Heat - Tracing Method	Max Operational Temperature	Advantages	Disadvantages
Heat Transfer Fluids			
Steam	400°F (204°C)	Take advantage of waste steam, explosion environment safe, high heat-transfer rates	Nonuniform heat distribution; expensive to install and maintain; imprecise temperature control; wastes energy
Organics	500-750°F (260-400°C)	Moderate temperature control, wide temperature range, low freezing temperatures	Relatively expensive; needs a circulating system; leaks can be hazardous
Glycols	250°F (121°C)	Moderate temperature control; depresses freezing point, providing protection against freezing when not in use; lower operating cost than steam	Relatively expensive (glycols are cheaper than heat processed fluids); high installed costs; needs a circulating system; leaks can be hazardous
Electric			
Self-Regulating	150-300°F (65-149°C)	Will not burn - most reliable electric heating cable; energy efficient	Limited temperature range
MI Cable	1190°F (590°C)	Rugged; capable of high temperature and high power	Difficult to field cut; a break in the cable causes an open circuit; should not be crossed over itself; can be damaged by moisture penetration
Zone	150-400°F (65-204°C)	Can be field cut; if a heating element fails, circuit is maintained	Relatively fragile; can self-destruct from its own heat; can burn out if crossed over itself
Skin Effect	400°F (204°C)	Simple components; rugged; needs relatively few energy inputs; can be part of a prefabricated insulated pipe bundle	Impractical for applications less than 5000 ft long; design is complex
Impedance	Up to failure of supply cable and connections	High heat-transfer rates and close temp control; high temp capability; heating structure; element cannot burn out	Expensive custom design; entire pipeline must be electrically isolated from the support
Inductance	Up to Curie point	High-temperature capability; high heat-transfer rates	Very expensive; difficult customer design, not commercially exploited

Comparison of Heat-Tracing Methods

Source: Ankit Chugh, Piping Guide, "Types of Heat Tracing Systems", 2014