

Technical Advisory

Opening Stuck Valves on Asphalt Piping

Valves on pipelines containing asphalts can commonly become stuck, often due to solidified asphalt inside.

Heating the valve to melt the asphalt can sometimes free the valve. However, there was a recent safety incident involving a stuck valve at a TxDOT facility. Attempts to free the stuck valve resulted in the explosion of an asphalt line. Employees were heating the stuck valve with a torch to melt the asphalt inside the line. An explosion occurred after about two hours of heating.

This advisory is intended as general guidance to safely open stuck asphalt valves, highlight unsafe heating practices, and avoid future accidents.

Preferred Methodology

The preferred method to free a stuck valve is by heating it with steam from a steam machine. The steam should be hot enough to melt the asphalt inside the line within 5 to 10 minutes. If freeing the valve takes longer, the valve is either seized or otherwise damaged and must be repaired. Further heating in this case will not help.

Steam machines may be purchased or rented. The type used for paint or wallpaper stripping should be enough. Check with your contractor or binder supplier for brands and possible sources.

Seized valves may loosen if tapped with a hammer; be careful not to damage the valve or the piping. If the valve is seized or damaged and will not open, the valve must be repaired.

Other Options

If a steam machine is not available, other methods will work. A heat gun for stripping paint can also be used to heat the valve. Use a model with variable temperature control. Set the heat gun to a maximum temperature of about 300°F. This is hot enough to melt the asphalt but should not present an explosion hazard; asphalt can be stored and pumped through pipes at 300°F.

A gas torch can be used to heat the valve, provided the tank or pipe

contains only asphalt cement or PG binder. (The grade name starts with either “AC” or “PG”.)

As with steam, the application of the heat gun or gas torch should take 5 to 10 minutes to free the stuck valve. With these methods, particularly with the torch, it is imperative to discontinue heating the valve within 10 minutes. The intense heat may actually damage the valve and leave it permanently inoperative; more importantly, the asphalt can be heated to the point where it will explode the valve. If the valve is stuck after a few minutes of heating, it is probably seized or damaged and must be repaired.

Cutbacks and Emulsions

Cutbacks and emulsions are special considerations. Since cutbacks and emulsions contain large percentages of relatively volatile materials (water for emulsions; solvent for cutbacks), heating the valves requires more caution.

DANGER: Never use open flame on pipes, valves, or tanks containing cutback asphalt, (such as MC-30, MC-2400L, RC-250, etc.). The petroleum solvents in these materials will ignite very easily. This could result in an explosion, a large fire, and possibly cause serious injuries.

DANGER: Use of open flame on pipes, valves, or tanks containing emulsified asphalt, (such as CRS-2, HFRS-2, SS-1, CSS-1, MS-2, AE-P, etc.) is strongly discouraged. The torch will be much hotter than the boiling point of the water in the emulsion. Boiling the emulsion in the piping could lead to an explosion, possibly causing serious injuries.

When using a heat gun with either of these materials, set the heat gun to a maximum temperature of about 200°F.

General Precautions

Proper safety precautions should be taken when using torches, heat guns, or steam machines. Protective clothing, heat-resistant gloves, and

eye/face protection not only protect the user from the heat of the equipment, but will also protect the user from any potential spattering asphalt or water that may occur when heat is applied.

Conclusion

Heating is often the easiest method to free stuck valves on asphalt lines. Keep in mind that the materials in these lines are essentially all hydrocarbon; therefore, overheating can cause fires or explosions.

Heating carefully using proper procedures and safety precautions will help avoid incidents like the one described in the introduction.

Acknowledgement

Thanks to our asphalt suppliers who shared their procedures for safely heating stuck valves.

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