDA Certified bio-based



High Performance Products: CrodaTherm PCMs have high latent heat capacities, making them efficient in use.



Long Term Stability: CrodaTherm PCMs are stable & have consistent performance for a minimum of 10,000 cycles for long term reliability



Low Flammability: CrodaTherm PCMs are not classified as flammable & have higher flash points than competing materials.



Material Compatibility: CrodaTherm materials have good long-term compatibility with multiple material types



Minimal Evaporation: CrodaTherm PCMs have a low rate of loss due to evaporation even at elevated temperatures.

