

Comparison of 1000mm deep communication corrugated ducts used in supercomputing centers



Overview

COD: Advanced Corrugated Duct Solutions | PDF | Duct (Flow) | SiliconeThe document provides information on Corrugated Optical Ducts (COD). COD is a multipl.

Key Takeaways

1000mm deep corrugated ducts for supercomputing centers are available in single-wall HDPE, double-wall HDPE, and prestressed metal variants, each offering distinct advantages in strength, flexibility, and installation suitability. Material and Structural Options

1. Single-Wall HDPE Corrugated Ducts

- Lightweight and flexible, suitable for standard underground or aerial installations.
- Cost-effective and easy to handle, with smooth inner walls reducing friction for fiber cable installation.
- Adequate for moderate mechanical protection but less resistant to crushing in high-load environments . 2. Double-Wall HDPE Corrugated Ducts

- Features an inner smooth wall and outer corrugated wall for enhanced crush resistance.

- Preferred in high-density fiber deployments, such as supercomputing centers, where long-term durability and protection against soil or mechanical stress are critical .
 - Slightly higher cost but provides superior structural integrity compared to single-wall ducts.
- ### 3. Prestressed Corrugated Metal Ducts (Galvanized Steel)
- Extremely high strength and crush resistance, suitable for areas with heavy loads or above-ground exposure.
 - Can be used in dual-wall hybrid configurations with HDPE for flexibility and corrosion resistance .
 - Heavier and more expensive, requiring specialized installation equipment.

Fire and Safety Considerations

- Plenum-rated corrugated ducts are designed for low smoke and fire resistance, meeting UL 2024/UL 910 standards, which is critical for supercomputing centers with strict fire safety requirements .
- HDPE ducts can be formulated with fire-retardant resins to meet plenum or LSZH (Low Smoke Zero Halogen) requirements.

Installation and Accessories

- Couplers, end caps, and pull tapes facilitate cable installation, especially for long 1000mm deep ducts in dense data center layouts .
- Air-jetting and plow chute methods are compatible with HDPE ducts, while metal ducts may require mechanical pulling.
- Accessories for sealing, locating, and terminating ducts are available to ensure long-term reliability and maintainability .

Performance Summary

Feature	Single-Wall HDPE	Double-Wall HDPE	Prestressed Metal
Crush Resistance	Moderate	High	Very High
Flexibility	High	Moderate	Low
Cost	Low	Medium	High
Fire Rating	Optional	Optional	High (with coating)
Installation Ease	Easy	Moderate	Complex
Suitability for Supercomputing Centers	Moderate	High	High (for exposed or high-load areas)

Conclusion

For supercomputing centers, double-wall HDPE corrugated ducts are generally preferred due to their combination of high crush resistance, flexibility, and ease of installation, while prestressed metal ducts are ideal for areas requiring maximum structural protection. Single-wall HDPE ducts are suitable for less demanding sections or future expansion pathways. Fire-rated and plenum-compliant options are essential to meet safety standards in high-density data environments .

Article Content

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