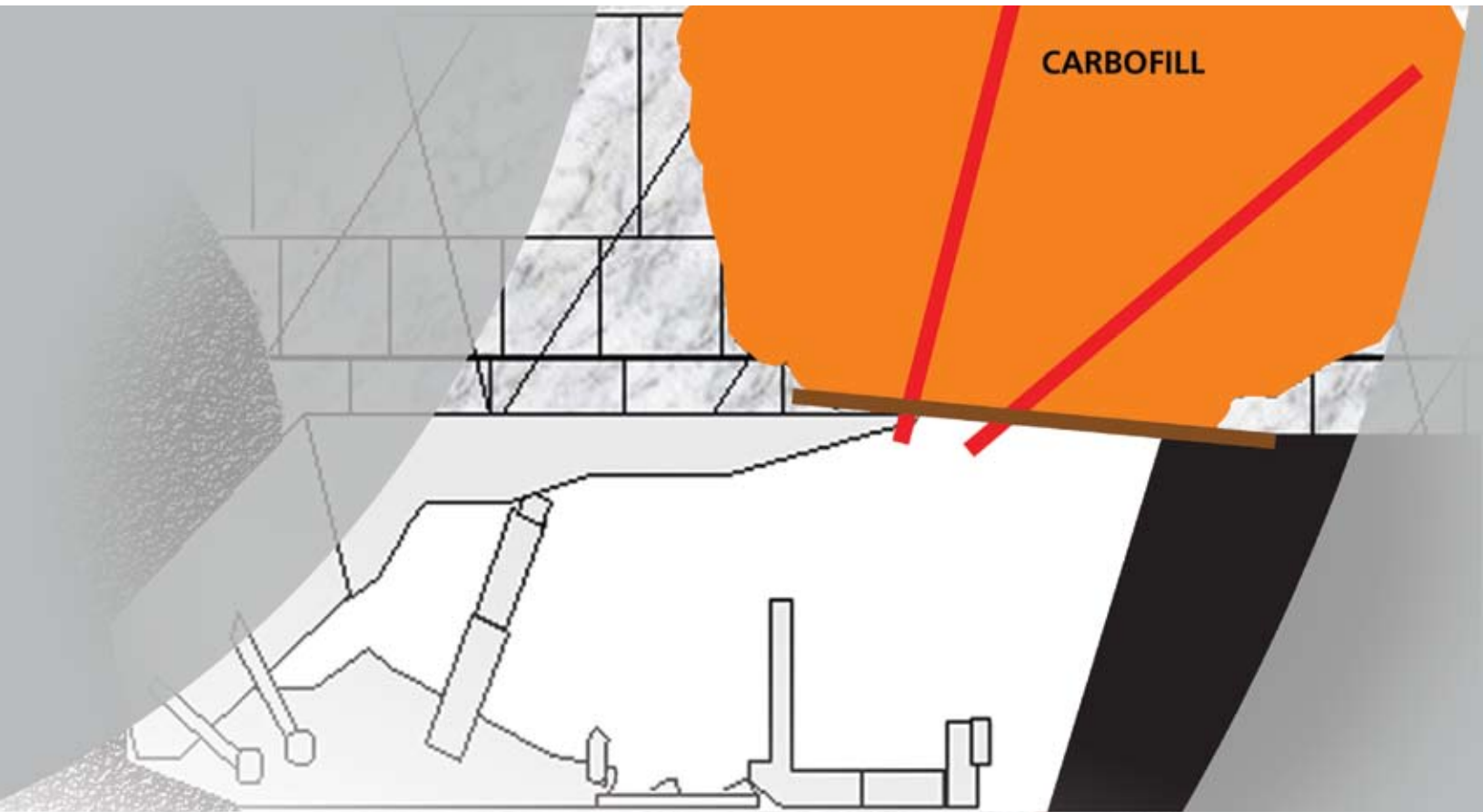


Carbofill

Phenolic Resin Foam for Cavity Filling, Gas Sealing and Fire Fighting in Mining



Solutions from Materials Technology





PHP piston pump
with resin container

Carbofill - low emission - high foaming

Carbofill is a fast reacting dual component phenolic resin foam which starts foaming immediately on mixing and exhibits excellent physical properties. This product ensures a significant reduction in roof falls in rock or coal while filling cavities. Thus Carbofill contributes to improving the operational safety and efficiency in mining.

Carbofill is well suited for:

