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Industry Guidelines

PACKAGING, HANDLING AND STORAGE OF POLYETHYLENE PIPES AND FITTINGS

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Pipelines Integrity For a Cleaner Environment

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PACKAGING, HANDLING AND STORAGE OF POLYETHYLENE PIPES AND FITTINGS

Polyethylene pipes and fittings are light in weight and easy to handle, and have considerable resilience, flexibility and resistance to impact. However PE pipes and fittings can be scored by sharp edges and can be distorted under load, particularly at higher temperatures.

General

Pipes and fittings should not be dropped, indented, crushed or impacted. Pipes and fittings must not be stored or transported where they are exposed to heat sources likely to exceed 70°C. While PE is very resistant to low temperatures, as the temperature drops below freezing the impact resistance will slowly drop, and therefore care must be taken to avoid damage by impact. Care should be taken in handling pipes and fittings in wet or frosty conditions as they may become slippery.

Do not place pipes and fittings in contact with lubricating or hydraulic oils, petrol, solvents or other aggressive materials.

Scores or scratches to a depth of 10% or more of the wall thickness are sufficient to cause rejection for any pressure application

Polyethylene is combustible and may be subject to fire regulations, the requirements of the local Authorities must be observed. In the event of a fire there are no restrictions on the type of fire extinguisher which can be used.

Lifting and Handling

PE pipes and fittings should not be subjected to rough handling during loading and unloading operations.

Only webbing slings should be used to lift PE pipes by crane. Under no circumstances should chains, wire ropes and hooks be used on PE pipe

Lifting of individual pipes or packs up to 6 m in length can be handled by a fork lift. To prevent drooping of long packs or individual pipes and subsequent scuffing of pipe ends. Two lifting points or spreader bars should be used for pipes or pipe packs exceeding 6 metres in length.

Coils

During coiling care should be taken to maintain the coil diameter at or above the specified minimum to prevent kinks. In uncoiling or recoiling care should be taken that sharp objects do not score the pipe.

When releasing coils, it must be remembered that the coil is under tension and must be released in a controlled manner. The end of the coil should be

retained at all times, then the straps released steadily, one at a time. If the coil has bands at different layers of the coil, then they should be released sequentially starting from the outer layers. The amount of energy locked up in the coil will depend on the size of pipe, the class of the pipe, and the size of the coil.

When lifting coils slings must be placed around the entire coil. If coils are lifted by a fork truck contact points must be protected and the lifting must be performed on the entire coil. Fork tines must not be inserted between pipes in a coil.

Drums

The same stored energy is found in drums as with coils, except that the pipe is under more control when it is restrained on a drum. It is therefore only necessary to restrain the end of the pipe to make sure it is under control, and to see that the drum is restrained so that it cannot turn freely, and allow the pipe to unravel.

Drums are very heavy and must not be manhandled, but must always be handled with the appropriate equipment.

Drums must be stored on flat, stable ground to make sure they will not topple over, and should be controlled by the use of chocks to ensure they do not roll out of position.

When lifting drums from the vehicle, they should be lifted by use of a strap placed under the plate carrying the pipe, and not through the outer rim of the drum, as this will bend the rim inwards and damage both the drum and the pipe.

If lifted by a fork, the tines should be fitted inside the drum under the cross members, making sure the length of the tine is sufficient to fit through the drum to support both sides.

Under no circumstances should a drum be allowed to drop from the back of a vehicle on to the ground, or even on to a stack of tyres or other buffer system. When lifting steel drums, care must be taken to make sure they do not come in contact with overhead wires.

Storage and Transport

Pipes of other colour than black should be protected from elevated temperatures and direct sunlight during storage and transport, particularly if they are to be stored for more than 6 months.

Pipes stacked for storage or transport should be continuously and evenly supported to minimise distortion. Alternatively horizontal supports of at least 75mm bearing width, spaced not further apart then 1.5 metre centre-to-centre, should be placed beneath the pipes. If stacks are rectangular, vertical supports at twice that spacing should be provided at the sides.

Timber framed packs should be stacked with the frames close together and alternating evenly. Packs with widely differing frame spacing should not be stacked. Do not align the bearers vertically as the stacks are likely to be unstable.

In such load bearing stacks the maximum free height should be such that the pipe is not permanently deformed, having regard to sideways stability. For larger diameter pipes it may be necessary to brace the ends of the pipe with internal supports to prevent end distortion. Sharp sections bearing against the pipes should be avoided as these can cause indentations in, or scoring of, the pipe wall

Pipes with end treatments such as belling, forming, flanging or pre-assembled fittings should be stacked so that the ends are free from loading; if necessary they should be protected from damage. Pipes cut and squared for butt fusion should be given special attention to ensure that they are always handled, particularly in transit, in a manner that keeps the pipe ends free from damage.

If different classes of pipe are kept in the same stacks then the heaviest class should always be at the bottom. Pipes may be nested inside each other for transport or storage provided distortion does not occur. When being transported pipes should not be restrained in a manner likely to result in damage to them.

Electrofusion Fittings should be stored under cover in dry conditions. They should be kept in their packaging until ready for use.

Coiled pipe can be stored and transported by being laid flat on a continuous surface such as pallets but shall be stored and only to such a height that the bottom convolutions does not become distorted. Pipe coils can also be stored and transported in a near vertical position, although this may be governed by the availability of a support which will safely hold leaning coils, provided that the bottom outside coils are not damaged or flattened in transport

Where drums are available they should be used to transport pipe; their radiused bearing surface is designed to protect the pipe from indentations.
In the storage and issuing of pipe and fittings the principle of ‘first in, first out’ should be observed.

References:

AS 2033 Installation of polyethylene pipe systems

POLIplex Design Textbook – Iplex

Polyethylene Pipe Systems Technical Manual – Vinidex

IPS Polyethylene Pipe training course