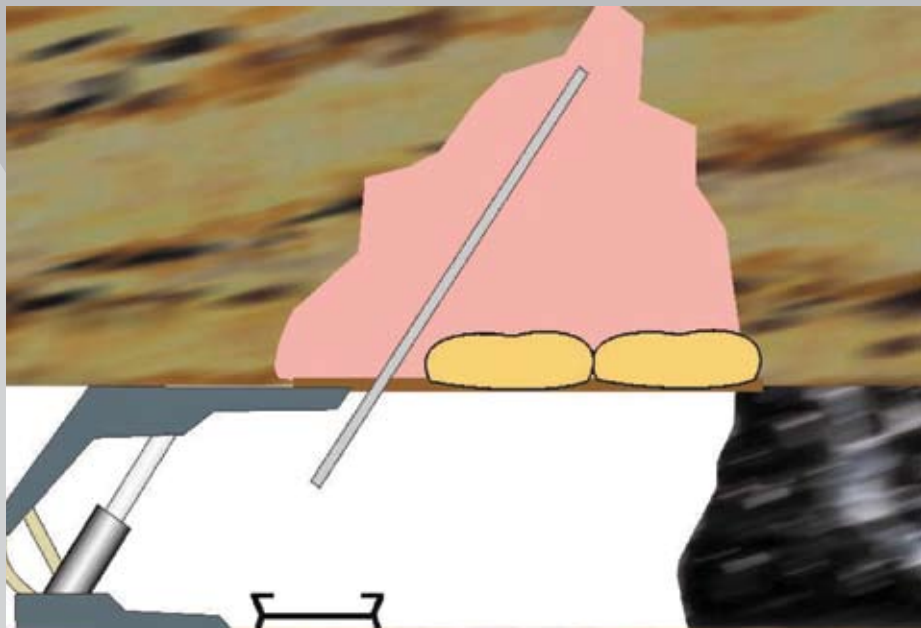
- Fire fighting
- Filling excavations in drifts and longwalls
- Cavity filling to prevent gas accumulation
- Injection for rock stabilization
- Filling dams to prevent air penetration into gob
- Stabilization of burst material
- Sealing gas dams

Due to the nature of the Carbofill foam, only light formwork is required and in some cases is not required at all.

Carbofill can be applied via hose, pipe or injection bolt. Tubular films, pack bags or Bullflex hoses can be filled with Carbofill.



Phenolic resin pump SK90



	Technical Data of the Components		
	Unit	Resin	Catalyst
Density at 25°C (77°F)	kg/cm ³ (lbs/ft ³)	1290 ± 30 (80.5 ± 2)	1540 ± 30 (96.1 ± 2)
pH-value		~ 8	0 - 1
Shelf Life	Month	3 12	6
Storage Temperature	°C (°F)	max. 20 (68)	max. 5 (41)
Processing Time	°C (°F)	min. 15 (59)	

	Technical Data of the Resin Mixture at 20°C (68°F)	
	Unit	Mixture
Starting Time	Sec.	immediately
Reacting Time	Sec.	180 ± 60
Foaming Factor, free		32 - 38
Consumption	kg/m ³ (lbs/ft ³)	~ 36 - 42 (~ 61 - 71)
Admission of German Mining Authority		E 84.12.22.67-6-13

Carbofill - extinguishes mine fires



Benefits of Carbofill

- ▼ High foaming factor
- ▼ Low density
- ▼ Reduced formwork needs
- ▼ Easy handling
- ▼ High filling capacity, production can be started immediately
- ▼ No waiting time after completion of the filling work
- ▼ Low emission
- ▼ Extinguishes mine fires

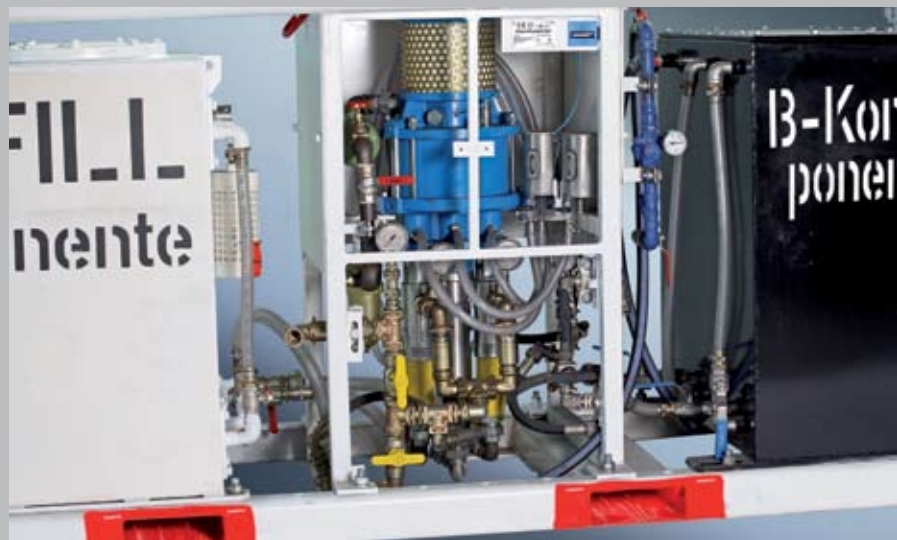
To apply Carbofill the A (resin) and B component (hardener) are pumped on site at a ratio of 4:1 via two-component pump and hoses. Once at the injection site the resins are thoroughly mixed via an inline mixer and injected immediately.

The Minova pumps are equipped with a scale to control the processed volume of the product. Improper emissions can be avoided if Carbofill is used according to proper procedures.

Two pneumatically driven pumps are available for the on-site application of Carbofill:

PHP piston pump in UTE frame with large storage containers for A and B component

- ▼ SK 90 gear pump for pumping distances of up to approximately 300m (980ft)
- ▼ PHP piston pump for pumping distances of up to approximately 800m (2600ft)





Minova USA Inc.

150 Carley Court
Georgetown KY 40324 USA
Phone 502 863 6800
Fax 502 863 1374
Email sales.info@minovaint.com
Website www.minovausa.com



A member of the Orica Group

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